

Joan C. Chrisler
Donald R. McCreary
Editors

Handbook of Gender Research in Psychology

> **Volume 1**
Gender Research in General and
Experimental Psychology

 Springer

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Joan C. Chrisler . Donald R. McCreary
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Volume 1: Gender Research in General
and Experimental Psychology

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ISBN 978-1-4419-1464-4 e-ISBN 978-1-4419-1465-1
DOI 10.1007/978-1-4419-1465-1
Springer New York Dordrecht Heidelberg London

Library of Congress Control Number: 2009941984

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Printed on acid-free paper

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Contents

1	Introduction	1
	Donald R. McCreary and Joan C. Chrisler	
Part I	History of Psychology	
2	Emergence and Development of the Psychology of Women	19
	Alexandra Rutherford and Leeat Granek	
3	Emergence and Development of the Psychology of Men and Masculinity	43
	Sam V. Cochran	
4	Emergence and Development of the Psychological Study of Lesbian, Gay, Bisexual, and Transgender Issues	59
	Kristin A. Hancock and Karen Greenspan	
Part II	Research Methods	
5	Quantitative Approaches to the Study of Gender	81
	Sarah K. Murnen and Linda Smolak	
6	Qualitative Inquiry in Gender Studies	103
	Mary M. Gergen	
7	Measuring Gender: Options and Issues	133
	Andrew P. Smiler and Marina Epstein	
8	Cross-Cultural Research Methods and the Study of Gender	159
	Gordon B. Forbes	
9	Gender Diverse Recruitment to Research Projects	179
	Deborah J. Bowen, Chanita Hughes Halbert, Alecia Robinson, and Uli Boehmer	
10	Interpreting and Communicating the Results of Gender-Related Research	191
	Peter Hegarty and Felicia Pratto	

Part III Brain and Behavior

- 11 The Physiology of Sex Differences** 215
Deborah Saucier and Crystal Ehresman
- 12 Sex and Gender in Sensation and Perception** 235
Joseph A. Schroeder
- 13 On Tending to Our Scientific Knitting: Thinking About Gender
in the Context of Evolution** 259
Nora S. Newcombe

Part IV Learning, Education, and Cognitive Processes

- 14 Gender in the Classroom** 277
Susan A. Basow
- 15 Gender and Academic Abilities and Preferences** 297
Heather A. Priess and Janet Shibley Hyde
- 16 Gender, Spatial Abilities, and Wayfinding** 317
Carol A. Lawton
- 17 Gender and Creativity** 343
Mark A. Runco, Bonnie Cramond, and Alexander R. Pagnani

Part V Communication

- 18 Words Matter: The Language of Gender** 361
Christine A. Smith, Ingrid Johnston-Robledo, Maureen C. McHugh,
and Joan C. Chrisler
- 19 She Said, He Said: Gender, Language, and Power** 379
Maureen C. McHugh and Jennifer Hambaugh
- 20 Gender, Power, and Nonverbal Behavior** 411
Marianne Schmid Mast and Sabine Sczesny

Part VI Emotion and Motivation

- 21 Gender, Emotion, and Socialization** 429
Leslie R. Brody and Judith A. Hall
- 22 Sex and Gender Differences in Eating Behavior** 455
C. Peter Herman and Janet Polivy
- 23 Gender Differences in Sexuality** 471
Jennifer Petersen and Janet Shibley Hyde

Part VII Lifespan Development

- 24 Gender Identity and Stereotyping in Early and Middle Childhood** 495
May Ling Halim and Diane Ruble

25 Gender in Adolescence: Applying a Person-in-Context Approach to Gender Identity and Roles	527
Katherine H. Clemans, Laura M. DeRose, Julia A. Graber, and Jeanne Brooks-Gunn	
26 Gender, Adult Development, and Aging	559
Abigail J. Stewart and Nicky J. Newton	
Author Index	581
Subject Index	661

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Chapter 1

Introduction

Donald R. McCreary and Joan C. Chrisler

The Development of Gender Studies in Psychology

Studies of sex differences are as old as the field of psychology, and they have been conducted in every subfield of the discipline. There are probably many reasons for the popularity of these studies, but three reasons seem to be most prominent. First, social psychological studies of person perception show that sex is especially salient in social groups. It is the first thing people notice about others, and it is one of the things we remember best (Fiske, Haslam, & Fiske, 1991; Stangor, Lynch, Duan, & Glass, 1992). For example, people may not remember who uttered a witty remark, but they are likely to remember whether the quip came from a woman or a man. Second, many people hold firm beliefs that aspects of physiology suit men and women for particular social roles. Men's greater upper body strength makes them better candidates for manual labor, and their greater height gives the impression that they would make good leaders (i.e., people we look up to). Women's reproductive capacity and the caretaking tasks (e.g., breastfeeding, baby minding) that accompany it make them seem suitable for other roles that require gentleness and nurturance. Third, the logic that underlies hypothesis testing in the sciences is focused on difference. Researchers design their studies with the hope that they can reject the null hypothesis that experimental groups do not differ. Even though similarities between women and men can tell us as much about human behavior as differences between them can do, researchers often are disappointed by, and reviewers and editors uninterested in, studies that require acceptance of the null hypothesis.

If we accept the founding of Wundt's laboratory in 1879 as the beginning of formal psychology, then we can say that, for almost the first 100 years of its history, psychological research and theory was focused on "sex" (i.e., universal, biologically based causes of behavior). Although some psychoanalytic theorists (e.g., Deutch, Horney, Jung) wrote about ideas we now understand as "gender," the idea that human behavior is multiply determined (i.e., has biopsychosocial determinants) was not acknowledged until recent decades. Feminist psychologists, influenced by the Women's Liberation Movement of the 1960s and 1970s, began to write about sociocultural influences on the psychology of women. They used the word "gender" to describe psychological and social aspects of behavior and social roles. Gradually the term "gender roles" came to replace the older term "sex roles," as psychologists realized the extent to which social and cultural influences operated to move people into particular roles (e.g., breadwinner, bread baker). The notion that gender is performed (i.e., something

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we “do” rather than something we “have”; West & Zimmerman, 1987) also makes “gender” a better modifier for the active performance of role-related activities.

The formal study of gender in psychology can be dated to the early 1970s. The first psychology of women textbooks for undergraduate and graduate courses were published in 1971 (Unger, 1998). The founding of Division 35 (Psychology of Women) of the American Psychological Association in 1974 is another important marker, as a subfield can certainly be said to have coalesced when it is large enough to earn a place as an APA division. The journal *Sex Roles* published its first issue in 1975; *Psychology of Women Quarterly* came next in 1977, followed by *Women & Therapy* in 1982. The first issue of *Feminism & Psychology* appeared in 1991. In the early days of gender studies, and even today—at least among the general public (Pryzgodna & Chrisler, 2000)—the word “gender” has often been synonymous with women. We hope that this idea seems ridiculous to our readers. However, psychologists who believed that “man” is the norm and “woman” is the “other” were slow to come to the realization that the psychology of men is as influenced as the psychology of women by the society and the culture in which people live, as well as by the social interactions of everyday life. Although feminist men authored books about the stresses associated with masculinity as early as the 1970s, it was not until 1997 that APA Division 51 (Psychology of Men and Masculinity) was founded. The first issue of its journal *Psychology of Men & Masculinity* was published in 2000.

Early studies of sex and gender differences were often atheoretical and sometimes simplistic (e.g., only one independent and one dependent variable, small and homogeneous samples). Researchers were so focused on looking for gender differences that they looked anywhere and everywhere with little or no rationale other than their personal interest in the particular phenomenon or ability. Studies were conducted on such varied topics as reaction time, auditory acuity, social conformity, eating behavior, extroversion, problem solving, creativity, criminality, and cognitive development. The scattershot nature of many of these early studies, as well as the low status associated with studies of women’s issues, led many journal editors, tenure and promotion committees, and other establishment entities to think of the psychology of gender as a fringe area and the journals that published it as low quality. Today things look very different. The psychology of gender is a well-established area, and researchers have many strong theories to guide them in their work. The journals mentioned above have developed good reputations (e.g., high rejection rates, impressive impact factors), and studies of gender can be found in most mainstream journals these days. Nevertheless, some research is still being done atheoretically, especially in countries whose work in this area is still in an early stage of development, and many psychologists are unfamiliar with the terminology of gender research (e.g., they frequently conflate “sex” and “gender”), the current questions under study, and the wide variety of methods used to answer those questions. We hope that the *Handbook of Gender Research in Psychology* will be helpful in clarifying that confusion and setting an agenda for future research.

We recently looked through the first few volumes of *Sex Roles (SR)* and *Psychology of Women Quarterly (PWQ)* to see what was of interest to researchers in those early days. Most of the articles described gender comparative studies, some described studies of the psychology of women, and only one (an article on fathering) concerned the psychology of men. The most popular topic across both journals was work and career. Both journals contained multiple articles about gender differences in achievement motivation. *PWQ* published articles on women in male-dominated occupations, re-entry women workers and students, and assertiveness training. Early articles in *SR* concerned gender stereotypes (especially in the media), children’s attitudes toward gender roles, and differences between feminists and nonfeminists. Examples of the scattershot work we derided above are one article each on gender and handedness, gender roles and criminality, and gender and conformity. *PWQ* also published an article on the empty nest syndrome, which is rarely even discussed these days. Of course, all of the articles referred to “sex roles”; there was no mention of gender, and the

majority of the samples were all (or predominantly) White and heterosexual (when explicit sample descriptions were provided and probably when they were not).

Recent issues of *SR*, *PWQ*, and *Psychology of Men & Masculinity (PMM)* tell a different story. The journals continue to publish articles on a wide variety of topics, especially *SR*, which is interdisciplinary, and, as a monthly journal, publishes many more pages and articles than the other two do. Gender comparative studies are still common, especially in *SR*, but most are designed to test theories, and so the results are of more than passing interest. Some of the studies are specifically designed to reduce inequalities (e.g., studies of workshops to improve girls' spatial skills), and articles on recurring topics (e.g., gender stereotypes in the media) allow readers to understand changes over time. Topics of current interest in both *PMM* and *PWQ* concern body image, aggression and violence, homophobia and heterosexism, physical and mental health, and social cognition (e.g., studies of discrimination and stereotyping). All three journals have published a number of new measures that can be applied in gender research. All three journals also require authors to use the words "gender" and "gender roles," even *SR*, which, ironically, has decided to keep its original name even though the only place the term "sex roles" is used is on the cover (Chrisler, 2007). All three journals prefer to publish studies with diverse samples, and all three have published special issues, special sections, and articles focused on ethnic and sexual minorities. Much progress has been made in gender studies thanks to the leadership of these journals' editorial boards, and our psychological science, theory, and practice are richer as a result.

Methodological Issues

In its publication manual, the APA urges researchers to include both women and men in their studies and to explore possible gender differences. But the APA provides no guidance on how to interpret those gender differences (or similarities) when they emerge. As there is no over-arching theory of gender that researchers can use to interpret their results, many (especially those not particularly interested in gender research) are left not quite knowing what their findings mean. As a result, gender is often considered a nuisance variable and its variance tends to be partialled out of the main analyses. In other words, gender is often used only as a statistical control variable. Other researchers report gender differences in their Results section, but then ignore the findings in the Discussion.

Fortunately, there have been a series of recent methodological and statistical changes that either have had, or presently are having, an important influence on the way researchers study the psychology of gender. On the methodological side, Hesse-Biber and Leavy (2008) described several new methodological approaches in their recent *Handbook of Emergent Methods*. These include a variety of grounded theory, interview, discourse analytic, and ethnographic approaches. For many researchers who study the psychology of gender, some of these emerging methods are not really new. However, for those just beginning to study the area or those who have noticed that their statistical control variable is explaining a lot more variance than they would expect—and want to know why—these new methods provide some powerful tools to help researchers to understand the role that gender plays in any field of interest.

On the statistical side, the increased use of moderating variable analyses (Baron & Kenny, 1986) has allowed researchers to go from focusing on mean differences between men and women (or boys and girls) on a single variable of interest to examining the extent to which the associations between two or more variables differ as a function of gender or gender role. It is true that researchers have been examining gender-based interactions in ANOVA models for decades, but regression-based

interactions allow researchers to gain more power when working with multiple independent variables. Furthermore, the extension of regression to structural equation modeling (i.e., assessing multiple group comparisons or conducting tests of measurement or structural invariance) allows for more complex model testing and multivariate tests of gender differences. For instance, structural modeling allows researchers to incorporate multiple dependent, as well as independent, variables into their conceptualizations.

However, the change that has had the largest impact on how researchers study gender is meta-analysis. In conjunction with the APA Task Force on Statistical Inference (Wilkinson and the Task Force for Statistical Inference, 1999), meta-analysis has helped to promote an increased focus on effect size (as opposed to a sole focus on statistical significance testing). In the past, researchers would test for differences between women and men or girls and boys, and, if the mean differences reached the threshold for statistical significance (i.e., $p < .05$), it was said only that the two groups differed. Rarely was there a mention of whether the magnitudes associated with those significant differences were trivial, moderate, or large. However, the introduction of meta-analysis allowed researchers to go back to those studies, compute the effect sizes, and then to determine how strong the effects were overall, to group similar studies together in order to explore the stability of the effect sizes across time, and to study the role that mediators and moderators played in influencing the size of those effects. In addition, the APA Task Force on Statistical Inference encouraged researchers to report effect sizes in all of their published research so that readers do not have to wait for a meta-analysis to be conducted. As a result, even though many researchers include gender as a variable in their research, they are now somewhat better equipped to interpret the findings within the context of their theories, models, or hypotheses.

Purpose and Goals of this Handbook

Given psychology's long history of studying gender, combined with the changes in both content and methodology, we thought it was time to bring together the ideas, theories, and research from as much of the discipline as possible. Our hope was that such an undertaking would provide a critical overview of the current state of affairs in psychological research on gender and help to provide concrete direction for graduate students and early career professionals who wish to work in gender studies. A handbook of this nature also serves to inform all psychologists of the gender-related research being conducted throughout the entire range of the discipline. Most psychologists who study gender tend to work in the social, clinical, and developmental areas. As a result, most consumers of gender research, especially psychology instructors, are probably more familiar with work in those areas than they are with work in other subfields (e.g., neuroscience). In other words, most of us know less about how gender is studied and the findings that have emerged in the domains outside of the social–clinical–developmental core.

To determine the breadth of topics to cover in this handbook, we surveyed a variety of current Introduction to Psychology textbooks and identified the most common chapter titles and themes. This gave us 14 potential sections for the handbook, which we used to create a preliminary list of the most commonly studied topics within each. Discussions with colleagues helped us identify which topics had enough material to be covered in their own chapters and which topics might be best combined with related matter.

Next came the most difficult part of the process: recruiting authors. It was our plan to enlist a mixture of established and emerging researchers. Established researchers bring a combination of

breadth and depth gained from a career spent working in their respective fields. Emerging researchers (those with recently awarded doctorates and current graduate students) can bring fresh insight to their fields, and they also represent the psychologists of the future, those who are most likely to move their areas forward. Emerging authors were recruited in two ways. First, some early career psychologists were recruited based on their work or reputation. Second, we invited all established authors to collaborate with graduate students, post-docs, or junior colleagues.

Once we knew what topic areas we wanted covered and who we would like to author each of the chapters, we charged the authors with four tasks. First, we asked them to think broadly about gender. As we mentioned earlier, too often in the field, the word “gender” is assumed to be a code word for women. We did not want the authors to assume that a handbook designed to describe the gender research in psychology would really focus only on the psychology of women. We asked them specifically to consider men, boys, women, and girls. But we also asked the authors to explore the intersection of racial, ethnic, and sexual minority status (including transgender) whenever possible. Some authors went beyond that and also addressed the role of social class and other demographic influences. Second, we asked authors not just to summarize the research that shows significant gender differences, but to explore critically the areas in their subfields where gender is studied, to discuss where the differences are and where they are not, and then to offer some form of interpretation of those effects or noneffects (e.g., effect sizes from meta-analyses). Third, we asked the authors to consider international research whenever possible. We recognized that this would be easier for some topics than others. In some areas, the focus would have to be on North American research findings (or even those specific to the United States) because the wide variety of legal or cultural factors would preclude a thorough analysis of cross-cultural issues. Other chapters would more easily allow for these comparisons. However, in most chapters, authors were able to provide at least some focus on research conducted outside the United States. Finally, because all authors are experts in their respective subfields, we asked them to conclude their chapters with a section that describes what they think researchers should do next (i.e., future directions). This could be theory development, new research methodologies or statistical approaches, or topics that need attention; whatever the authors thought would help to propel their area forward was appropriate.

Handbook Overview

Our survey of the most common topical areas within psychology led us to create 14 sections for this handbook, each with multiple chapters. The sheer number of chapters resulted in the decision that the handbook would have to be produced in two volumes. This meant ordering those sections into two sets of conceptual wholes. This was not an easy task, but we came to the following compromise. *Volume I* would begin with a section on the history of gender research in psychology and with a consideration research methods. We decided that this was the right way to begin because these are the important basics that psychologists must learn before going on to other topics. The remaining sections in Volume I are Brain and Behavior; Learning, Education, and Cognitive Processes; Communication; Emotion and Motivation; and Lifespan Development. In total, these seven sections represent the areas of general and experimental psychology. *Volume II*, on the other hand, contains the sections that address the social and applied aspects of psychology. This volume contains sections on personality psychology, abnormal and clinical psychology, psychotherapy, social psychology, industrial–organizational psychology, health psychology, and special topics in applied psychology. A brief description of these sections, and the chapters in them, is provided next.

Volume I: Gender Research in General and Experimental Psychology

History of Psychology

Volume I begins with a three-chapter section on the history of gender research in psychology. First, Alexandra Rutherford and Leeat Granek describe the emergence of the study of the psychology of women in the late 1800s as it was studied by the first generation of women who became psychologists. They situate the development of the field in the historical context of events and movements (e.g., World War II, the Women's Liberation Movement, multiculturalism) that drove psychologists to organized activism and affected what they saw as important topics of study. Next, Sam V. Cochran dates the emergence of the study of men and masculinity to the Women's Liberation Movement of the 1960s, which spurred men, as well as women, to consider how their lives had been shaped and limited by gender-role socialization. He traces the growth of the field and introduces readers to the major topics, theories, and measures that have preoccupied researchers thus far. Then, Kristin A. Hancock and Karen Greenspan discuss the emergence and development of the psychological study of lesbian, gay, bisexual, and transgender issues. They use a generational framework to show how the field has changed from first generation work on "male homosexuals" at a time when gay men and lesbians were thought to be mentally ill to second generation work that challenged that position and showed that lesbians and gay men could be happy and healthy in the absence of social stigmatization and discrimination. Third generation researchers have broadened the base to include bisexual and trans people, to include ethnic and racial diversity, and to study aspects beyond mental health and illness, including family life.

Research Methods

This section contains six chapters that provide an overview of some of the major topics related to research methods in the psychological study of gender. The first two chapters explore the two main approaches for conducting gender-based research: quantitative and qualitative methods. In the first of these, Sarah K. Murnen and Linda Smolak discuss experimental and quasi-experimental research methodologies; they describe these methods' advantages, disadvantages, and the various ways that researchers can offset the effects of some of those disadvantages. Throughout their chapter, they use examples from the recent research literature to highlight their points. Next, Mary Gergen describes the wide range of qualitative research methods available to study the psychology of gender. Her chapter describes the basic characteristics of qualitative research in general and then provides descriptions of the many different approaches for conducting qualitative research and illustrates them with examples from current literature.

The remaining four chapters examine specific methodological limitations that researchers face. First, Andrew P. Smiler and Marina Epstein address the complex issue of assessment. They organized their chapter around various types of measures of gender: measures of support for, and adherence to, cultural gender norms; measures of gender-role conflict and gender-role stress; and measures related to the relative position of men and women in society. Within each of these sections, Smiler and Epstein describe the reliability and validity of some of the most commonly used measures. In the next chapter, Gordon Forbes describes the various approaches to the cross-cultural study of gender. This chapter provides an excellent overview for those who are not familiar with conducting research across cultural boundaries. It discusses the differences between various social groups, the elements of culture, approaches to the psychological study of culture, and the measurement problems

researchers can expect to face. Then, Deborah J. Bowen, Chanita Hughes Halbert, Alecia Robinson, and Uli Boehmer discuss the importance of sample diversity in gender research. They describe various procedures researchers can use to maximize the recruitment of a wide variety of minority groups (e.g., social, ethnic, and sexual minorities) into their studies. This section concludes with a chapter by Peter Hegarty and Felicia Pratto, who write about the important issue of how researchers interpret and communicate findings from gender-related research. They compare and contrast “sex differences” and “gender differences,” and they note the important influence of social and political climates, as well as scientific metaphors and social norms, in framing how differences are interpreted by authors and their readers.

Brain and Behavior

The three chapters in this section focus on current research and theory in neuroscience and evolutionary theory. First, Deborah Saucier and Crystal Ehresman discuss the physiology of sex differences. They summarize the current knowledge about genetic and hormonal effects on human development and behavior, including menstrual cycle effects and physiological differences related to sexual orientation. In the next chapter, Joseph A. Schroeder examines the evidence for sex-related differences in sensation and perception. He examines the sensory systems one by one to show what evidence, if any, there is that men and women have different thresholds and acuities, and he shows how modern brain imaging techniques are making it possible to study subtle, and gender-related, differences in these important functions. Then, Nora S. Newcombe casts a critical eye on evolutionary psychology theory. She examines the research on spatial cognition to show how an interactionist model can better account for the data at hand.

Learning, Education, and Cognitive Processes

This section contains four chapters that address gender-related issues associated with how and what we learn. In the first chapter, Susan A. Basow describes the many ways that gender influences find their way into classrooms. She describes a wide variety of issues from the gendered nature of the teaching profession and the curriculum to the students themselves. She also describes gender differences in educational attainment and provides an overview of the most frequently studied factors that are presumed to influence this outcome. Next, Heather A. Priess and Janet Shibley Hyde examine gender differences in academic abilities and preferences. After providing readers with an overview of some methodological issues, they present a critical review of the research in a number of areas, including intelligence, mathematical and verbal abilities, and academic preferences. Their findings suggest that, although gender similarities are more frequent than gender differences, the questions are complex and require more than a simple difference approach to understand the issues. Third, Carol A. Lawton explores factors that influence gender differences in spatial abilities and wayfinding. Spatial abilities, especially mental rotation, represent one of the more robust findings in the gender difference literature, but Lawton discusses how the underlying biological, cognitive, and social factors that influence these differences are complex and muddy the proverbial waters. The fourth chapter in this section explores gender differences in creativity. After providing an historical overview, Mark A. Runco, Bonnie Cramond, and Alexander R. Pagnani discuss the criteria for assessing creativity, describe how those criteria are applied in scientific research, and review the role of gendered personality and cognitive factors in creative thinking and productivity.

Communication

The three chapters in this section explore the importance of communication—written, oral, and nonverbal. In the first chapter, Christine A. Smith, Ingrid Johnston-Robledo, Maureen C. McHugh, and Joan C. Chrisler discuss the impact that gendered language use has on readers and listeners, describe the history of the development of the APA’s guidelines for avoiding bias, and provide some definitions and suggestions for the use of gender-related terminology in speech and writing. Next, Maureen C. McHugh and Jennifer Hambaugh critique the “difference as deficit” model of gendered speech, summarize which hypothesized gender differences the research supports and which it does not, examine sexism in the “naming” of some speech acts (e.g., nagging, gossip), and advocate for a postmodern approach to future research in this area. In the third chapter, Marianne Schmid Mast and Sabine Sczesny interrogate the long-standing theory that gender differences in nonverbal behavior are due to status and power differentials. After their careful review of the literature, they conclude that men’s and women’s nonverbal behavior differs in a number of ways, and high- and low-status people’s nonverbal behavior differs in some ways, but status and gender differences do not map onto each other consistently. They call for more complex studies that allow researchers to examine interaction effects between gender and status, given the important effect nonverbal behaviors can have on impressions of women and men, especially in the workplace and in leadership positions.

Emotion and Motivation

There are three chapters in this section, and each explores a different area in which gender influences the way we feel and express our feelings or our motivation to act in a given way. The first chapter, written by Leslie R. Brody and Judith A. Hall, explores gender and emotion. They examine topics such as gender stereotypes about emotional display rules and emotional regulation, gender-related issues associated with the nonverbal expression of emotion, and emotional competence. In the next chapter, C. Peter Herman and Janet Polivy discuss gender-related issues in eating behavior. For example, why is it that, even after we control for men’s typically greater body size, men tend to eat more than women, and the food they eat is not as healthy as what women eat? Herman and Polivy explore the main biological, psychological, and social factors that influence this important aspect of human behavior. Next, Jennifer Petersen and Janet Shibley Hyde review the research on gender differences in sexuality. After exploring the many theories that address this issue, Petersen and Hyde review the empirical data on sexual behavior and attitudes, as well as the biological, psychological, and social factors that influence them.

Lifespan Development

The three chapters in this section explore gender-related developmental influences across the lifespan. The first chapter examines the development of gender identity, gender roles, and gender stereotypes in children. May Ling Halim and Diane Ruble also explore the many aspects that influence these factors, including the roles of cognitive development, parents, and sociocultural factors, and they discuss the behavioral consequences of gender-role socialization in this age group. In the second chapter, Katherine H. Clemans, Laura M. DeRose, Julia A. Graber, and Jeanne Brooks-Gunn describe how adolescent gender roles are influenced by an increasing degree of interactions with an expanding social network. Changes in adolescents’ bodies influence the ways girls and

boys see themselves, how others see them, and how they interact with the world. For a minority of adolescents, this can be a problematic time, thus, the authors also discuss some of the more common intra- and interpersonal problems associated with adolescence. Abigail J. Stewart and Nicky J. Newton conclude this section with their exploration gender-related development across adulthood. They offer a review and critical analysis of theory and research on changes in personality, with a focus on Erikson's theory of psychosocial development. Stewart and Newton also discuss the role of the aging body and how changes in social roles can influence adults' gender enactment.

Volume II: Gender Research in Social and Applied Psychology

Personality Psychology

In the first chapter in this section Jayne E. Stake and Heather Eisele review the research on gender similarities and differences in important aspects of personality, such as agency and communion, the Big Five personality traits, and self-concept. They emphasize the importance of social context on the expression of personality traits and introduce readers to some new directions in the study of well-being and healthy personalities. Next, Lauren E. Duncan and Bill E. Peterson review the research on gender and motivation for achievement, power, and affiliation. They discuss traditional and contemporary methods of studying social motives and show how expression of these motives may differ across cohorts due to historical events and cultural contexts. The chapter concludes with a call for future research that includes diverse samples and the potential to evaluate the impact of mediating and moderating variables. In the third chapter in this section Nancy Lynn Baker and Janelle L. Mason discuss the ways that gender bias (and other forms of prejudice) complicate researchers' and clinicians' attempts to measure personality and abilities. Among the topics the authors examine are assumptions about tests and test takers, the influence of context and experience on test scores, and problems with how norms for test scores are constructed and which norms assessors should use. Issues with particular tests are also reviewed.

Abnormal and Clinical Psychology

The chapters in this section discuss gender (and other) stereotypes in the conceptualization of psychiatric diagnoses and gender differences in two psychological problems for which people often seek psychotherapy. First, Alisha Ali, Paula J. Caplan, and Rachel Fagant discuss the social construction of the diagnostic categories in the American Psychiatric Association's *Diagnostic and Statistical Manual of Mental Disorders (DSM)*. They show how androcentric, heterosexist, and racist ideas can shape expectations for how people "should" behave and what type of "treatment" is required to maintain the status quo. Special attention is paid to issues in the diagnoses of personality, anxiety, and mood disorders. Next, Kate Richmond, Kate Carroll, and Kristoffer Denboske interrogate the social construction of gender identity disorder. Is deviance in gender performance necessarily a mental illness? Whose interests does this diagnosis serve? Is it possible to reform the "diagnosis" to meet the needs of trans people without pathologizing gender nonconformity? These are some of the provocative questions the authors raise. In the next chapter, Mark L. Hatzenbuehler, Lori M. Hilt, and Susan Nolen-Hoeksema review the literature on gender differences and sexual orientation differences in depression rates. They examine the evidence for biopsychosocial causes of depression and then propose a new model they call the "stress-mediation model of vulnerability to depression" that

accounts for the evidence to date. In the fourth and last chapter in this section, Rachel M. Calogero and J. Kevin Thompson discuss gendered aspects of negative body image, such as appearance anxiety, drive for muscularity, and drive for thinness. The relationship of these body image concerns to eating disorders, anabolic steroid abuse, body dysmorphic disorder, and elective cosmetic surgery is discussed in light of explanations such as objectification theory and the tripartite model of social influence.

Psychotherapy

The three chapters in this section concern gender issues in the process of psychotherapy and the issues that bring people to a therapist. First, Cynthia Bruns and Ellyn Kaschak recount the history of the development of feminist therapy and the impact of the Women's Liberation Movement's consciousness-raising technique on our understanding of women's mental health and "dis-order." The authors review the research that supports the utility of a gender and power analysis in therapy, critique the evidence-based treatment movement, and consider issues such as whether men can be feminist therapists. Next, Matt Englar-Carlson, Mark A. Stevens, and Robert Scholz discuss gender issues in psychotherapy with men. As masculinity is currently constructed, it works against men's willingness to admit vulnerability, to seek psychotherapy when they need it, and to feel comfortable "sharing" in the therapy setting. The authors examine the types of problems that typically bring men to therapy, provide advice on how to engage and support men during therapy sessions, and discuss the ways that male clients benefit from a gender analysis of their stresses and problems. In the last chapter in this section Louise B. Silverstein and Gary Brooks examine gender issues in family and couples counseling with lesbian, gay, and heterosexual couples. They critique gender stereotypes in family systems therapy, encourage therapists to adopt a social justice and multicultural perspective in family and couples therapy, and critique the absence of intersectionality in evidence-based treatment models.

Social Psychology

Social psychology is one of the areas where gender research has flourished. Four of the main areas are summarized here. In the first chapter in this section, Tara C. Marshall provides an overview of the theories and research associated with gender, peer relationships, and intimate relationships. She reviews a wide variety of topics, including factors that influence the development and maintenance of same-sex and cross-sex friendships, as well as potential romantic partners. Marshall concludes with a discussion of gender-related factors associated with the ending of romantic relationships. The second chapter, written by Irene Hanson Frieze and Man Yu Li, explores gender-related factors in aggression and prosocial behavior. They provide a review of the gender stereotypes associated with aggression, as well as an overview of the findings from a wide variety of experimental and quasi-experimental research on gender and aggression. Frieze and Li also discuss gender differences in various types of prosocial behavior, including empathy, nurturance, personal disclosure, and helping behavior. The third chapter explores gender issues in group behavior. Linda Carli describes the many ways in which a group's gender composition can influence people's behaviors in that group, as well as how gender composition affects the group's performance on a variety of tasks. Carli highlights the importance of the gender stereotypes we bring to our group interactions. In the fourth chapter, Ritch C. Savin-Williams, Seth T. Pardo, Zhana Vrangalova, Ryan S. Mitchell, and Kenneth M. Cohen

provide an overview of the research associated with sex and gender prejudice. After discussing the prevalence and correlates of prejudice against gay, lesbian, and bisexual individuals, the authors address prejudice against transgendered individuals. They conclude their chapter on a positive note by describing research that suggests that attitudes toward sexual minorities might be improving.

Industrial–Organizational Psychology

This section includes chapters that focus on different aspects of work, including social interactions in the workplace and work–life balance. Helen M.G. Watt starts off the section with a review of the literature on gender and occupational choice, with a special focus on how gender-role socialization affects people’s interest in STEM (science, technology, engineering, mathematics) fields. She examines the myriad ways that gender stereotypes, peers, teachers, parents, and popular culture impact boys’ and girls’ perceived abilities and motivation. Next, Scott Coltrane and Kristy Y. Shih review the literature on gender and the division of labor, with a focus on household labor and childcare. They examine theories that purport to explain why, despite the massive increase in the number of women in the formal workplace, women still do much more household labor than men do. Coltrane and Shih also compare and contrast lesbian and gay couples’ division of labor with that of heterosexual couples, and they discuss the negative and positive effects of work-to-family and family-to-work spillover. Vicki J. Magley, Jessica A. Gallus, and Jennifer A. Bunk examine gendered aspects of workplace mistreatment, including incivility, bullying, and sexual harassment. They consider the causes and consequences of mistreatment and suggest ways that institutions can reduce mistreatment in their workplaces. Finally, Ronit Karik and Alice H. Eagly review the literature on gender and leadership, which traditionally has been associated with men and masculinity. They discuss the role of gender stereotypes, social capital, leadership style, and barriers to advancement in the relative rates of advancement up the corporate ladder and the political hierarchy.

Health Psychology

This section contains four chapters that describe the main types of gender-related research conducted in health psychology. In the first chapter, Christina Lee reviews the area of gender, health, and health behaviors. Her chapter begins by exploring gender differences in life expectancy and then describes the ways in which gender differences in health-promoting behaviors can impact longevity. She notes the complex nature of the factors that influence health and discusses ways in which factors such as socioeconomic and cultural context influence these types of gender differences. The second chapter, written by Amy Zwicker and Anita DeLongis, discusses gender differences in stress and coping. After providing a general overview of the main models, Zwicker and DeLongis discuss research on two gender-related, stressful contexts: interpersonal relationships and the workplace. In addition to their examination of the role of coping, the authors describe the importance of social support in mitigating the adverse effects of stress. The third chapter explores gender issues in health-care access and utilization. Cheryl B. Travis, Andrea L. Meltzer, and Dawn M. Howerton begin by describing gender differences in health-care utilization, including access to ambulatory care and medications. They then discuss the main gender-related factors that can influence whether and when people seek health care, including gender stereotypes, differences in symptom-reporting style, and communication with medical professionals. The authors then apply these issues to health utilization practices in three areas: cancer, diabetes, and sexual and reproductive health. In the final chapter of this section,

Vivian S. Hwang and Sharon Danoff-Burg summarize and discuss research on gender differences in the diagnosis and treatment of chronic illness. For example, the importance of early disease diagnosis often is important for treatment success, but early diagnosis can be complicated by gender stereotypes. Hwang and Danoff-Burg also focus on gender differences in adjustment to chronic illnesses, such as cancer and HIV.

Special Topics in Applied Psychology

The last section of the handbook contains five chapters on special topics within gender research. In the first of these, Diane L. Gill and Cindra S. Kamphoff review gender research in sports psychology. Although trained in psychology, sports psychologists work primarily with physiologists, biomechanists, and motor behavior researchers, and this affects the way they approach topics such as gender. Gill and Kamphoff discuss a number of important areas, including the history of women in college sports and the role of governmental legislation on access to sport participation, as well as gender differences in sport participation and the barriers that influence access to and interest in sport. The second chapter provides an overview of some of the important methodological issues encountered by those who study gender-related issues in forensic psychology. Kenneth V. Heard discusses the importance of doing forensic research that can stand up to court scrutiny, the differences between being a forensic researcher and a psychotherapist who works in a forensic environment, and a myriad of ethical and methodological issues faced by forensic researchers. In the third chapter, Sharon M. Wasco and Meg A. Bond describe how gender is treated within community psychology. After describing the goals of community psychology and how gender is typically conceptualized in that field, Wasco and Bond summarize gender-related findings from the main journals on the topic. They note that gender in this area tends to be treated either as a grouping, process, or contextual variable. They describe examples of all of these types to help illustrate their use. The fourth chapter, written by Dara Greenwood and Julia Lippman, explores gender in the media. They review research that explores how often, and in what capacity, women and men are presented in traditional media (especially television and video games), as well as gender differences in the use of so-called new media (e.g., internet, cell phones). Greenwood and Lippman also explore gender differences in the influences these media have on boys, girls, men, and women. The final chapter in this section, and the handbook and a whole, is Angela R. Febbraro and Ritu M. Gill's examination of gender in military psychology. The chapter is focused mostly on women in the male-dominated and hypermasculine military, and the authors examine issues related to career progression, leadership, harassment, and work-life balance. Febbraro and Gill conclude with a discussion of sexual orientation and military service in various countries.

Observations and Gaps

Reading through each of the chapters gave us an appreciation for how far psychology has come in understanding gender's multi-faceted influence on people's lives. However, we also began to realize how much farther psychology, as a discipline, has yet to go. In other words, we began to identify some gaps in the research.

Where are the men and boys in gender research? One of the first things we noticed when we started reading the initial chapter submissions was the absence of men and boys in gender research. There is a myth within psychology that all of the knowledge that came before the arrival of second

wave feminism was based solely on men, and, as such, there is an abundance of knowledge about men, but an absence of knowledge about women. The reality, however, is quite different. Although men were used most often as participants in psychological research, diversity among men was rarely studied. Most of the men who participated in this early psychological research were White and upper middle class or upper class; differences based on economic, cultural, racial, ethnic, and sexual orientation were rarely studied. Feminist scholars were correct to say that the results of that work might not be generalizable to women, but it has only recently become apparent that they are not always generalizable to all men either.

The relative absence of men and boys in gender research in psychology was evident in almost all chapters. For example, when Kark and Eagly discussed gender issues in leadership, they rarely mentioned studies of the barriers that men face in becoming leaders, perhaps because no such studies have yet been done. The false assumption is that all men have an equal chance to become leaders. Similarly, Gill and Kamphoff's overview shows that gender research in sport psychology rarely addresses the barriers that boys and men face in accessing, excelling in, or ignoring sports (e.g., Are boys who do not want to participate in sports marginalized?). And Travis, Meltzer, and Howerton's chapter emphasizes how researchers have focused on barriers to women's health-care utilization but have rarely studied how gender-role socialization has influenced men's greater risk for early mortality.

There has been a growth in the study of the psychology of men and masculinity, but some areas of gender research have been at the forefront of discussions of men's and boys' issues and an integration of those issues into theories and research. For example, there is a growing discussion of men's and boys' gender-related problems in counseling (e.g., Silverstein and Brooks) and health psychology (e.g., Lee). Research in the body image area is an excellent example of this, and it was addressed in several chapters. That is, whereas past research has shown that men and boys display fewer weight-related body image concerns than women and girls do, when researchers began asking men and boys about their muscularity concern, they found it was associated with a wide variety of adverse outcomes, including poor self-esteem and higher levels of both anxiety and depression (McCreary & Sasse, 2000). Thus, men's and women's body images are focused on different ideals (i.e., the thin ideal versus the muscular ideal), but both ideals can result in serious consequences (e.g., eating disorders, anabolic steroid abuse). The research in this area has grown substantially since this differentiation became salient in the literature.

Differences in doing gender research across fields. A second thing we noticed was that gender is studied differently in some fields of psychology (e.g., neuroscience and sports psychology vs. social and clinical psychology), as these researchers use different techniques, theories, models, measures, or terminology. In many ways, these differences are a reflection of the point we raised earlier in this Introduction that gender research tends to be situated more often in the social, clinical, and developmental areas of psychology. As a result, there is a critical mass of gender researchers in some fields, but not others. In areas where there are many gender researchers, people get to know one another. They meet regularly at conferences and collaborate in a wide range of research endeavors. This leads to the development of a wider range of topical expertise within the study of gender. That became obvious to us as we were recruiting authors for this handbook. Many authors easily could have written two or more chapters (and two did!) because they are regarded as experts in more than one aspect of the psychology of gender. But, based on our observations, this does not appear to be the same for those who study gender outside of the core gender research areas.

There are many pitfalls for this type of segregated gender research. The first potential concern is that it could lead to miscommunication among gender researchers. For example, we noted, during the process of putting this handbook together, that those who do research from within the core areas tend to use different terminology than those who work in the noncore areas. Those in the core, for

example, tended to make a distinction between “gender differences” and “sex differences,” as well as “gender roles” and “sex roles.” This can be a frustrating experience for many and leads to the question of how gender researchers in all areas of psychology can work effectively together, even though these barriers such as this exist. In other words, do these differences prevent collaborations between the two groups? Also, are there any exclusional factors operating among gender researchers that impede communication and make collaboration difficult? It is important for gender researchers to ask themselves these questions.

Overstating the magnitude of differences. A third issue we noticed is that, when there is no focus on interpreting effect sizes, many people (researchers included) tend to overemphasize the magnitude of gender differences. That is, even though women and men, or boys and girls, appear to be more similar than different, many researchers overemphasize statistical differences without interpreting effect sizes. This often leads to the use of language that suggests all men do X, or are Y, whereas all women do A, or are B. There is no qualifying the findings, such as noting that men “tend to” act or be a certain way, whereas women “tend to” act or be the same way somewhat less or more. Similarly, even gender researchers frequently use the colloquial phrase “opposite sex” when we all know that women and men are more alike than different. The term “other sex” is more appropriate, even though that phrase still suggests a dichotomy that does not include those who are intersex.

But how do psychologists pursue a desire not to overstate differences when the professional and popular presses emphasize significant differences and make it almost impossible to publish research findings of similarities or nonsignificant differences? How do theories get developed and described in a way that does not overly magnify gender differences, but accurately reflects potential similarities and differences as a function of various psychological or cultural factors? These are considerations that researchers and their professional organizations need to consider in depth.

Measurement. A fourth issue that became apparent is that our measures of psychological gender are woefully inadequate. Many instruments are based on gender stereotypes that may be dated (e.g., Bem Sex Role Inventory [Bem, 1974]; Personal Attributes Questionnaire [Spence, Helmreich, & Stapp, 1975]). The use of outdated items on gender-related questionnaires can lead to a wide variety of problems with both validity and reliability. For example, the failure to adopt current and relevant content reduces the construct validity of the instrument, that is, it no longer measures the construct it was designed to measure or it does not measure it as accurately as it once did. Similarly, the attempt to measure gender-related content using dated instruments could become obvious to participants and lead to potential response biases.

A related problem is that some researchers, especially those who base their work on Sandra Bem’s (1974) theory of androgyny, use gender-role measures inappropriately. Bem’s androgyny theory suggests that those who are higher than average on both masculinity and femininity are androgynous, whereas those who are higher on either masculinity or femininity are gender-typed (or cross-gender-typed, if they are higher on the nonsex-specific trait component). Assessment of someone’s androgyny is dependent upon being able to measure people’s global levels of masculinity and femininity. Initially, this is what people thought the Bem Sex Role Inventory and Spence et al.’s Personal Attributes Questionnaire did. Numerous studies were devised and conducted, and many findings seemed to support Bem’s theory (Cooke, 1985). However, several problems emerged with these measures, including a realization that the questionnaires measure only two smaller dimensions of masculinity and femininity: agency or instrumentality and communion or expressivity (e.g., Archer, 1989; McCreary, 1990; Spence, 1984). In addition, several studies (e.g., Lubinski, Tellegen, & Butcher, 1983) showed that the agency or instrumental scales tend to be moderately correlated with self-esteem because of the perceived or actual increased degree of mastery over one’s environment these traits can provide. Given these definitional problems, androgyny theory cannot be properly tested, although people continue to try. If this is the case, then what role do the existing

studies play in our understanding of the psychology of gender? Should we discount those findings entirely, or even partially? How much credibility do we give the findings? Are those studies useful in other ways? And what should journal editors do when they receive new submissions based on these outdated measurement principles?

The problem with trying to assess global masculinity and femininity that both men and women internalize led some researchers to focus on the development of gender-specific measures. Questionnaires such as the Conformity to Male Norms Scale (Mahalik et al., 2003) and the Adolescent Femininity Ideology Scale (Tolman & Porche, 2000) assess gender-related characteristics in only women/girls or only men/boys. Although questionnaires such as these may be easier to create and represent cleaner constructs (i.e., avoiding the complexity of trying to define measures that are reliable and valid in both male and female participants), they come at a price: Using questionnaires such as these means that researchers can no longer study the degree to which gender-role socialization influences the myriad of gender differences described in this handbook (e.g., risky health behaviors, performance on educational attainment measures, sexual motivation, mental health outcomes). In other words, researchers who use these types of measures can no longer study the extent to which gender role interacts with gender to influence important outcomes.

Conclusion

The 2 years we spent organizing and editing this handbook was an exciting time for us. We learned a lot by reading about subfields in which we do not ourselves work, and we are grateful to the authors because every chapter gave us something new to consider. We hope that our readers will gain as much from the experience of reading the handbook as we did from editing it. And, we hope that you, our readers, will answer some of the questions, solve some of the problems, and fill in some of the gaps we mentioned above. Each chapter ends with suggestions for future research, and there is much to be done. So, let us get to it!

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Part I
History of Psychology

Chapter 2

Emergence and Development of the Psychology of Women

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The emergence and development of the psychology of women has been closely tied to the social and professional status and concerns of women over the course of the late 19th, 20th, and early 21st centuries. Although treatises on female subjectivity have existed throughout history, we begin our account with work on the psychology of women produced soon after the advent of scientific psychology in western Europe and North America in the late 1800s and provide a broad overview of developments through the early 21st century. Although in its earliest forms the psychology of women focused largely on sex differences presumed to underlie women's predetermined social roles, the purview of the field, its institutional presence, and its philosophical bases changed and grew dramatically throughout the latter one-third of the 20th century. Propelled by political, epistemological, and methodological developments, the psychology of women and gender has moved far from its late 19th century roots to encompass the diverse interests of its increasingly diverse practitioners and constituents.

Outlining the emergence and development of the psychology of women appears to be a straightforward task until one tries to define the historical object. Treated strictly as a body of research or an institutional sub-field within psychology, the psychology of women becomes artificially divorced from its gendered context and political origins. Given that the psychology of women, both as subject matter and professional discipline, was created almost entirely by women, often in response to personal experiences of sexism or an acute awareness of widespread sexist assumptions about women, it is impossible to disentangle the emergence and development of the psychology of women from the women who developed it and the gendered contexts in which they worked. Furthermore, the growth of the field is closely tied to the historical trajectory of women's status and to the increasing awareness of gendered practices and their effects within the discipline of psychology.

Given the impossibility, and even undesirability, of attempting to separate out agents, context, and objects of study, we have chosen to embrace this reflexivity and use it to shape the contours of our account. Morawski and Agronick (1991), in their discussion of feminist work in experimental psychology, referred to this complex state of affairs as a "double consciousness": "Given that psychology is a reflexive science – one involving the production of truth statements about a class of objects (humans) of which the observer is a member – then women's double consciousness as women and as scientists can take even more complicated forms" (p. 569). Here, our historical account of the psychology of women engages us in a reflection on how women scientists have utilized and

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navigated this double consciousness as gender politics and the very definition of science have shifted over the past 100 years.

Work that could be referred to, retrospectively, as “psychology of women” began quite early in the discipline’s history (see Milar, 2000). In part, this was due to the fact that, compared to other sciences, the new psychology admitted a higher proportion of women to its professional ranks from its beginning and the proportion of women increased more rapidly than in other sciences throughout the 1920s and 1930s (Furumoto, 1987; Hogan & Sexton, 1991; Rossiter, 1982). This did not necessarily mean that psychology was less misogynistic, but rather that, as a young field, it could ill afford to turn away promising members. Women rarely rose to positions of leadership or prestige in proportion to their numbers overall, either within professional societies or in academe (see Bryan & Boring, 1946; Mitchell, 1951).

Psychology was also professionalizing at a time when first wave feminism, whose origins in the United States are traced to the historic Seneca Falls Convention in 1848, was gaining considerable momentum and social and political visibility. Suffrage activities and the increasing numbers of women entering both the industrialized work force and postsecondary education brought gender role stereotypes and social expectations about men’s and women’s behavior into sharp relief. Another cultural product of this period – the New Woman – seriously destabilized the cult of true womanhood that had cemented women’s social status for decades. Highly educated and economically independent, the New Woman of the Progressive Era “challenged existing gender relations and the distribution of power” (Smith-Rosenberg, 1985; p. 245).

First-generation women psychologists perfectly embodied the New Woman and often found themselves, by virtue of their sex and their expertise, in the position of using science to challenge persistent gender role stereotypes. Given that their male colleagues applied these stereotypes as equally to them as to women in general, this work unavoidably, although often not explicitly, served personal, political, *and* professional aims. As historian Rosalind Rosenberg (1982) has noted of the writings of late 19th and early 20th century women social scientists, “Their writings revealed. . .how the very basis of women’s understanding of themselves was changing” (p. xiv).

In the first part of this chapter, we show how many first-generation American women psychologists used the tools of their science to engage in forms of feminist activism. Based on a periodization suggested by Scarborough (1994), we first focus on the period from psychology’s inception as a scientific discipline to just after World War I. We then discuss developments from the early 1920s until the early 1970s, a period characterized more by the absence of the psychology of women than by its development, although there were some exceptions. For example, it should be noted that both Karen Horney and Clara Thompson made important critiques of psychoanalytic theory in this period that stressed the importance of social, cultural, and environmental factors on women’s psychic development (for a review of their contributions to psychology of women, see Denmark & Fernandez, 1993). We then turn to developments from the early 1970s to today. By necessity, our coverage is selective, and we emphasize definitional, epistemological, and methodological issues rather than content areas (for other recent historical overviews of the psychology of women, see Rutherford & Pickren, 2008; Marecek, Kimmel, Crawford, & Hare-Mustin, 2003). It was in this period, with the rise of the women’s liberation movement, that the psychology of women as a distinct field of inquiry began to be fully articulated and the explicit use of the term “feminist psychology” gained common currency. In fact, Stewart and Dottolo (2006) have recently suggested that “The invention of feminist psychology began in the 1970s” (p. 493). Although the institutional trappings of feminist psychology, such as textbooks, journals, organizations, courses, and conferences, certainly began and proliferated at this time, we argue (as have others; see O’Connell & Russo, 1991) that a feminist consciousness clearly informed early research on the psychology of women, even if “feminist psychology” had not yet been invented. It is also clear that, over the past

two decades, the close identification of “psychology of women” with “feminist psychology” has changed, a point to which we return later in the chapter. We conclude by presenting some thoughts about the future of the field, including some persistent dilemmas and future directions.

Psychology and/of Women: The First Wave

As we noted above, the lives and work of first-generation American women psychologists were embedded in a social context of changing gender ideals (see also Minton, 2000) and a disciplinary context of rapid professionalization (see Camfield, 1973). The increasing numbers of women in higher education and the birth of the “new psychology” were coincident with the formalization of graduate education in the United States. Although, as Scarborough and Furumoto (1987) have shown, several first-generation women psychologists were barred from graduate programs on the basis of their sex, many sought out and received training in male-only institutions despite this barrier. Mary Whiton Calkins, for example, took courses at Harvard as a guest of the university and completed all of the requirements for the degree. Christine Ladd-Franklin studied at Johns Hopkins, even though the university did not formally admit women. In 1894, after a failed attempt to work at Columbia (which did not open its doors to women until 1900), Margaret Floy Washburn was the first woman to be officially awarded a Ph.D. in psychology at Cornell University.

These first-generation American women psychologists were distinctive in a number of respects. All were White, middle-class, Protestant, and from the Northeast or Midwest (Scarborough & Furumoto, 1987). However, they were also distinctive among women scientists because, compared to more mature sciences like physics and chemistry, psychology had not yet developed rigidly separate spheres of work for male and female scientists. For a number of reasons ably discussed by Rossiter (1982), between about 1880 and 1910 there arose a separate, gender-typed labor market for highly educated women in the natural sciences. Instead of competing with men for university positions or government employment, women often took jobs as research assistants, were funneled into service professions, or were forced to take teaching-heavy jobs at women’s colleges. Although many first-generation American women psychologists were also limited to employment at women’s colleges, “women’s work” was not to become as rigidly defined in psychology until somewhat later (see Furumoto, 1987).

After World War I, with the rise and proliferation of applied psychology, many women psychologists were guided toward positions in hospitals, clinics, courts, and schools. Often these positions required only Master’s level training. In the 1920s, funds from philanthropic organizations began to be directed toward psychology, and research centers were established. One example of this philanthropy was the Laura Spelman Rockefeller Memorial Fund, which provided funding for work on child development and parent education in the 1920s (see Lomax, 1977). Many women, especially at institutes where anti-nepotism rules prevailed, began to take jobs as research assistants and associates at the centers established by these funds. By mid-century, many female psychologists were also implicitly and explicitly encouraged to study and pursue jobs in child/developmental psychology, a field seen as consistent with gender stereotypes about women’s nurturance and interest in children (see Cameron & Hagen, 2005).

Our point is that very early in psychology’s history, before the emergence of a separate sphere of women’s work, many of the women who were able to overcome obstacles to full participation in the discipline made important *scientific* contributions. In many cases, these contributions involved their efforts to use science to challenge or refute the sexist assumptions about women’s natures and abilities that prevailed in society at large and were largely imported wholesale into the scientific canon

of psychology. One of these prevalent assumptions, heavily influenced by Darwinian evolutionary theory, was the variability hypothesis: the belief that men exhibit greater range and variability in the distribution of psychological traits than do women, which accounts for the greater numbers of men of both superior and inferior talent and for the greater mediocrity of women. Men's greater variability – both physically and mentally – was assumed to drive evolutionary progress (see Shields, 1975a, 1982). This greater variability among men, along with beliefs about men's and women's *different* strengths, was also assumed to equip men and women for different roles in society, a view known as the complementarity hypothesis (see Shields, 2007).

To test the variability hypothesis, Joseph Jastrow, a professor at the University of Wisconsin, conducted a study in which he asked 25 female and 25 male students to write down 100 words as quickly as possible. He concluded from an examination of these lists that women produced fewer unique words, had more repetition, and included more words that refer to apparel, furniture, and food than men did (Jastrow, 1891). As he summed up: "In general we may conclude that the feminine traits revealed by this study are an attention to the immediate surroundings, to the finished product, to the ornamental, the individual, and the concrete; while the masculine preference is for the more remote, the constructive, the useful, the general, and the abstract" (pp. 565–566). He concluded that women's and men's intellects are fundamentally different and interpreted these differences to support the variability hypothesis.

Mary Whiton Calkins and Cordelia Nevers, at Wellesley College, countered Jastrow's conclusions by conducting a similar study with the "young women of the experimental psychology class of Wellesley College" (Nevers & Calkins, 1895, p. 363). Their research failed to replicate Jastrow's results and, in fact, told quite a different story about women's variability. They concluded that, although theirs was not a completely comparable study, their "uncompromising contradiction" of Jastrow's data was warning enough that conclusions about the difference between men's and women's intellects were circumspect and often based on "purely personal observation" (p. 367). Further exchange between Jastrow and Calkins followed. Jastrow claimed that methodological differences between his study and Calkins' invalidated her results. She claimed that they did not and further argued that the enterprise of making distinctions between the intellects of men and women were "futile and impossible, because of our entire inability to eliminate the effect of environment" (p. 430). This dialogue became known as the "community of ideas" debate, and it was one of the first efforts by women psychologists to challenge prevailing scientific and cultural beliefs about gender differences (see also Tanner, 1896).

Helen Thompson-Woolley, who earned her Ph.D. at the University of Chicago in 1900, produced the first dissertation in psychology on sex differences, *The Mental Traits of Sex* (Thompson, 1903). Supported in her work by a particularly progressive academic and professional environment at Chicago, she conducted a review of the scientific literature on the status of sex differences and concluded that there was more confusion and contradiction than scientific substance. She then undertook an empirical investigation of the motor and sensory abilities of a group of 50 University of Chicago undergraduates: 25 women and 25 men (for a detailed discussion of this work and its context, see Rosenberg, 1982). Instead of reporting results for each test in terms of averages, Thompson-Woolley graphed the distributions of both men and women and noted that, in every case, the curves almost completely overlapped. In addition, although there were a small number of reliable average differences between the two groups (e.g., on motor ability and puzzle solving), women and men were actually more similar than different on most tasks including her admittedly crude tests of emotionality, a trait believed to be highly sex-typed. On tasks that did show reliable differences, Thompson-Woolley cautioned strongly against hereditarian interpretations and argued forcefully for a consideration of the ways girls and boys, women and men, were socialized differently and consistently encountered radically different environments and social expectations. In many ways,

Thompson-Woolley's arguments remain as relevant – and necessary – today as they were over 100 years ago.

One of the students most influenced by Thompson-Woolley's work was Leta Stetter Hollingworth. Hollingworth published numerous studies to debunk stereotypes about women, including another critique of the variability hypothesis (Hollingworth, 1914b; also see Shields, 1975b). She also conducted an empirical study to challenge the widespread belief that the mental and motor abilities of women became impaired during menstruation (Hollingworth, 1914a). Like Calkins and Woolley before her, throughout her work Hollingworth emphasized the differential effects of environment, culture, and social expectations in any explanation of presumed or demonstrated sex differences. The emphasis on these differential effects as an explanatory mechanism is a notable and relatively consistent feature in the sex differences work of first-generation women. One might conclude that, for this group of early women scientists, the first-hand experience of these differential effects rendered a psychology based heavily on hereditarian explanations irrelevant to, and unrepresentative of, their lived experience.

Although highly respected among their male peers, Calkins, Thompson-Woolley, and Hollingworth practiced insurgent science, and their numbers were relatively small. Their work did not give rise to a field called psychology of women. Although American women gained national suffrage in 1920, this victory signaled the beginning of a period of quiescence in terms of feminist activism. The rise of a distinct realm of women's work in psychology, as mentioned earlier, combined with the economic pressures of the Great Depression, diverted attention from the scientific debates on sex differences within psychology. However, with the advent of World War II (WWII), a group of women psychologists were impelled to collective action and formed the first organization explicitly designed to advance women's interests in psychology and to address the underrepresentation of women on committees and in professional organizations. By drawing attention to the "woman problem," these feminist activists challenged the myth of a meritocratic ideal of professional advancement that so many of their male peers unquestioningly accepted. Once again, their own experiences, as women and as scientists, revealed a different story.

Psychology and/of Women at Mid-century

It is no understatement to say that professional psychology benefitted from World War I (WWI). It was during the Great War that psychologists developed and used the intelligence test on a massive scale and appeared to prove their usefulness to society at large. As Samelson (1977) has stated, WWI helped put psychology "on the map" (p. 280). Thus, when WWII began, psychologists were ready to lend their expertise and take advantage of wartime opportunities. In 1940, an Emergency Committee in Psychology (ECP) was formed to assume responsibility for the mobilization of psychologists in the war effort. Initially, there were no women included on the committee, moreover, it quickly became clear that committee members were not disposed to including their female colleagues in their plans for professional mobilization. This "oversight" provoked a group of about 30 women to confront one of the ECP members with their concerns. The group was admonished to be patient and to wait quietly until plans could be made that would include them (Schwesinger, 1943). Although women psychologists had much to offer the war effort, their potential contributions appeared to have been completely overlooked.

Almost 2 years later, the ECP's promised plans had still not appeared. It was clear that collective action was called for. A group of about 50 New York women psychologists, many of them involved in applied work, began meeting to discuss how they could use their professional skills in

the national emergency. In November, a subgroup of these women met in the Manhattan apartment of research and consulting psychologist Alice Bryan to draw up a charter for a national organization of women psychologists. On December 8, 1941, 1 day after news of the bombing of Pearl Harbor, the National Council of Women Psychologists (NCWP) was formed. Florence Goodenough, a respected psychological scientist at the University of Minnesota, was selected as president. Although not particularly sympathetic to the “woman problem,” Goodenough was willing to lend her name to a group that would apply their considerable expertise to needed areas. By the middle of 1942, almost 250 doctoral-level women psychologists had joined the NCWP (Capshew & Laszlo, 1986).

From the beginning, there was some disagreement over the group’s objectives. Although fully aware that they were being edged out of military positions because of their gender and were not being invited to fill vacant academic positions, women were reluctant to make the NCWP simply a clearinghouse for charges of sex discrimination. As Bryan remarked, in the devastating aftermath of Pearl Harbor “Winning the war had to be given first priority” (Bryan, 1986, p. 184). However, as Capshew and Laszlo (1986) have argued, male psychologists and leaders in the ECP used subtle strategies to undermine the group’s feminist resolve. Many vehemently denied that sex discrimination existed in psychology and suggested that, in drawing attention to perceived discrimination at a time of national emergency, women were being self-centered. Another prominently held view was that, by drawing attention to sex-based inequities, women were undermining their status as scientists for whom pure merit would determine professional success (a position certainly held by many women in this period as well; see Johnston & Johnson, 2008). Nonetheless, the formation of the NCWP marked the first time women had come together with the explicit aim of professional advancement. They offered their services to help select women for the military, prepared recommendations on how to remain calm during war, and gave child-rearing advice to working mothers, among other initiatives (for summaries of the group’s contributions to the war effort, see Capshew & Laszlo, 1986; Napoli, 1981; for a comparison of the NCWP with later groups for women, see Walsh, 1985).

In 1942, Alice Bryan was invited to serve on the ECP Subcommittee on Survey and Planning, which was charged with reorganizing the American Psychological Association (APA). She was the only woman in the group. Here she met Edwin Boring, a Harvard experimental psychologist. Her acquaintance with Boring resulted in an interesting collaboration that demonstrates the double consciousness of being a woman scientist in this period. Like other male psychologists, Boring was becoming increasingly provoked by Bryan’s repeated assertions that women did not hold proportionate representation in APA offices. Always the empiricist, Boring suggested that he and Bryan, as fellow-scientists, collaborate on an empirical study of the problem.

Their collaboration resulted in three articles published in the *Psychological Bulletin* and the *American Psychologist* between 1944 and 1947 (Bryan & Boring, 1944, 1946, 1947). The reports are notable for their detachment, neutrality, and absence of interpretation. As a scientist, Bryan was obliged to play the role of detached data gatherer, and, even though the data clearly vindicated her original claim, the reports are strangely quiet about what might have caused these disparities. In his autobiography, Boring characterized their collaboration as one in which Bryan, with her feminist convictions, and he, with his conviction that women, for both biological and cultural reasons, “determined most of the conditions about which she complained” (Boring, 1961, p. 72), could potentially moderate each other’s positions and reveal the truth. However, in an effort to work together amicably, the pair sidestepped their ideological differences and presented their results – which clearly vindicated Bryan’s suspicions that women were underrepresented – in largely descriptive format (for more information on the collaboration and its results, see Capshew, 1999).

Boring (1951), however, clearly revealed his interpretive biases in a sole-authored article entitled “The Woman Problem.” What was the “woman problem”? As Boring wrote, in terms of their

positions in APA, “professional women acquire less prestige than professional men ‘in proportion to their numbers’” (Boring, 1951, p. 679). In this short, expository essay, he ventured that two of the primary reasons for women’s proportionate lack of prestige were (1) a natural predisposition on the part of women to prefer “particularistic” tasks (i.e., understanding single cases, as in clinical work) over the work of generalization that was the true calling of the scientist and (2) that women suffered from “job concentration” difficulties. Because, he reasoned, the culture tends to reward scientific work (large theories and broad policies) and fanaticism, it is no wonder that women would experience conflict between professional success and family orientation. He tackled the question of whether a woman could become such a fanatic (a “168-hour” person) and still remain marriageable. He concluded that indeed she could, but that she must be “abnormally bright to combine charm with concentration” and noted that some women “make the synthesis by being charmingly enthusiastic” (p. 681).

Ultimately, as Boring’s comments intimate, the immediate pre- and postwar periods did not provide a particularly hospitable environment for feminist activism or for the proliferation of research on the psychology of women. Neither did women psychologists necessarily benefit from the postwar economic boom (Walsh, 1985). Men quickly filled both the academic positions they had previously dominated *and* the newly prestigious clinical positions that had previously been at least partly relegated to the “women’s sphere.” Whereas rules prohibiting the employment of married women had restricted first-generation women psychologists, anti-nepotism rules in turn affected the career placement and advancement of many second-generation women. Many resorted to lower-paid research assistant positions in order to follow their husbands (for a discussion of dual-career couples in psychology, see Russo & O’Connell, 1980).

As Johnston and Johnson (2008) have recently shown, women in psychology’s second generation were also more racially and religiously diverse than their first-generation counterparts. Thus, many experienced the double jeopardy of racism and sexism (e.g., Mamie Phipps Clark) or anti-Semitism and sexism (e.g., Mary Henle). It was not until the 1930s that the first African American women were awarded Ph.D.s in psychology (see Guthrie, 1998). Inez Prosser received her Ph.D. in educational psychology in 1933 but tragically died a year later (Benjamin, Henry, & McMahon, 2005). Ruth Howard received her Ph.D. in psychology in 1934 at the University of Minnesota (Guthrie, 1998; Howard, 1983). One of the most well-known African American women psychologists Mamie Phipps Clark was awarded her Ph.D. in 1944. Clark quickly perceived the paucity of opportunities available to her as a Black woman in psychology, and she set about creating her own opportunities. She established the Northside Center for Child Development in 1946 and served as its director until her retirement in 1979 (Clark, 1983; Lal, 2002).

Despite these obstacles, a small number of psychologists in this period continued to carry out work on the psychology of women. A notable example is Georgene Seward, a Columbia-trained social and clinical psychologist. In 1944, Seward turned her attention to the still-entrenched belief that women’s performance and productivity became impaired during menstruation (Seward, 1944a). She noted, “Today when women are playing an increasingly important part in winning the war, the question of their reputed biological handicaps becomes especially pertinent” (p. 90). First she reviewed experimental evidence on “menstrual handicaps” and found no reliable differences between menstruating women and controls on either basic or complex laboratory tasks. She reiterated that whatever differences were found on *subjective reports* of impairment had to be interpreted in the light of the overwhelming negative value placed on menstruation by social tradition. She then reviewed studies that examined how menstruation affected women at work. In terms of productivity and absenteeism, she found highly variable results, including cross-cultural differences. In discussing these results, she remarked, “Although for centuries women have been exploited as cheap labor, society has continued to assume a paternalistic attitude toward them, emphasizing their ‘need’ for special

protection. These protective devices actually have ‘protected’ only economic inequalities between the sexes, justified on the assumption of biological inequalities” (p. 93). She concluded that, as social mores regarding the handicap of menstruation shifted, women would be liberated from a “code of menstrual invalidism” that would “enable them confidently to assume their places beside men in the work of the world” (p. 99).

Seward was also intensely interested in the topic of gender roles and postwar planning (see Seward, 1944b). She was involved in a joint NCWP and Society for the Psychological Study of Social Issues Committee on Roles of Men and Women in Postwar Society and published a book in 1946 called *Sex and the Social Order*. The majority of the book presented a survey of psychological studies of sex from rats and chicks to human beings, from which she concluded that, as one moved further up the evolutionary scale, sex differences had increasingly social rather than biological origins. Despite this, social roles were almost always assigned in humans on the basis of biological sex, which creates psychological distress and emotional conflict in women. In the last chapter of her book, Seward noted that WWII had afforded many women the opportunity to participate fully in the work force, often in traditionally masculine occupations. She argued that the successful pursuit of democracy in postwar society depended on supporting women’s roles as *both* workers and mothers, or, as she put it, “Victory for the democratic way of living means a democratic reformulation of sex roles” (Seward, 1946, p. 249). In order to bring about this reformulation, Seward recommended (1) the elevation of the traditionally feminine values of giving and loving and their expression in the socialization of every child; (2) economic reform that would enable, and indeed require, the equal participation of both women and men in the system of production; (3) cooperative housing and day-care to relieve the worker-mother of the sole burden of domestic responsibilities; and (4) increased training in mathematics and mechanics for girls and more parent training for boys in the context of a co-educational system that would prepare women and men to share equally in the world’s work.

Seward’s recommendations seem utopian even today. In fact, the 1950s brought almost a complete reversion to traditional gender roles for men and women, despite Seward’s proposals for reform, and despite the fact that many married women and mothers *did* work outside the home (Helson, 1972). As Morawski (1994) has noted, “The decades following Seward’s systematic appraisal, however, produced a quite different understanding of sex and gender, realizing not hers, but another’s postwar agenda” (p. 41). This was a period, as we have noted above, in which research on the psychology of women did not proliferate, and women’s leadership in professional organizations and institutions actually declined in comparison to psychology’s first 30 years (Scarborough, 1994). Social unrest was fomenting, however. This foment came in the form of the beginnings of the civil rights movement in the 1950s. This movement would provide a model for other liberation struggles during the 1960s, one of which was the women’s liberation movement. It was not until the upsurge of second-wave feminism in the late 1960s that organized psychology would again be called upon to re-examine its professional treatment of women and confront issues of sex discrimination. Debates about sex differences and the importance of social context in understanding the psychology of women, along with feminist psychologists’ demands that psychology acknowledge and reform its sexist and androcentric practices, would prove catalytic in the formation of a new sub-discipline.

The Feminist Revolution in Psychology

Emergence of a Psychology for Women

In 1968, feminist neuroscientist Naomi Weisstein delivered a critique of psychology that would become a feminist classic. In her paper, entitled “Psychology Constructs the Female,” Weisstein

used recently published studies in social psychology to illustrate the importance of situational variables and experimenter demands in determining behavior and to demonstrate that trait and biological theories were inadequate to explain women's lives because they ignored the social conditions under which women lived and social expectations about women. The paper was published by the New England Free Press that year, then revised and published again in 1971 with the expanded title: "Psychology Constructs the Female; or, The Fantasy Life of the Male Psychologist (With Some Attention to the Fantasies of his Friends, the Male Biologist and the Male Anthropologist)" (Weisstein, 1971). The article was subsequently reprinted about two dozen times.

Although Weisstein followed in the pattern of earlier psychologists in using psychological science to critique hypotheses or beliefs that supported sexist or essentialist assumptions about women, she did so with a twist. Whereas Calkins, Woolley, and Hollingworth had performed empirical studies to test the validity of the theories themselves and consistently urged an environmental versus hereditarian interpretation of their results, Weisstein used the scientific literature in social psychology that showed the incredible power of social expectations in shaping behavior to critique any scientific theory about women's (or indeed anyone's) behavior that did not take this level of explanation into account. Whereas earlier generations of women psychologists drew on their personal experiences with the power of social expectations to urge the re-evaluation of scientific theories and popular beliefs about women, Weisstein had at her disposal a body of experimental findings and empirical evidence to prove the negative effects of social expectations on women's lives.

Weisstein's critique of psychology was timely. By the late 1960s, many women psychologists began to be supported in their belief in the power of context to shape behavior, not only by Weisstein's critique, but by the rising crest of the second wave of the women's movement. Structural inequities between men and women and rampant sex discrimination were exposed and protested. Betty Friedan's *The Feminine Mystique* (1963) resonated with, yet de-centered, many women, including female psychologists. The consistent pathologization of femininity was also a call to activism. In 1972, psychologist Phyllis Chesler published *Women and Madness*, which exposed the double bind that psychiatry and psychology imposed on women: Stepping outside the norms of femininity was expressly discouraged as a sign of maladjustment to the feminine gender role, yet overadherence to gender norms (e.g., emotionally expressive, relationally dependent) was a sign of psychiatric pathology (Chesler, 1972). Research and theorizing on women, previously marginalized or practiced by a few women (as we have discussed), was legitimized and invigorated. It was in this period that the psychology of women coalesced as a distinct field. Textbooks appeared (e.g., Bardwick, 1971; Sherman, 1971; Unger & Denmark, 1975), courses were developed, societies and organizations were formed (e.g., Association for Women in Psychology, see Tiefer, 1991; APA Division 35 – The Psychology of Women, see Mednick & Urbanski, 1991; Russo & Dumont, 1997), and eventually journals were established (e.g., *Sex Roles* in 1975; *Psychology of Women Quarterly* in 1976; *Women & Therapy* in 1982; *Feminism & Psychology* in 1991).

Not all were happy with the term "psychology of women." In the first review of the area for the women's studies journal *Signs*, Mary Parlee (1975) referred to the notion of a "psychology of women" as a "conceptual monstrosity" (p. 120). She argued that it would confirm and perpetuate the notion that psychology proper (the rest of psychology) was by, for, and of men. She expressed concern that psychology of women might simply become a catch-all category for any research on women, even if that work perpetuated sexist assumptions. She then organized her review of the literature using a framework suggested by Nancy Henley. She placed bodies of research into three categories: psychology *of* women (empirical work on sex differences, sex roles, and other topics); psychology *against* women (studies that explore why traditional psychology has failed to produce relevant understandings of women and suggestions for new research, including Weisstein's article mentioned above); and psychology *for* women. In this last category Parlee placed the work of

feminist psychologists and defined a *feminist psychologist* as someone who “is both a feminist (as the dictionary defines this term) and a psychologist and whose research is in an area where a psychologist’s perspective on feminism affects the way she or he formulates problems and questions” (p. 131).

After reviewing important studies in the first two categories, including Eleanor Maccoby and Carol Jacklin’s landmark review of sex differences research (Maccoby & Jacklin, 1974) and Matina Horner’s fear of success studies (Horner, 1972; for a critique see Tresemer, 1977), Parlee then explored three research areas to which *feminist* psychologists had begun to contribute. The first was the study of phenomena that, according to Parlee, would be obvious from a feminist point of view but which had remained invisible to the rest of psychology. For example, Broverman, Broverman, Clarkson, Rosenkrantz, and Vogel (1970) had shown that experts’ descriptions of mentally healthy men and women paralleled stereotypic conceptions of masculinity and femininity, that is, mentally healthy men were described as having stereotypically masculine traits and mentally healthy women were described as having stereotypically feminine traits. When asked to describe a healthy adult (sex unspecified), experts’ descriptions were closer to their descriptions of a healthy man than a healthy woman. Much of the work Parlee surveyed in this category involved investigations of femininity and masculinity and the way these concepts organize reactions, evaluations, decisions, and behaviors.

In her second category of feminist research, Parlee described studies in which a feminist approach to women’s experiences forced a reinterpretation of traditional theories or bodies of data. She offered Sandra Bem’s work on androgyny as an example (Bem, 1974). Bem suggested that masculinity and femininity, instead of residing at opposite ends of a continuum, were actually independent dimensions. She developed a sex role inventory to measure endorsement of masculine and feminine characteristics and proposed the concept of androgyny to capture the phenomenon of equal endorsement of typically masculine and feminine traits. With the concept of androgyny, researchers could move beyond masculinity and femininity to explore more complex interactions and develop new theory.

Finally, Parlee outlined a third category of studies by feminist psychologists. In this research, women’s behavior and experience were explored within the context of an already well-developed theoretical frame that had hitherto paid little attention to women as a group or gender as a variable. Here she included some examples of unpublished work using operant conditioning theory to explain how sex-typed behaviors were learned and maintained, as well as the use of attribution theory to understand women’s experience and the operation of sex role stereotypes. For example, social psychologists Deaux and Emswiller published a study in 1974 that showed that college students attributed the success of a female stimulus person on an experimental task to luck. Success by a male stimulus person on the same task was attributed to ability or skill (Deaux & Emswiller, 1974). Here Parlee also discussed Nancy Henley’s emerging work on the politics of touch. Henley (1973) used sociolinguistic theories on relative status in dyads to explore why women were touched by men more than they touched men. She then expanded this work to include how the effects of status, sex, and power are often conflated and are expressed through nonverbal behavior (Henley, 1977).

Four years later, Parlee (1979) wrote another review essay for *Signs*. Here she stated that her use of the phrase “psychology of women” explicitly referred to research and theory that was *for* women and noted that feminist psychologists had prevailed in owning their discipline so that people doing sexist research on women no longer used the label for their work. She discussed the increasing vigor of the field in terms of numbers of researchers and their visibility in professional associations. She also noted that feminist psychologists were beginning to investigate previously unexamined topics that lent themselves to interdisciplinary analysis, such as rape, domestic violence, conversational interactions, and women’s health.

In that article, Parlee (1979) also highlighted the growing unease with positivist philosophies of science, not only in psychology of women but, to some extent, in psychology generally. The limitations of positivism's preferred method – the laboratory experiment – were being acknowledged across many subfields of psychology (see Elms, 1975). The context-stripping required of this method seemed dramatically to limit ecological validity, generalizability, and, consequently, the social usefulness of laboratory results. Moreover, despite claims of almost 100 years of value-free science, it was finally becoming clear to many psychologists that social values often masqueraded as scientific fact. As Carolyn Sherif wrote in her now-classic paper "Bias in Psychology" published in 1979, "If the possibility and existence of sexist bias was recognized by the turn of this century, why and how could academic and non-academic psychology continue to perpetuate its myths up to the present?" (Sherif, 1979/1998, p. 61). Sherif then reviewed the dominant beliefs conducive to bias in psychology and conducted what amounted to as an exposé of the pitfalls of the experimental laboratory method as applied to psychology. She introduced the important and powerful feminist idea that beliefs about the proper way to pursue knowledge – the ways we *formulate* questions, *execute* their investigation, and *interpret* the results – are all potential sources of bias that influence the kinds of knowledge we generate.

Also in 1979, Rhoda Unger published "Toward a Redefinition of Sex and Gender in Psychology," which formally introduced psychologists to the distinction between biological sex and gender as a social construction (although Vaughter, 1976 had earlier discussed the distinction in the women's studies journal *Signs* and Bem's work acknowledged this distinction). Her article also built upon Sherif's work in an important way. Unger (1979) suggested that questions about sex differences, which had captured both the popular and scientific imaginations throughout psychology's history, were questions that arose predominantly from a framework that privileges the biological basis of women's presumed inferiority. These were, she argued, *someone else's* questions, often pursued for the purpose of maintaining or supporting the status quo, rather than changing it. Unger elaborated on the relationship between methodology and epistemology in her classic paper "Through the Looking Glass: No Wonderland Yet! The Reciprocal Relationship between Methodology and Models of Reality" (Unger, 1983; see also Rutherford, 2007). Just as Weisstein's 1968 article had been a "feminist shot that ricocheted down the halls between psychology's laboratories and clinics, hitting its target dead-center" (Sherif, 1979/1998, p. 58), so were Sherif's and Unger's calls for an examination of feminist epistemology to ricochet down the halls of feminist psychology in the 1980s.

Emergence of Feminist Practice

One other important area of development should be noted before we turn to a closer look at some of these epistemological debates: feminist critiques of clinical psychology and the emergence and development of feminist therapy and counseling (see Brodsky, 1980; Gilbert & Osipow, 1991; Marecek & Hare-Mustin, 1991). During the 1970s, feminist psychologists were among other groups who protested the inclusion of homosexuality as an official diagnosis in the *Diagnostic and Statistical Manual of Mental Disorders*. They also protested the inclusion of categories that pathologized women's behavior and experiences, such as self-defeating personality disorder and late luteal phase dysphoric disorder (Caplan, 1992; Parlee, 1994). It also became clear that the sexual abuse of female clients by male therapists was occurring with alarming regularity, but, more disturbing, it was considered a beneficial and acceptable therapeutic practice by many perpetrators. The ethics of sexual contact in therapy had been neither adequately debated nor developed

(Hare-Mustin, 1974). In 1977 feminist psychologists were successful in having the Ethics Code of the American Psychological Association changed to prohibit sexual contact between therapist and client (Marecek & Hare-Mustin, 1991).

Feminists did more than critique existing practices. They also developed new ones (see Brodsky & Hare-Mustin, 1980). Early in the 1970s, freestanding feminist therapy collectives sprang up across the United States. With little or no theory upon which to develop precise therapeutic practices other than the feminist maxim “the personal is political,” feminist therapists drew upon the consciousness-raising movement for a model of how to empower and work with women (Kravetz, 1980; for a history of consciousness raising and its relationship to therapeutic culture, see Rosenthal, 1984). Gradually, therapeutic models were refined and some common principles emerged: greater power sharing and collaboration in the therapist–client relationship; an emphasis on structural rather than intrapsychic explanations for women’s problems; and respect for all forms of diversity. The incorporation of the Feminist Therapy Institute in 1983 provided a professional home for feminist therapists and continues to serve as a center for training in feminist principles. It has developed and disseminated an important code of Feminist Therapy Ethics to guide feminist practice.

Over the next two decades, feminist therapists addressed problems that affected women, such as body image and eating problems, relational issues, domestic violence, sexual abuse, homophobia, and racism. Today, feminist therapists continue to develop models for working with clients from diverse backgrounds that address the complex intersections of gender, ethnicity, sexual orientation, socioeconomic status, and other important variables in their clients’ lives (Brown, 1995). Much of this work has been conducted by feminist psychologists who themselves experience these intersections. Their work is informed and enriched by this reflexivity (see Chin, 2000; Comas-Díaz, 1987).

Epistemological Debates and Methodological Developments of the 1980s and 1990s

The feminist critique of psychological science that began in the late 1960s with Weisstein’s insistence on the importance of social context was developed further in the late 1970s and coalesced in the 1980s and 1990s. Feminist psychologists began to challenge not only the deficiencies of the scientific method as practiced within their discipline, but the very philosophy on which it was based (for a review of this critique, see Teo, 2005). This positivist philosophy claimed that good science proceeds progressively and cumulatively, using rationality, objectivity, and a detached neutrality toward its subject matter. The goal of positivist science is to uncover universal truths. Feminist philosophers and scientists objected to this characterization of “rational” science and argued that “truths” discovered in positivist science were andocentric and biased at every level, including the underlying theories, methods, goals, and interpretations guiding the research (Harding, 1986, 1991). Feminist physicist Evelyn Fox-Keller (1985) argued that positivist science focused too heavily on objectivity and that the rigid separation of the researcher from the researched was a distinctly masculine trait that was more about power and control than about value neutrality in research.

This feminist critique of science was itself influenced by the major social and political upheavals of the 1970s. Second-wave feminism was characterized by protests to challenge discrimination against women in all domains of private and public life. The political activities of organizations such as the National Organization for Women (NOW), the explosion of consciousness-raising groups around the country, and the cresting of the civil rights movement in the United States, de-centered and re-organized not only traditional social roles and systems, but academic and intellectual systems

as well. Furthermore, de-colonial and liberation struggles throughout the world led to the overthrow of traditional power structures and centers of authority. As critical theorist Chela Sandoval (2000) has written, “the period from the last half of the nineteenth century through the 1970s can be seen as a cultural breach replete with myriad forms of de-colonial events. . . . [T]he rationality of Western thought can be said to have found its limits in the twentieth century. . . . permitting a release of new knowledges in the sciences, arts, and humanities” (p. 8).

Feminist psychologists who worked in academic institutions in the 1960s and 1970s were heavily influenced by the political and cultural activities of the women’s movement, as we have already discussed. Some were also influenced by the feminist critique of science, and began acting on these critiques, both by introducing them into psychology and by incorporating them into their research (Marecek, 2001). Perhaps most significant was that the notion of deconstructing one’s epistemology and methods in order to understand the underlying assumptions guiding one’s research became a staple of the feminist critique of positivist psychology.

Feminist psychologists drew on writings from the broader feminist critique of science to articulate several important shortcomings of mainstream psychology. They pointed out the historical absence of women as participants in psychological research (Carlson & Carlson, 1961; Langton, 2000; Riger, 1992), the lack of attention to power and its relationship to gender in psychological theorizing (Yoder & Kahn, 1992), and the continued lack of attention to social context, including the ways in which variables such as social status, personal and cultural history, and the beliefs and values of both the researcher and the researched affect outcomes (see Fox & Prilleltensky, 1997). Feminist critics have also argued that western psychological epistemology is based on individualism and on the Cartesian mind/body split, a masculine ontology that discriminates against women’s ways of knowing and reasoning (Sampson, 1985; Shildrick, 1997). Carol Gilligan’s critique of Kohlberg’s moral theory is a prominent example of one outcome of this critique within psychology (Gilligan, 1982). Three feminist responses to the criticisms of science, originally proposed by Harding (1986), have been incorporated into psychology. They include feminist empiricism, feminist standpoint theory, and feminist postmodernism (see Riger, 1992).

Feminist Empiricism

Feminist empiricism is the most common epistemological approach used in psychology to counter gender biases in experiments (Morawski, 1990). This approach is based on the assumption that positivistic science is a sound way to generate truth and that, once methodological “errors” are removed, the findings that emerge from this kind of science will represent a close approximation of reality that is applicable universally. The major criticism of this approach is that, even when positivistic research is designated as “feminist,” it is often still saturated with technical flaws including experimental biases, poorly represented samples, faulty measurement techniques, and misrepresentation of data. Researchers have thus countered feminist empiricism with the charge that methods can never reveal “reality,” as no science, including a feminist empiricist one, can be separated from the social and political practices of which it is a part (Wilkinson, 1997). Furthermore, feminists have noted that “empiricist science takes the male gaze as the natural perspective and continues to place women as the problematized Other. The antinomies of empiricism lend validity to certain descriptions of reality and disadvantage other accounts” (Hare-Mustin & Marecek, 1990, p. 170). Some theorists have thus concluded that the potential of feminist empiricism is overshadowed by its entanglement in cultural gender binaries and should be abandoned for feminist standpoint epistemologies.

Feminist Standpoint Epistemologies

Feminist standpoint epistemologies claim that we should “center our science on women because what we know and how we know depend on who we are, that is, on the knower’s historical locus and his or her position in the social hierarchy” (Riger, 1992, p. 733). In other words, feminist standpoint epistemologies argue that women’s material experiences privilege their understanding of their world and thus put them in the best position to think, reflect, and report on their own lives. In addition to asserting that knowledge claims are best made from women’s lived situations, this theory also advocates understanding these accounts through the predominant social structures in which they are situated.

Whereas feminist empiricism claims that research is validated through methodological rigor, feminist standpoint theory argues that validity of research findings can be determined through the lens of subjectivity and self-reflexivity. Feminist standpoint theory posits that we can only arrive at objectivity through self-situating within our social, cultural, and political landscape. It challenges an empirical epistemology that emphasizes objectivity and neutrality by emphasizing the importance of subjectivity in producing knowledge (see Code, 1991; Harding, 1991; Lloyd, 1993).

Feminist standpoint theory became increasingly popular in the 1980s and 1990s. Marecek (2001) has noted that, although empiricist methods were valuable for “the feminist research program of the 1960s and 1970s,” a program that was “intended to challenge claims that women were deficient in cognitive abilities and other qualities needed for success in work and public life” (p. 256), 1980s feminists moved from gaining equal rights in the workplace to focusing on distinctly feminine strengths that they claimed were particular to women. In line with political changes in the United States, namely, a shift away from the radical 1960s progressivism to the far more conservative Reagan era of the early 1980s, American feminist discourse also changed. It moved from emphasizing equal rights and the similarities between the sexes to delineating and glorifying “feminine traits” such as maternal thinking (Ruddick, 1989) and a relationship-oriented morality (Bohan, 1993). As mentioned above, perhaps the best-known example of this approach is Carol Gilligan’s theory that women have a unique feminine sensibility and an ethic of care that prizes compassion, nurture, and relationships over impartial justice and individual achievement (Gilligan, 1982; for other examples, see Belenky, Clinchey, Goldberger, & Tarule, 1986; Chodorow, 1978).

Theory generated from this perspective has revealed a plethora of alternative epistemologies that have enriched notions of both who and what can be known (see, for example, Collins, 2000; Corker, 2001; Langton, 2000; Moya, 2001). Some, however, have pointed out that this approach can potentially essentialize and universalize the notion of woman (Morawski, 1990). Assuming a “woman’s voice” or a “woman’s way of knowing” can lead to the obfuscation of the profound, often incommensurable, differences among women of various classes, races, sexual identities, and geographies.

Feminist Postmodernism

Feminist postmodernism is a theoretical frame that was built around the central tenets of the poststructuralist or postmodern movement. Postmodern thinkers challenge the positivist empirical scientific tradition and claim that human beings cannot be understood outside of their culture or history. One of the most prominent and influential thinkers in this genre was Michel Foucault (1977, 1980), a psychologist and philosopher who began with the assumption of historical and cultural interconnection and proposed that knowledge cannot be separated from power. Foucault argued

that all “truths” are constructed and inexorably linked to the knowledge/power binary. This binary “emphasizes the way that knowledge is not dispassionate but rather an integral part of struggles over power. . . it also draws attention to the way that, in producing knowledge, one is also making a claim for power” (Mills, 2003, p. 69). In other words, all knowledge claims are infused with power and thus are always political.

Whereas feminist standpoint theory posits individuals to be active in constructing their realities, feminist postmodernism argues that women’s knowledge and behavior are mediated through the discursive power structures that are patriarchal and androcentric and thus discriminate against women. Feminist postmodernists state that, although positivistic science appears to be value-free, it is actually shrouded in neutrality that promotes the masculine conception of reality that functions to maintain men’s power interests, and they examine the development of particular forms of knowledge to ask questions about why certain knowledge claims are deemed “truer” than others. These psychologists begin with the Foucauldian assumption that knowledge is deeply entangled with power and that language and power are also inextricably bound together (Hare-Mustin & Marecek, 1990; Hepburn, 1999). They use these assumptions to deconstruct accepted “truths” to reveal their political repercussions (Nightingale & Neilands, 1997).

The major criticism of feminist postmodernism is that it argues for the equivalence of multiple truths, thereby leading to a rejection of all evaluative criteria. If all truths are determined by the power/knowledge binary, then all knowledge claims can hold potentially equal value at the right cultural or historical moment. For example, at this point in time, positivist empirical research in psychology is considered to be the “truth” because of the power structures that uphold this epistemology as the appropriate way of knowing. This is upheld regardless of the validity of the theory. According to this reasoning, all truths or all methods can potentially hold the same power of claiming truth if the “knower” has enough power to assert it (for a discussion of the perceived incompatibility between relativism and feminism, see Hepburn, 2000).

Feminist Methods

The infiltration of feminist epistemologies in psychology has led many psychologists to think about the possibility of a feminist method. One of the first social scientists to write about feminist methodology was Shulamit Reinharz (1979/1992) who argued that, although there is no single feminist method, there is a common feminist epistemological approach. In other words, regardless of what methodological tools are used, it is the underlying assumptions guiding the research that make it feminist. She argued that a researcher committed to taking gender, class, race, and other social, historical, and cultural facts into account when conducting research is conducting feminist research. Moreover, a person who is aware of the patriarchal influences that shape and constrain the lives of one’s participants is also using a feminist method regardless of the specific research tools employed.

Common to all feminist psychological approaches is the belief that no method is neutral and that the very act of choosing a certain way to study something or someone will constrain what can be found (see Crawford & Kimmel, 1999; Unger, 1983). The second point that is common to all feminist approaches is that, in addition to taking gender into consideration as an explanatory variable, social class, race, ethnicity, religious background, and sexual orientation are also central to understanding any given phenomenon (Crawford & Unger, 2004).

Within psychology, several feminist methods have been proposed. Gergen (1988) has suggested that a feminist method should include these principles: (1) recognizing the interdependence of experimenter and participant; (2) avoiding the decontextualizing of participants or experimenters from

their social and historical contexts; (3) recognizing and revealing the nature of one's values within the research context; (4) accepting that facts do not exist independent of their producers' linguistic codes; (5) demystifying the role of the scientist to establish an egalitarian relationship between researcher and participant; and finally (6) acknowledging the interdependent relationship between science and its consumers.

There have also been debates about the actual methodological tools to be used in feminist psychological studies. Some feminists have suggested that, instead of experiments and questionnaires, feminist researchers should turn to qualitative methods and/or personal documents to be used as primary sources (Teo, 2005). The conclusion of these debates often harkens back to Reinharz's original proposal that one's epistemological stance (the assumptions and goals in the research process), rather than the tools themselves, make any research project a feminist endeavor.

Building a Multicultural Psychology of Women

There will not be valid theories of the psychology of women as long. . . as these theories are based on a very limited sector of the population. . . the whole issue of inclusion is not about "affirmative action" but rather about the nature of knowledge, both in the psychology of women and in the discipline of psychology as a whole. The theories and the research we now have are, for the most part, incomplete and faulty pieces of knowledge, no matter how elegant they seem. (Espin, 1995, p. 73)

The multicultural movement in psychology advocates and enforces respect and appreciation for diversity and works to achieve greater inclusiveness in the discipline as a whole (Pope, Reynolds, & Mueller, 2004). Just as women have historically been studied from a man's perspective, the study of psychology has typically been conducted from the viewpoint of White, middle-class researchers, and participants. This has unreflectively generated a body of theory and praxis that is unrepresentative of an increasing majority of the American population, and which is often exported unsuccessfully to other cultures and contexts around the world (see Enriquez, 1987).

One of the main concerns of the multicultural movement is the ethnocentrism of mainstream psychology and the negative effects of universalizing this knowledge. The United States' dominance in matters of economy and media has led to what is termed the globalization movement. Globalization has led not only to the wholesale importation of American products and goods but also the spread of American values and ideologies around the world. Rather than diversifying psychology, the globalization of the discipline has led "third world countries" to be importers of American psychological knowledge instead of exporters of their own knowledge (Moghaddam, 1996). Teo (2005) noted that, although the multicultural critique, or what he termed the "postcolonial critique," has called for indigenous psychologies, what has happened instead is that many "third world" psychologists "start out with a Western perspective, and imitate and perpetuate Western ideals of mental life" (p. 177).

Although multicultural psychologists have expressed concern over the globalization of Euro-American psychology, within the field of psychology of women there have also been critiques. Those who have the power to speak out and take a stand on women's issues within the academy and other social institutions have typically been White, heterosexual, middle-class women (Lips, 2006). The result is that some psychologists, even those who are feminist, have analyzed and understood gender relations within a limited scope that leaves out the experiences of all others from different ethnicities, social classes, sexual orientations, and cultures (Lips, 2006; Reynolds, & Constantine, 2004). Even more problematic has been the tendency to derive "truths" from these overrepresented and privileged groups of women and apply them to everyone.

Feminist and multicultural psychologists have thus begun to examine the ways in which researchers in the discipline have overlooked the perspectives of women of color (Comas-Díaz, 1991; Espin, 1995; Reid, 1988), the perspectives of poor women (Reid, 1993; Saris & Johnston-Robledo, 2000), and the perspectives of women with disabilities (Roets, Reinaart, & Van Hove, 2008). The conclusion of these critiques is that, although all women share some kind of oppression as a result of their gender, they experience this oppression differently depending on their historical, social, political, economical, and psychological situations. There is no single, universal woman's experience and thus no single, universal experience of oppression.

Multicultural Psychology, Feminist Psychology, and Social Activism

There have been many parallels between feminist psychology and multicultural psychology. Both feminist and multicultural psychologies emphasize the role of social oppression in the etiology of mental health problems (see Brown, 1994; Comas-Díaz & Greene, 1994). In addition, research in both disciplines underscores the finding that what is defined as pathology is often a reaction to oppressive forces (Brown, 1994; Worell & Remer, 1992). Moreover, both multicultural and feminist psychologists argue that addressing oppressive conditions (e.g., poverty, racism, barriers to education and institutional support) often alleviates symptoms of mental disorders (Brabeck, 2000; Brown, 2000).

The idea of using psychological knowledge to further political activism and change the social conditions that oppress people has also been advocated by political psychologists (Jost, Banaji, & Nosek, 2004), community psychologists (Fox & Prilleltensky, 1997), liberation psychologists (Martin-Baro, 1994), and feminist psychologists (Fine & Roberts, 1999; Grant, Finkelstein, & Lyons, 2003; Moane, 1999). More recently, feminist liberation psychologists have explicitly advocated for "bringing about change at the macro levels of culture and society, as well as the personal and community levels" (Moane, 2006, p. 74).

Persistent Dilemmas and Future Directions

We began this chapter with a description of some early work on the psychology of women that would, retrospectively, be termed "feminist empiricism." Without the conceptual distinction between sex and gender, and in the absence of epistemological reflection or debate, early feminist psychologists had only the master's tools with which to dismantle the master's house (Lorde, 1984/2007). Often, their job consisted of using science to prove that sex differences, presumed to be based in biology, either did not exist or were socially and culturally determined. Feminist psychologists are still debating the pros and cons of feminist empiricism, and sex differences continue to preoccupy the scientific and popular imaginations. Janet Hyde (2005) has argued that decades of sex differences research paradoxically reveal that we are more the same than different. Alice Eagly (1987) has argued that there are only a small number of true psychological differences between men and women, and these can be explained socioculturally. How to interpret gender differences and the virtue of studying them at all remain persistent dilemmas for feminist psychologists (see Kitlinger, 1994).

The recent upsurge of interest in and attention to evolutionary psychology and sociobiological explanations of gender differences have also been a cause of concern for many feminist psychologists. Eagly (e.g., Eagly, 1987; Eagly & Wood, 1999) has consistently argued against sociobiological

interpretations and has used social role theory as an effective counterexplanation that could lead to social change rather than support for essentialist and biologized acceptance of the status quo. This is not a new dilemma, as our discussions of the variability hypothesis have shown. More recently, after E. O. Wilson (1975) published *Sociobiology: The New Synthesis*, a multi-disciplinary group of feminist scientists, led by feminist activist and comparative psychologist Ethel Tobach, came together to combat the use of genetic determinism to justify sexism. The group, called the Genes and Gender Collective, held multiple conferences and published at least seven volumes on issues such as evolutionary explanations of rape and women and work (see, for example, Hunter, 1991; Sunday & Tobach, 1985; Tobach & Rosoff, 1977, 1994). Sociobiology in the service of sexism is a persistent dilemma for feminist psychologists.

We have shown that social, political, intellectual, and disciplinary factors all contributed to the emergence of a distinct field called psychology of women, or feminist psychology, in the 1970s. The field was born in the wake of intense feminist activism and critique of the status quo. Keeping psychology of women true to its feminist roots is a continuing challenge. Additional historical reconstructions that pay careful attention to the political contexts in which both psychology and the psychology of women have been forged are needed. How have generations of feminist psychologists related to and influenced the epistemic assumptions, research practices, and knowledge products of a field strongly identified with the “androcentric ideology of contemporary science” (Harding, 1986, p. 136)? How have feminist psychologists negotiated relationships with a discipline that has been, perhaps more than any other social science, oblivious to or antagonistic toward their aims?

Systematic preservation of the historical record of feminist psychology, including first-person accounts and memoirs, oral histories, photographs, and collections of individual and organizational papers, is necessary to construct these accounts and to keep our collective memory alive as the feminist founders and pioneers of the field pass away. The establishment of a historical record that includes the stories and experiences of a diverse range of feminist scholars can help us to redress the past neglect of their stories and to avoid the one-sided histories that result. In sum, we need to collect and analyze the material that will allow us to construct a history of psychology *for* women.

To ensure a vibrant future, feminist psychology also needs to continue to attract junior scholars who bring a range of experiences, backgrounds, and concerns to the discipline. This remains a distinct challenge, but also suggests exciting future directions. In their recent review article on feminist psychology in *Signs*, Stewart and Dottolo (2006) highlighted the work of both established and emerging feminist scholars. In characterizing the “new hands building feminist psychology” (p. 501) they noted, “Many of these young feminist psychologists aim explicitly to address race, class, gender, and sexuality as social identities and constructions” (p. 503). Stewart and Dottolo remarked that these scholars use interdisciplinary women’s studies perspectives to guide their investigations and are seriously engaged in the theorization of intersectionality. Further, these researchers draw on a wide range of methods to confirm, challenge, or develop feminist theories in new ways. Stewart and Dottolo concluded, albeit tentatively, that this generation of feminist scholars may be less pre-occupied than previous generations with “staking out claims” about the nature of their enterprise. Feminist psychologists have built a solid house. It is time to invite everyone in.

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Chapter 3

Emergence and Development of the Psychology of Men and Masculinity

Sam V. Cochran

The second wave of feminist activism that blossomed in 1960s following the publication of Friedan's (1963) *The Feminine Mystique* gave rise to a sophisticated analysis of traditional gender roles. This activity spawned a number of areas of research into men's and women's gender roles and their impact on both men and women as well as on our culture at large (Smiler, 2004). Of particular import in numerous academic disciplines during this era was the critique of "men as the standard" against which both men and women are measured. Within the field of psychology, a special domain of inquiry devoted to the study of men's gender roles, behaviors, and aspects of psychology related to these has developed and become known as the psychology of men and masculinity (Betz & Fitzgerald, 1993; Brooks & Levant, 1999). What began as a relatively focused critique of men's traditional gender roles has blossomed into an area of vigorous scholarly inquiry, theory building, and empirical research on the psychology of men and masculinity as scholars from around the world contribute to this work.

To illustrate how this field has grown, prior to 1960 only eight manuscripts with "masculinity" as a key word were listed in the PsycINFO database. In just 20 years, between 1960 and 1980, that number had jumped to 83 manuscripts, and between 1980 and 2000 the number of manuscripts with the key word "masculinity" mushroomed to 392. Finally, in just the 8 years between 2000 and 2008 the number of manuscripts that contained masculinity as a key word had jumped to 491. Clearly masculinity as a topic of scholarly inquiry within psychology has grown dramatically since 1960.

Historical Overview

During the 1950s and 1960s, as women and minorities voiced demands for equality in all aspects of American life, White men were faced with a challenge of how to respond to these demands. In the U.S., the study of the psychology of men and masculinity can be traced to these cultural forces at play during this crucial time period. Parallel efforts around the world were catalyzed during these turbulent and contentious times. The efforts of men and women to articulate men's responses to the challenges to traditional models of masculinity and men's roles were reflected in social movements and documented in publications, organizations, conferences, and, eventually, scholarly journals.

The study of men as gendered individuals gained popularity in a number of academic disciplines in the U.S. and other countries around the world and is evident in the large number of links on the

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World Wide Web to sites that relate to the study of men and masculinities (as an example, see *The Men's Bibliography* compiled by Michael Flood and available at <http://mensbiblio.xyonline.net/>). Dozens of sites are catalogued under topics such as men's efforts to end violence against women, reproductive rights and equality, men's health, men's vocational growth, men's relationships, and other related topics.

As a result of this global interest in the psychology of men and masculinity, a number of organizations, academic institutes, and centers have emerged. In Australia, the Australian Psychological Society hosts an interest group titled the Psychology of Men and Masculinities. The Centre for Gender Research is housed in the University of Oslo, and the International Association for Studies of Men is hosted through the Work Research Institute in Oslo, Norway. The Men's Health Network, founded in 1992 in Washington, D.C., is devoted to providing men with educational, health, and prevention information. On an international level, the International Society for Men's Health, devoted to the study of men's health issues, is based in Vienna, Austria and the European Men's Health Forum is based in Brussels, Belgium. The study of men and masculinities has clearly become a global effort in the past 20 years.

Publications

Popular works devoted to articulating men's responses to feminist critiques of traditional gender roles began to appear in the 1960s. These works were written by men who were early pioneers in the study of gender as well as men who attended men's consciousness raising groups. These consciousness raising groups, designed to parallel women's consciousness raising groups of the 1960s, provided a supportive environment in which men could come together to discuss their reactions and responses to the immense social upheavals and cultural changes that occurred during those years. In particular, the consciousness raising groups allowed men to give voice to their reactions to and perspectives of changing gender roles, which formed some of the first expressions in the discourse on men and masculinity.

Popular books and periodicals written by men began to appear on the market in the early 1970s. These early volumes reflect themes popular at the time, and they were the first examples of a critique of the limitations and destructive aspects of the traditional masculine gender role. A distinctive feature of these works is that they presented a perspective that viewed men as gendered persons distinctly differentiated from women and from femininity. Some titles of these popular works are *The Forty-nine Percent Majority: The Male Sex Role* (David & Brannon, 1976), *Men and Masculinity* (Pleck & Sawyer, 1974), *Hazards of Being Male: Surviving the Myth of Male Privilege* (Goldberg, 1977), and *The Male Machine* (Fasteau, 1974).

Other publications that appeared at about the same time featured populations of men as subjects of scholarly inquiry. *The Seasons of a Man's Life* (Levinson, Darrow, Klein, Levinson, & McKee, 1978) reported the results of an in-depth interview study of 40 men between 35 and 45 years old who were drawn from four different occupational groupings. This study is notable in that it provided an empirical base for a sequential, developmental progression of stages of the adult man's lifespan and underscored the importance of both work and relationships in men's lives. Although a study of 40 men's lives, the cover of the book notes that it offers "a radical new theory of adult development that shows how every man must pass through a series of specific age-linked phases which underlie his personal crises, govern his emotional states and attitudes, and even shape his behavior."

Adaptation to Life (Vaillant, 1977) reports the results of an extensive study of men's mental health over the lifespan, done with a sample of men exclusively, and marketed as "broadly and diversely

applicable to aspects of the lives of most of us.” Although the results of the Grant Study, reported in detail in this book, are based on 268 White men who began a longitudinal study of mental health over the life span, the applicability to women’s lives and the potential or actual differences between the findings reported in the study and findings reported in comparable studies conducted with women are largely missing. Clearly, the study of men as men, and not as universally representative of humans, had still not been clearly articulated in the academic world.

As the psychology of men and masculinity began to become better established through the 1980s and 1990s, a number of publications that reflected its presence within psychology appeared. In response to an emerging interest in working with men in therapeutic and applied settings, a number of publications addressed clinical issues. These include *Handbook of Counseling and Psychotherapy with Men* (Scher, Stevens, Good, & Eichenfield, 1987), *A New Psychotherapy for Traditional Men* (Brooks, 1998), *New Psychotherapy for Men* (Pollack & Levant, 1998), *The New Handbook of Psychotherapy and Counseling with Men* (Brooks & Good, 2001), *Deepening Psychotherapy with Men* (Rabinowitz & Cochran, 2002), and *In the Room with Men* (Englar-Carlson & Stevens, 2006).

Arguably the most salient publication that appeared during this period of time was *A New Psychology of Men* edited by Levant and Pollack (1995). This publication was a milestone in documenting the arrival of the psychology of men and masculinity as a credible scientific and practical discipline within psychology. Comprised of 12 chapters that cover a number of theoretical, research, and applied topics, this book signified the achievement of an important developmental stage in the maturation of the study of men and masculinity (Cochran, 1997).

In addition to psychological writings, fields outside of psychology, such as sociology, anthropology, literature, cultural studies, and health studies, have also witnessed a parallel increase in scholarly activity that has used the feminist critique of traditional gender roles as a starting point for a discourse on the masculine gender role, cultural analyses of traditions and rituals associated with masculinity, and depictions of men in literary and popular writings. Examples of this work include Gilmore’s (1990) *Manhood in the Making*, Bribiescas’ (2006) *Men: Evolutionary and Life History*, and Chapman and Hendler’s (1999) *Sentimental Men*.

Organizations

In addition to these writings related to the psychology of men and masculinity, several organizations supported task forces or committees devoted to issues related to the psychological study of men and masculinity. In many instances, men and women involved in early writings on men and masculinity also were instrumental in forming and advancing these task forces and committees within various professional and grass-roots organizations. One of the earliest such organizations was what is now known as the National Organization of Men Against Sexism (NOMAS). As noted earlier, in the late 1960s and early 1970s men began to take the feminist critique of traditional gender roles to heart and formed consciousness-raising, study, and discussion groups around the country. Men who took this activist perspective as feminist allies were instrumental in forming what was originally known as the National Organization of Changing Men. This organization as it now exists was the group that convened the first annual *Men and Masculinity* conference in Knoxville, Tennessee in 1975. The National Organization of Men Against Sexism presently has 19 task groups, a number of which relate directly to the psychology of men and masculinity, such as Men and Mental Health, Ending Men’s Violence, and Fathering.

The Standing Committee for Men was established within the American College Personnel Association. This group initially was an interest group, then a task force, and finally was approved as

a standing committee by the governing body of the organization in 1978. The Standing Committee for Men was similarly a pro-feminist, gay affirmative organization that had as its goals promoting awareness of men's issues among both men and women, supporting men in developing their full potential despite socially constructed gender-role limitations, encouraging the creation and dissemination of knowledge about men's development, welcoming allies new to exploring men's gender roles, and supporting men in balancing the personal and professional dimensions of their lives. This standing committee was one of the earliest groups within a national organization that was a home base for psychologists on college and university campuses who were engaged in both research and clinical work with men.

Perhaps the most significant organizational development in the history of the psychological study of men and masculinity was the establishment in 1997 of the Society for the Psychological Study of Men and Masculinity. This organization is a division of the American Psychological Association, the world's largest association of psychologists. The Society for the Psychological Study of Men and Masculinity (also known as Division 51) was organized by a small group of men and women who were interested in networking with the Divisions of Psychotherapy (Division 29) and Family Psychology (Division 43) of the American Psychological Association. An initial meeting of interested men and women was held at the annual convention of the American Psychological Association in 1988. After this initial meeting, interested psychologists continued to spearhead efforts within the American Psychological Association by organizing related interest groups in various divisions. Among these were the Men Treating Men Network (Division of Family Psychology), the Task Force on Men's Roles in Psychotherapy (Division of Psychotherapy), and a Special Interest Group on Men and Masculinity (Division of Counseling Psychology). These efforts led to the formation of a core group of men and women who initiated the drive for divisional status within the American Psychological Association that culminated in the approval of full divisional status at the annual convention in 1997 (Brooks & Levant, 1999).

Today, this division has over 500 members. It produces a quarterly scholarly journal titled *Psychology of Men and Masculinity*, organizes a full menu of symposia and posters at the annual conference of the American Psychological Association, sponsors workshops and conferences on psychotherapy with men, and hosts a mid-winter executive board meeting. In addition to this work, the division and its members are active in developing and teaching courses on the psychology of men and masculinity in colleges and universities around the world and in conducting workshops on the creation of curricula that pertain to the psychology of men and masculinity.

Conferences

In addition to the organizations and publications that have been described, conferences also provided a popular venue for dissemination and discussion of topics pertaining to the psychology of men and masculinity. As noted, as early as 1975 the National Organization of Men Against Sexism convened a National Conference on Men and Masculinity that drew a diverse group of men and women who aligned themselves with a pro-feminist critique of traditional gender roles and the impact these roles have on men's lives. The National Conference on Men and Masculinity has been held annually since then, and topics related to the psychology of men, men's mental health, and other related concerns are commonly addressed. In addition to this conference, the Standing Committee for Men of the American College Personnel Association convenes on an annual basis, and business meetings as well as scholarly presentations that often have a direct relevance to the psychology of men and masculinity are held at this conference.

The annual conference of the American Psychological Association provides a setting for an annual meeting of the Society for the Psychological Study of Men and Masculinity. During this conference the Society conducts its annual business meeting, hosts a social hour, and provides a number of hours of conference programming devoted to symposia and poster sessions that include presentations on cutting-edge research, clinical approaches to working with men, and new initiatives for advancing the psychology of men and masculinity. In addition to this annual meeting, the Society has also had a long tradition of an annual mid-winter meeting that was originally affiliated with the mid-winter meetings of the Divisions of Psychotherapy, Family Psychology, and Independent Practice. At this annual mid-winter meeting a group of psychologists interested in the psychology of men and masculinity, and who belonged to these other divisions, conducted a day-long men's retreat that has become a tradition at the mid-winter meetings of the Society. This men's retreat is designed to provide a venue for members to gain support from one another in promoting the efforts as well as the values of the division.

On an international level, a number of men's health-related organizations also sponsor conferences that have direct relevance to the psychology of men and masculinity. The International Society for Men's Health sponsors a biennial World Conference on Men's Health and Gender that addresses psychological and mental health issues. The Australian Men's Health Forum sponsors an annual National Men's Health Conference. In the U.K., the Medicines and Healthcare Products Regulatory Agency (MHRA) recently sponsored a conference titled *Engaging Men in their Health Care: Widening Access to Medicines*. The Stockholm Centre for Public Health, in conjunction with Reform, a resource center for men located in Oslo, Norway, sponsors the Nordic Conference on Men's Health. In any given year there are dozens of conferences around the world that offer venues for participants to report research and clinical work related to men's physical and mental health.

Journals

As interest in the psychology of men and masculinity began to coalesce within these different organizations, scholars within psychology began to construct conceptual models and programs of research devoted to furthering the understanding of the psychology of men and the masculine gender role. Early research efforts were devoted to creating instruments to measure what had been named masculinity and other aspects of men's gender roles. Key efforts in this area included the development of the Bem Sex Role Inventory (Bem, 1974), the Personal Attributes Questionnaire (Spence, Helmreich, & Stapp, 1974), the Attitudes Toward the Male Role Scale (Doyle & Moore, 1978), and the Gender Role Conflict Scale (O'Neil, Helm, Gable, David, & Wrightsman, 1986). Thompson, Pleck, and Ferrera (1992) and Thompson and Pleck (1995) have published thorough reviews of the numerous scales and instruments that have been created to operationalize and measure the various masculine gender role-related constructs. (See also Chapter 7.)

Early journals that published work related to the psychology of men and masculinity include *Sex Roles*, first published in March, 1975, and *Psychology of Women Quarterly*, a publication of the Society for the Psychology of Women (aka Division 35 of the American Psychological Association), first published in September, 1976. Phyllis Katz (1975), the first editor of *Sex Roles*, explicitly included the term masculinity in describing the genesis and goals of the new publication, which gave legitimization to the nascent study of masculinity and men's roles. Two broad-based journals emerged in the 1990s that were devoted specifically to men and masculinity and included contributions from men's studies scholars within the humanities and social sciences in addition to

psychology. These two journals are the *Journal of Men's Studies*, which was first published in 1990, and *Men and Masculinities*, which was first published in 1998.

Probably the most significant milestone in publishing related to the psychology of men and masculinity occurred in 1998. At that year's annual convention of the American Psychological Association, the Society for the Psychological Study of Men and Masculinity entered into an agreement with the American Psychological Association to create the journal *Psychology of Men & Masculinity*. In January, 2000 the first issue of *Psychology of Men & Masculinity*, the first publication of its kind devoted exclusively to empirical and conceptual work on the psychology of men and masculinity, was published. In his inaugural editorial David Lisak (2000) noted that "The discipline of psychology can finally assert the existence within it of a journal devoted to the study of *men the particular*, not *man the generic*" (p. 3). The journal began publishing two issues per year, and, in 2005, it grew to be a quarterly publication that averages over 100 submissions per year.

In addition to journals that were devoted to the psychological aspects of men and masculinity, other publications emerged that were devoted specifically to the examination of men's health issues and related psychological inquiry. These include the *International Journal of Men's Health* first published in 2002, the *American Journal of Men's Health*, first published in 2007, and the *Journal of Men's Health*, formerly the *Journal of Men's Health and Gender*, first published in 2004 and the official journal of the International Society for Men's Health. Will Courtenay (2002), in the inaugural editorial published in the *International Journal of Men's Health*, noted the need for gender-specific research on men's health, health behavior, and health care needs. All of these journals routinely include reports that are related to the study of the psychology of men and masculinity as it pertains to men's health behaviors, attitudes, and health outcomes.

Since its emergence in the 1960s and 1970s, the psychology of men and masculinity has now become a relatively established domain within the field of psychology. Early efforts to articulate the purpose and value of such an endeavor have yielded vigorous research programs, publications, and organizational structures devoted to advancing this work. In addition to psychology, other academic disciplines have proved hospitable to scholars working in the area of men's studies. Although still relatively young, there is no question that those working to advance the psychology of men and masculinity have made considerable progress in the past 40 years.

Paradigms for Psychological Study of Men and Masculinity

Within the intellectual and cultural milieu of the late 1960s and early 1970s, scholars who were concerned with the psychology of men and masculinity articulated three paradigms that informed their work, and these continue to be salient. Each paradigm and the researchers associated with it have tended to generate scholarly output that is consistent with the values and assumptions inherent in the paradigm. The three central paradigms are the biological or essentialist paradigm, the gender role identity paradigm, and the gender role strain paradigm.

Essentialist, Biological, and Evolutionary Paradigms

Essential features of an organism are those features that are universally present and uniquely determinative of the distinctiveness of the organism. For example, the existence of a single X and a single Y chromosome is determinative of the male sex. Factors associated with such a genetic endowment are considered to represent essentially male traits or characteristics and are thought to be derived

largely through biological processes in the organism. Examples of some of these characteristics include defining sexual features, composition and distribution of body hair, and various distinctive anatomical characteristics.

Because most physical and biological features are clear markers of sex differences, some scholars have attempted to correlate aspects of men's psychology with biological processes unique to men. Examples of such efforts include attempts to understand men's lower rates of depression or higher rates of violence by correlating these phenomena with men's testosterone levels (e.g., Davis et al., 1992; Windle & Windle, 1995; Yesavage, Davidson, Widrow, & Berger, 1985). Other researchers are attempting to establish sex differences in aspects of brain structure and function and determine the effect these might have on mental abilities and cognition (e.g., Kimura, 1996). Genetic factors in heritability of attention deficit, alcoholism, conduct disorder, antisocial personality, and other conditions in which there are larger percentages of boys and men than girls and women may also be evidence of a non-trivial biological contribution to the differential impact of these conditions.

A point of view related to the biological paradigm is the evolutionary psychology perspective (Good & Sherrod, 2001). This perspective strives to understand and explain aspects of men's (and women's) social and psychological behavior in terms of adaptation of the organism and the preservation of the species. Phenomena such as sexual attractiveness, courtship behavior, and their derivatives, such as pressures to cultivate certain kinds of body appearances or the practice of monogamy in sexual relationships, are explained in terms of the evolutionary pressure to preserve and transmit genetic endowment (e.g., Buss, 1995). Mackey (2001) has extended an aspect of this point of view by analyzing cross-cultural data related to what he termed a man-to-child affiliative bond; he argued that such a bond confers a reproductive advantage to males of a species.

Although a comprehensive analysis of this particular paradigm is beyond the scope of this history of the psychological study of men and masculinity, it is clear that many aspects of the biological point of view may have merit. However, from a psychological point of view, aspects of this perspective are limited in terms of understanding men in several ways. First, this perspective does not clearly define those persons whose genetic endowment does not fit neatly into a bifurcated, chromosomal definition of sex. This includes individuals who consider themselves to be intersex, transsexual, or transgendered persons or those individuals with multiple X or Y chromosomes. Second, the biological or essentialist point of view encourages a reduction of social, interpersonal, and cultural phenomena associated with gender to neurochemical, biological, or genetic causality. This analysis risks associating causation with correlation. Third, even if the perspective is found to be empirically sound, there is a lack of description or explanation of important within-group individual differences in social, interpersonal, and cultural variables within the male (and female) biological sex such as variable rates of mood disorders or expressions of aggressive or violent behavior that occurs in both men and women.

Gender Role Identity Paradigms

The gender role identity paradigm is closely related to the biological or essentialist point of view in that a unitary gender identity is viewed as the end point of a developmental trajectory that begins at a boy's birth and results in a mature man. As Pleck (1995) has noted, the gender role identity paradigm holds that "males have an intrinsic psychological nature that is deformed by modern culture and its key institutions (especially families)" (p. 26). Proposed aspects of this intrinsic nature unfold over time, in interaction with environmentally salient forces such as family milieu and peer group relations, and include the development of a sense of self as a person of masculine gender and the

acquisition and internalization of what are considered predominant men's values or norms including heterosexual sexual orientation and provider identity.

This perspective has been closely associated with psychoanalytic models of gender identity and development, and it informed early attempts to operationalize and measure gender roles, such as the Bem Sex Role Inventory (Bem, 1974) and the Personal Attributes Questionnaire (Spence et al., 1974). Stoller (1968) was probably one of the first psychologists to attempt an analysis of the development of masculinity and femininity by describing core gender identity, the self-definition a person establishes as belonging to one sex and not the other. Extensions of Stoller's original ideas regarding sex and gender have been formulated as they relate to masculinity, and they were summarized by Tyson and Tyson (1990). In addition, Fogel, Lane, and Liebert (1986) published a collection of essays that advanced psychoanalytic conceptualizations of the psychology of men.

More recent psychoanalytic analyses of gender roles that have informed a good deal of theorizing related to the psychology of men and masculinity were put forward by Chodorow (1989) and Pollack (1990). Aspects of their work are reflected in a model for psychotherapy with men, articulated by Rabinowitz and Cochran (2002), which integrates a psychoanalytic developmental analysis with a gender role strain analysis. In addition, this gender identity paradigm has informed a limited number of investigations within the psychology of men and masculinity, including an analysis of male body builders' personality features (Rubinstein, 2003).

Although this paradigm has been influential in writings on the psychology of men and masculinity, it suffers from several limitations. First, embedded in this paradigm is the traditional psychoanalytic notion that masculine gender identity follows a relatively narrow pathway that tends to be defined by the dominant culture. Moreover, deviations from this relatively narrow developmental pathway (e.g., homosexual orientation) have frequently been characterized as pathological in the past by adherents to this paradigm. In related fashion, this perspective tends to undervalue divergent identity pathways, including homosexual sexual orientation, non-traditional career choices, and other aspects of men's behavior that do not conform to a traditional masculine gender role as defined by the dominant culture. Although more recent contributors in this tradition (e.g., Chodorow, 1989; Friedman, 1988; Pollack, 1990) allow for divergence from the traditional pathways, other contributors have argued forcefully for a more traditional, heterosexually dominant form of male sexuality and masculine gender identity (e.g., Socarides, 1978).

Gender Role Strain Paradigms

Garnets and Pleck (1979) introduced a new conceptualization of gender roles based on the concept of what they called sex role strain. Pleck (1981) further elaborated this point of view in his influential *The Myth of Masculinity*. In these works, Pleck deconstructed points of view associated with gender-role identity, androgyny, and gender role transcendence perspectives. In their place he offered the gender role strain paradigm. The gender role strain paradigm views masculinity not as something that would unfold, as an identity, from within the individual in interaction with his environment. Rather, masculinity is viewed as a culturally defined phenomenon, contradictory and inconsistent in nature, and individually enacted by men in specific situations that vary across different ethnic groups, family traditions, and cultures.

Within this paradigm Pleck further articulated three subtypes of men's gender-role strain: discrepancy strain, trauma strain, and dysfunction strain. Discrepancy strain describes the strain an individual experiences in not conforming to dominant cultural expectations that pertain to a particular gender. Trauma strain details the process by which socialization forces intended to induce

a culture's dominant gender-role configuration are actually traumatizing or damaging to the individual subjected to these forces. Finally, dysfunction strain describes the negative or damaging consequences that adherence to culturally dominant expectations can have on an individual or on other persons.

The gender role strain paradigm has been the most influential of the three, and it has informed theory building and research within the larger domain of the psychology of men and masculinity. Models (e.g., O'Neil, 1981) and research instruments (e.g., Eisler & Skidmore, 1987; O'Neil et al., 1986) based on this paradigm have proliferated and provided impetus for research programs that range from examinations of the effect of gender-role conflict on men's psychological adjustment to the effect of men's gender-role strain on men's stress and health outcomes. O'Neil (2008) recently summarized research findings related to men's gender-role conflict in the interpersonal, intrapersonal, international, and therapeutic domains.

Beyond Essence, Identity, and Strain

Although related to the gender role strain paradigm, the social constructionist paradigm and the hegemonic masculinity paradigm go beyond locating masculinity, or the strain associated with conforming to dominant norms of masculinity, within the individual. These paradigms view masculinity as a cultural derivative that is contextual and contested in specific social and interpersonal interactions (e.g., Donaldson, 1993). A prevailing trend in more recent theorizing on men and masculinity is to articulate *masculinities* (e.g., Brod, 1987; Connell & Messerschmidt, 2005), which reflects the many ways that individual men enact *multiple aspects* of masculinity and the idea that masculinity is not a unitary or monolithic *thing* but the *performance* of roles and scripts by individual men. Rooted in the symbolic interactionism of Berger and Luckman (1966), this paradigm encompasses the gender-role strain and stress paradigm and augments it with a post modern analysis of power structures, individual diversity, and the dominant political and gender discourse. Examples of inquiry that incorporate aspects of this frame of reference include Koborov's (2004) analysis of a discursive approach to deconstructing adolescent boys' conversations and Emslie, Ridge, Ziebland, and Hunt's (2006) analysis of men's views of depression.

Viewed from within both the gender-role strain and the social constructionist paradigms, gender roles are reflective of the traditional, dominant, cultural norms that prevail in a given place during a given epoch. However, these norms are not universal nor are they necessarily healthy. They are individually constructed, vary according to context or situation, and are heavily related to individual experience. Addis and Mahalik (2003), who write in this tradition, discussed the social construction of men's gender roles and many of the problems inherent in how the traditional masculine gender role is enacted by individual men, which results in barriers to men's health care-seeking behavior, and the ensuing problems that result from failing to seek physical and mental health care in a timely manner.

Trends in Research on the Psychology of Men and Masculinity

Several authors have reviewed research pertaining to the psychology of men and masculinity, including Betz and Fitzgerald (1993), Good and Sherrod (2001), and Good, Sherrod, and Dillon (2000). In addition to being worthwhile resources regarding aspects of psychological research on men and masculinity, their work has also described prevailing trends in the emergence and development of

research about men and masculinity. Features of the development of research on the psychology of men and masculinity include efforts to define and measure masculinity, the relation of measured masculinity to positive and negative psychological and physical health outcomes, and potential future directions for research in this area.

Measurement of Masculinity

Some of the earliest efforts to research the psychology of men and masculinity were attempts to develop scales intended to assess masculinity, femininity, androgyny, and related constructs (e.g., Bem, 1974; Spence & Helmreich, 1978). Other scales were constructed to assess aspects of masculinity more directly, such as masculine norms and masculinity ideology. These scales included the Attitudes Toward the Male Role scale (Doyle & Moore, 1978) and the Brannon Masculinity Scale (Brannon & Juni, 1984).

Since the early 1980s, three distinct trends have emerged in measurement related to the psychology of men and masculinity. One is the measurement of masculine gender-role strain, which includes instruments such as the Gender Role Conflict Scale (O'Neil et al., 1986) and the Masculine Gender Role Stress Scale (Eisler & Skidmore, 1987). A second set of instruments has been developed to assess aspects of what has been termed masculinity ideology, that is, the array of beliefs about how masculinity is defined in our culture and what it means to an individual man to be a man. Examples of instruments designed to measure masculinity ideology include the Macho Scale (Bunting & Reeves, 1983), the Male Role Attitudes Scale (Pleck, Sonenstein, & Ku, 1993), and the Stereotypes About Male Sexuality Scale (Snell, Belk, & Hawkins, 1986). The third set of instruments developed to examine the psychology of men and masculinity evaluate masculine role norms and the extent to which men abide by, agree with, or conform to these norms. Examples of these instruments include the Male Role Norms Inventory (Levant et al. (1992), the Conformity to Masculine Norms Inventory (Mahalik et al., 2003), and the Male Role Norms Scale (Thompson & Pleck, 1986). Table 3.1 provides some perspective on the level of utilization of these and other instruments over the past 25

Table 3.1 Citations of instruments used in the measurement of masculinity

Instrument	Number of PsycINFO citations: 1967-present
Gender Role Conflict Scale (O'Neil et al., 1986)	125
Conformity to Masculine Norms Inventory (Mahalik et al., 2003)	25
Hypermasculinity Inventory (Mosher & Sirkin, 1984)	24
Masculine Gender Role Stress Scale (Eisler & Skidmore, 1987)	22
Male Role Norms Inventory (Levant et al., 1992)	17
Macho Scale (Bunting & Reeves, 1983)	14
Male Role Norms Scale (Thompson & Pleck, 1986)	11
Brannon Masculinity Scale (Brannon & Juni, 1984)	6
Attitudes Toward Men Scale (Downs & Engleson, 1982)	6
Attitudes Toward the Male Role (Doyle & Moore, 1978)	5
Masculine Role Inventory (Snell, 1986)	4
Male Role Attitude Scale (Pleck, Sonenstein, & Ku, 1993)	2

years in research on the psychology of men and masculinity. Clearly, the Gender Role Conflict Scale has been the most utilized instrument.

A number of authors have reviewed the utility and summarized analyses of the many instruments that have been created to explore the psychology of men and masculinity. These include reviews of specific instruments such as the Gender Role Conflict Scale (O'Neil, 2008; O'Neil, Good, & Holmes, 1995) and the Masculine Gender Role Stress Scale (Eisler, 1995). Other reviews have compared a number of different instruments that measure a common aspect of masculinity such as masculinity ideologies (e.g., Thompson & Pleck, 1995). Some other reviews have also evaluated the current status of research instruments and identified existing challenges and future directions including psychometric weaknesses of instruments, limited sampling for creation and validation of instruments, need for expansion of norms for the instruments, and the elaboration of discriminant and convergent validity evidence of the various instruments (e.g., Smiler, 2004; Chapter 7).

Although a number of limitations and future challenges have been identified, several researchers have recently expanded the use of various instruments to encompass international and diverse ethnic groups of men. Some of these efforts have included reports of comparisons of masculine gender-role conformity across American and Italian samples (Tager & Good, 2005), gender-role conflict and help seeking across American and Costa Rican samples (Lane & Addis, 2005), and masculine gender-role norm conformity in Asian American men (Liu & Iwamoto, 2007).

Men and Physical Health

One of the most robust and enduring statistics in the area of physical health is the fact that, on average, men have shorter life spans than women do (Courtney, 2000, 2002). Reasons for this are not well understood. Explanations have included genetic weaknesses based on the presence of a Y chromosome, failure of men to recognize physical symptoms, failure of men to seek professional help for serious health conditions, and socialization practices that associate weakness in men with seeking help.

Whatever the reasons are for men's shorter life spans, the area of men's physical health and its interaction with gender-role socialization practices has received a great deal of attention from researchers within and outside of psychology. Several areas of research have yielded valuable insights. These areas include the evaluation of men's health beliefs and behaviors (e.g., Courtenay, 2000), men's help-seeking behaviors (e.g., Mansfield, Addis, & Mahalik, 2003; Mansfield, Addis, & Courtenay, 2005), and strategies to increase health-promoting behaviors (e.g., Arras, Ogletree, & Welshimer, 2006). In addition, men's gender-role conformity and gender-role strain have been associated with health-related behaviors and outcomes (e.g., Good et al., 2006; Mahalik, Lagan, & Morrison, 2006; Mahalik, Levi-Minzi, & Walker, 2007).

Another important focus that has emerged is the area of men's body image concerns and the relationship of cultural definitions of men's physical bodies with various kinds of psychological as well as physical issues. This area has entailed the development of instruments designed to address men's unique issues with body image including likert-type response instruments, such as the Drive for Muscularity Scale (McCreary & Sasse, 2000) and the Swansea Muscularity Attitudes Questionnaire (Edwards & Launder, 2000), as well as figure drawing instruments, such as the Somatomorphic Matrix (Gruber, Pope, Borowiecki, & Cohane, 1999). McCreary, Saucier, and Courtenay (2005) examined the drive for muscularity as it relates to men's and women's gender-specific behaviors, masculine gender role conflict, and the personality traits of agency, communion, and unmitigated agency. Drive for muscularity was positively related to masculine behaviors and traditional

attitudes toward masculinity, as well as conflict about expectations for success, power, and competition, and work–family balance. In addition, clinical and research resources, such as the recent book *The Muscular Ideal* (Thompson & Cafri, 2007), have provided integrative analyses of important research issues as well as treatment concerns.

Men and Mental Health

Men's mental health remains the most salient and widely researched domain within the psychology of men and masculinity. Empirical support for the relation of the masculine gender role to mental health issues and outcomes has been widely sought. In addition, clinicians and researchers have worked hard to translate empirical findings into practical strategies and suggestions for working with men in counseling and therapy and for developing methods to make therapy more appealing to men. The relation of the various masculinity measures and men's mental health issues has been investigated since the inception of the various instruments utilized to measure masculinity issues first appeared over 25 years ago. A number of research programs have yielded impressive results in this area and include studies that relate measures of gender-role strain and conflict with mental health issues, help-seeking issues, and overall positive men's health (for thorough reviews of these findings see Eisler, 1995; O'Neil, 2008; O'Neil et al., 1995).

In addition to the substantive empirical research programs detailed above, researchers as well as clinicians have also addressed specific mental health conditions and issues that pertain to men. Some of these efforts include depression in men (e.g., Cochran & Rabinowitz, 2000), eating issues and eating disorders in men (e.g., Andersen, Cohn, & Holbrook, 2000; Thompson & Cafri, 2007), and men's interpersonal violence (e.g., Harway & O'Neil, 1999; Kilmartin & Alison, 2007). These contributions are important in that they represent the intermingling of the work initially conducted in academic settings with the work being carried out in applied, clinical, and community settings.

Conclusions and Recommendations

The psychological study of men and masculinity has grown substantially from the early 1970s to the present. Although it is still early days, notable trends in this evolution include the early efforts to define and measure masculinity, demonstrations of the associations between masculinity-related constructs and various maladaptive aspects of the male gender role, and the development of conferences, journals, and electronic venues through which to disseminate the results of research in this area. The study of men and masculinity is now a well-established domain within psychology as evidenced by at least one scholarly journal dedicated to publication of research in the area, a number of specific books and articles that represent research and applied efforts, the development of curricula for college-level courses on the topic, an emerging international presence, and a small but growing cohort of men and women who devote their clinical and research efforts to this area.

Whorley and Addis (2006) recently evaluated the research published on men and masculinity and offered a number of recommendations. Specifically, they recommended that those involved in the psychological study of men and masculinity expand their research design and analysis strategies to move beyond the correlational analyses so prevalent in the available publications. The call for expansion has also been echoed by O'Neil (2008), as he recommended utilizing moderation and mediation models as well as structural equation modeling, multiple regression analyses, and qualitative research

strategies to study gender-role conflict. Both Whorley and Addis (2006) and O'Neil (2008) also recommended that researchers studying men and masculinity expand their samples beyond the typical convenience samples comprised of college-aged men to include more racially and ethnically diverse men, men from varied socioeconomic backgrounds, and men of different nationalities. In addition, longitudinal samples of specific populations of men over time would allow new questions to be posed and would generate data that would enable researchers to examine questions that cannot be answered with current sampling and measurement strategies.

There are several additional directions that researchers studying the psychology of men and masculinity might take in the future. These include continuing to define, measure, and refine the many masculinities manifest in our culture, including masculinities related to ethnic, racial, sexual, and socioeconomic groups, and other important demographic and cultural distinctions. Related to this is the need for continued study of within-group differences (how men are different from each other) as opposed to between-group differences (how men are different from women).

As noted, much research has demonstrated the negative impact of the traditional masculine gender role on men's and women's health and psychological adjustment. In the future, researchers might consider efforts to explicate some positive aspects of the psychology of men and masculinity. For example, Levant's (1995) identification of aspects of the masculine gender role that are considered positive, such as the willingness to sacrifice personal needs for the sake of providing for others, might serve as a starting point for a research program designed to demonstrate aspects of the masculine gender role that perform positive social and adaptive functions.

Finally, a compelling case can be made to place men's violence against women and against other men as the most important research challenge that faces those working on psychology of men and masculinity. Men's violence is a concern that reaches all aspects of men's and women's families and local as well as national and international communities. It has received extensive analysis, and modest gains have been made in identifying aspects of masculinity related to violence and to mitigating the impact of men's violence. The study and, ultimately, the prevention of men's violence is an agenda that would find support from many disparate organizations and institutions devoted to the study of men's health and the psychology of men and masculinity on both national and global levels.

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Chapter 4

Emergence and Development of the Psychological Study of Lesbian, Gay, Bisexual, and Transgender Issues

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For over a century, homosexuality was treated as a mental illness by practitioners who employed a variety of therapeutic approaches to “cure” it. The psychological research of Evelyn Hooker (1957) challenged this position, and what emerged in response to her challenge was a substantial body of literature that refuted the notion of homosexuality as psychopathology. These studies formed the basis for what is referred to as lesbian, gay, bisexual, and (now) transgender (LGBT) psychology. In 1973, the American Psychiatric Association (APA) removed homosexuality from its official diagnostic nomenclature of mental disorders (American Psychiatric Association, 1974). In 1975, the American Psychological Association (APA) adopted a resolution that “homosexuality per se implies no impairment in judgment, stability, reliability, or general social or vocational capabilities” (Conger, 1975, p. 633).

The generations of research that led up to and that have followed this dramatic revision in the conceptualization of homosexuality have created a new area of study in psychology—one based upon empiricism instead of prejudice. This chapter summarizes the literature on LGBT people from the ground-breaking work that challenged the view of homosexuality as mental illness to the more descriptive studies of the present, which not only provide more refined information about LGBT people but shed light on various aspects of their lives and experiences in society.

As the field has broadened and become more inclusive, it is first necessary to present and discuss some terminology in current use. The importance of the terms is that they highlight the complexity among sex, gender, gender identity, and sexual orientation.

Terminology: Definitions and Discussion

Most commonly, the term *sex* refers to an individual’s biological status, which is typically categorized as male or female. Biological sex is generally designated by such indicators as sex chromosomes, gonads, internal reproductive organs, and external genitalia, and it is largely independent of cultural influences. Most individuals are categorized as female or male based upon these biological indicators.

The attitudes, feelings, and behaviors that a given culture associates with an individual’s biological sex are referred to as *gender*. Gainer (2000) described gender as “. . . a sociocultural construct referring to the behavioral, psychological, social, and cultural features and characteristics that have

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become strongly associated with being male and female” (p. 136). When the sociocultural expectations are internalized and enacted, they are referred to as gender roles. In most western societies, gender is categorized as masculine or feminine. Societal notions of what is feminine and what is masculine may vary dramatically across cultures and time periods (Bohan, 1996). Behavior that is compatible with cultural expectations or prescriptions is referred to as “gender normative.” Those behaviors that are incompatible with these expectations or prescriptions are referred to as “gender nonconforming.”

Although gender may be viewed as the external, societal expectation or cultural prescription for the behavior of men and women, *gender identity* is a term used to refer to the individual’s internal identification with these sociocultural expectations or prescriptions. Gender identity has to do with “one’s sense of oneself as female, male, or transgender” (American Psychological Association, 2006). In most instances, an individual’s gender identity is consistent with that person’s biological sex. When the two are incongruent, the individual may identify as “transsexual” or use another transgender category (cf., Gainor, 2000). Individuals who are *transsexual* experience a profound incongruence between their biological sex and gender identity and are likely to pursue interventions such as sex hormones and/or gender reassignment surgery (Brown & Rounsley, 1996; Gainor, 2000). The term *transgender* is more inclusive; it refers to transsexuals as well as to those individuals whose gender identity is incongruent with their biological sex but who do not wish to pursue the interventions described above.

When the term *sexual orientation* is used, it essentially involves “the sex of the individual to whom one is erotically and emotionally attracted” (Brown & Rounsley, 1996, p. 19). Quite often, sexual orientation, gender, and gender identity are confused and/or conflated. For instance, because a woman (a lesbian) is attracted to women, it is thought that she also wishes to be like a man in other ways. This is based upon the assumption that only men are attracted to women; thus, anyone attracted to a woman must be like a man or want to be so. Lesbians do not, as a rule, experience themselves as men or imitations of men. Similarly, most gay men do not view themselves as women or imitations of women. Nevertheless, it is assumed that being lesbian, gay, or bisexual is automatically associated with gender nonconforming behavior, feelings, and attitudes. The fact of the matter is that an individual can be lesbian, gay, bisexual, or even heterosexual and still demonstrate a wide range of gender expression—from gender normative to transgender. Gender-related characteristics vary a great deal among lesbian, gay, bisexual, and heterosexual individuals. Gender nonconformity is found in all sexual orientations. Still, a nonheterosexual orientation is often attributed to a person who is gender nonconforming, and this attribution may be accompanied by stigmatization.

It is important to keep in mind that, in patriarchal societies, androcentricism prevails. What is male or masculine is deemed more desirable, more powerful, and more privileged than what is female or feminine. Because LGBT individuals are automatically assumed to be gender nonconforming, gay men often pay a high price when it comes to victimization in hate crimes for the perception that they are less masculine than other men. Herek (1992) has noted that lesbians and gay men are not only stigmatized because of to whom they are attracted but because of their perceived violation of gender norms (see Chapter 15 in Volume II).

Chapter Organization

The development of LGBT psychology stemmed from the persistent efforts to pathologize same-sex attraction. Generally speaking, there have been three generations of research related to LGBT mental health issues. The first generation focused upon homosexuality as psychopathology and the

second on the depathologizing of homosexuality. LGBT psychology then turned its attention to the exploration of the similarities and differences among LGBT people, the ways in which they are similar to and different from heterosexual people, and the exploration of the unique issues of LGBT populations. This chapter is organized around these generations and ends with a discussion of current trends and possible future directions in the literature.

First-Generation Literature: Pathologizing Homosexuality

Prior to 1973, the literature on homosexuality was based upon the presumption that homosexuality is a mental disorder. The perception of homosexuality as a mental illness coincided with advances in medicine toward the end of the nineteenth century and prevailed for at least half of the twentieth century. The challenge for this medical model was first to discover the etiology of homosexuality and then to develop a treatment for it. The socially stigmatized behavior first needed to be framed as an illness. Psychoanalytic theories were generated regarding faulty resolution of the Oedipal conflict by Freud (1922, 1923), but he stopped short of framing homosexuality as mental illness; rather, he viewed homosexuality as a difficult-to-treat psychological disposition (Drescher, 2001). Those who followed, however, persisted in their efforts to develop theoretical frameworks that viewed homosexuality as a mental illness and as a psychological condition that warranted psychoanalytic intervention. Psychoanalysis became more prominent in the 1930s and 1940s and reached its highest level of influence in the 1950s and 1960s.

Freud's view of psychological bisexuality was rejected by Rado (1949, 1969), who maintained that heterosexuality was the only healthy outcome of psychosexual development and that Freud's belief had been based upon a faulty analogy Freud made regarding a later-disproven belief in embryonic hermaphroditism. Without scientific evidence for his position, Rado (1969) stated that

The male–female sexual pattern is dictated by anatomy. . .by means of the institution of marriage, the male–female sexual pattern is culturally ingrained and perpetuated in every individual from earliest childhood. . .Why is the so-called homosexual forced to escape from the male–female pair into a homogenous pair? . . .the familiar campaign of deterrence that parents wage to prohibit the sexual activity of the child. The campaign causes the female to view the male organ as a destructive weapon. Therefore the female partners are reassured by the absence in both of them of the male organ. The campaign causes the male to see in the mutilated female organ a reminder of inescapable punishment. When. . .fear and resentment of the opposite organ becomes insurmountable, the individual may escape into homosexuality. The male partners are reassured by the presence in both of them of the male organ. Homosexuality is a deficient adaptation evolved by the organism in response to its own emergency overreaction and dyscontrol (pp. 212–213).

Rado's view set the foundation for what is now referred to as "reparative" or conversion therapies. Other psychoanalytic "revisionists" (referred to as such because they revised Freud's view of homosexuality) included Bieber and his colleagues (1962), who conducted a study of homosexual and heterosexual men in psychoanalytic treatment and concluded that parental psychopathology was the cause of homosexuality, and Socarides (1968), who referred to homosexuality as a neurotic condition in which the libidinal instinct has "undergone excessive transformation and disguise in order to be gratified in the perverse act. The perverted action, like the neurotic symptom, results from the conflict between the ego and the id and represents a compromise formation. . ." (pp. 35–36). Although he himself was the father of a gay son, Socarides (1968), like Bieber, also viewed the parents of lesbians and gay men as responsible for homosexuality: "The family of the homosexual is usually a female-dominated environment wherein the father was absent, weak, detached or sadistic" (p. 38).

Homosexuality was removed from the official diagnostic nomenclature because there was no empirical basis for it as a mental illness or as an indication of psychological disturbance. Gonsiorek (1991) reviewed the research that was supposed to support the notion of homosexuality as psychopathology and described a number of problems, including lack of clarity in terminology, inaccurate classification of participants, inappropriate comparison groups, faulty sampling procedures, ignorance with regard to confounding social factors, and questionable outcome measures. Similarly, in his consideration of the research on sexual orientation conversion therapies, Haldeman (1991) concluded:

Perhaps conversion therapy seemed viable when homosexuality was still thought to be an illness; at this point, it is an idea whose time has come and gone. At no point has there been empirical support for the idea of conversion; indeed, the methodological flaws in these studies are enormous. It now makes sense to discontinue focusing on conversion attempts and focus instead on healing and educating an intolerant social context. Some will say that an individual has the 'right to choose' conversion treatment. Such a choice, however, is almost always based on the internalized effects of a hostile family and an intolerant society. As long as we focus on homosexuality itself as the problem, we miss the point (pp. 159–160).

To this day, efforts continue to be made to develop treatments for homosexuality by those who persist in the belief that it should be changed—for religious reasons. The names of these approaches vary, but they are essentially conversion therapies. The latest version is referred to as sexual identity therapy (Yarhouse, Pawlowski, & Tan, 2003). Basically, the goal of this approach is for a person who is attracted to members of the same sex to “disidentify” with those feelings of attraction and to avoid actively integrating the attractions into an LGB identity (Yarhouse et al., 2003). Although sexual orientation may not change, proponents believe that the decisions a person makes relative to same-sex attraction can change. The conflict that is likely to follow can result in psychological and emotional distress, frustration, guilt, and a sense of failure. The potential for conversion therapy to cause harm to many individuals who attempt it has been noted (Haldeman, 2001, 2004; Schroeder & Shidlo, 2001). An individual may continue to feel shame about being lesbian, gay, or bisexual. This shame may be compounded by the sense of failure at being unable to change. Fortunately, there are many religious communities today who welcome LGBT members. Certainly the optimal outcome for individuals who are conflicted with respect to sexual orientation and religious identification is to be able to integrate sexual orientation with religious identification. Once a leading proponent of conversion therapy for homosexuality, Davison (1991) observed that “change-of-orientation therapy programs are ethically improper and should be eliminated. Their availability only confirms professional and societal biases against homosexuality, despite seemingly progressive rhetoric about its normalcy” (p. 148).

Second-Generation Literature: The Psychological Adjustment Research

The decision to remove homosexuality from the official diagnostic nomenclature was based on a generation of research that showed that individuals with a homosexual orientation were no more or less psychologically impaired than their heterosexual counterparts were.¹ Second-generation literature began with the work of Evelyn Hooker (1957). Her research indicated no difference between

¹In most of the research prior to the 1980s, participants were not asked about bisexuality. Thus, results of earlier research did not officially pertain to bisexuality. However, it is likely that many of the studies that included samples of gay and lesbian individuals also included individuals who would now be regarded as bisexual.

nonclinical samples of heterosexual and homosexual men on projective test responses. This double-blind study challenged the notions that homosexuality per se was a mental illness and that projective testing would reveal its existence. Following that study, a substantial body of research emerged that essentially showed no significant differences between heterosexual and homosexual individuals on a wide range of variables related to mental health, including psychological functioning (Pillard, 1988; Rothblum, 1994; Weinberg & Williams, 1974), cognitive abilities (Tuttle & Pillard, 1991), and self-esteem (Savin-Williams, 1990). Fox (1996) also noted that he found no indication of psychopathology in nonclinical studies of bisexual women and men.

The second-generation research, however, did not put the issue of the relationship between homosexuality and psychopathology entirely to rest. Cochran (2001), in her review of recent studies of mental health morbidity and its relationship to sexual orientation, noted that lesbians and gay men seem to manifest higher rates of stress-related disorders than their heterosexual counterparts do. Gilman and colleagues (2001) found that a homosexual orientation appears to be related to an increased risk of anxiety, mood, and substance use disorders.² However, when recent researchers have noted differences between homosexual and heterosexual individuals with regard to psychological functioning (DiPlacido, 1998; Gilman et al., 2001; Mays, Cochran, & Roeder, 2003; Pachankis, Goldfried, & Ramrattan, 2008; Ross, 1990; Rotheram-Borus, Hunter, & Rosario, 1994; Savin-Williams, 1994), these differences have been attributed to the effects of stress related to stigmatization on the basis of sexual orientation. Such findings are consistent with an extant body of research that associates exposure to discriminatory behavior with psychological distress (e.g., Kessler, Michelson, & Williams, 1999; Markowitz, 1998). Nevertheless, those who wish to do so have used the findings that associate LGBT status with higher risk for psychological disturbance to revisit the notion that “homosexuality = psychopathology” even though the literature suggests that stigma is the likely culprit.

Third-Generation Literature: Identity, Diversity, and Descriptive Research

The most interesting and informative research has developed beyond challenging the mental illness model of homosexuality and demonstrating that LGBT individuals are as well adjusted as their heterosexual counterparts. A newer generation of literature that might be referred to as descriptive research reports explorations of the lives of LGBT people in greater detail and has brought much needed refinement to our understanding of these populations and added appreciation for within-group differences. The areas discussed below include gender differences; race/ethnicity/culture; bisexuality; relationships, families, and parenting; lesbian, gay, bisexual, and questioning youth; and sexual prejudice.

Gender Differences

Until the 1980s, literature on homosexuality ignored gender differences and focused primarily upon gay men. This androcentric approach tended to treat observations and research findings on gay men

²In this study, “homosexual” was defined as having same-sex partners. It is important to note that there is some debate regarding the role a lesbian, gay, or bisexual identity plays. Rothblum (personal communication, September 2, 2001) has observed that studies on LGB self-identified people have shown that lesbians do not differ from their heterosexual counterparts with regard to self-esteem and mental health. Sampling women who have sex with women (as opposed to self-identified lesbians), therefore, may yield groups who are more prone to exhibit mental health problems.

as though they pertained to all those attracted to members of the same sex—including bisexual people and lesbians. However, as the descriptive research developed and awareness of the importance of studying gender similarities and differences increased, we now know that there are some important differences between lesbians and gay men. These differences may be due to gender-role socialization, which is believed to have a greater impact than sexual orientation upon same-sex relationships (Kurdek, 1994; Peplau, 1981; Ritter & Terndrup, 2002). For instance, Duffy and Rusbult (1986) found that both lesbian and heterosexual women reported greater investment in and commitment to maintaining their relationships than did men of either sexual orientation. Another difference appears to be that gay male couples are more sexually active than lesbian or heterosexual couples, and they report less partner exclusivity than other couples do (e.g., Blumstein & Schwartz, 1983; Kurdek, 1995; Peplau, 1991). Many authors (e.g., Cabaj & Klinger, 1996; Gray & Isensee, 1996; Rutter & Schwartz, 1996) believe that gender-role socialization impacts a number of dynamics in gay and lesbian relationships (e.g., cohesion, distribution of power, monogamy, intimacy, sexuality).

Although it is easy to conclude that gender and gender-role socialization are major factors in understanding the identity development and relationships of lesbians and gay men, it is also important to be aware of the ways in which the dynamics of gay men and lesbians do not reflect gender-role norms. Green, Bettinger, and Zacks (1996) described lesbians and gay men as more androgynous than their heterosexual counterparts. However, it is also too simplistic to say that gay men and lesbians merely manifest cross-gender attitudes and behaviors. Gay men and lesbians draw from both typically masculine and typically feminine attitudes and behaviors in their relationships with greater freedom than their heterosexual counterparts do (Hancock, 2000).

There is some evidence to suggest that women exhibit a bit more fluidity with regard to their sexual feelings, behaviors, and identity than men do (e.g., Baumeister, 2000; Dempsey, Hillier, & Harrison, 2001; Gonsiorek, 1991; Peplau & Garnets, 2000), although the explanations for this difference vary. Recently, however, this evidence has been challenged by the results of a longitudinal study (Rosario, Schrimshaw, Hunter, & Braun, 2006). In the first study of sexual identity changes over time in both male and female youths, Rosario and her colleagues (2006) “. . .found that female youths were significantly more likely than male peers to identify consistently as gay/lesbian than to change identities” (p. 55). Further research is clearly needed to shed additional light upon this area. Consistency in sexual identity over time continues to be the case for most individuals (Diamond, 2000; Rosario et al., 2006). However, there is evidence to indicate that women tend to “come out” a little later than men do, although both men and women are coming out at younger ages today than they once did (Groves, Bimbi, Nanin, & Parsons, 2006).

Race, Ethnicity, and Culture

Researchers have recently turned their attention to the impact of race, ethnicity, and culture—particularly as they pertain to identity development. Just as generalizations about homosexuality (and bisexuality) were made based upon studies of gay men (until fairly recently bisexuality was unacknowledged as an orientation unto itself), many of the conclusions made from early research on LGBT people were based upon studies of White individuals—particularly White gay men (Chan, 1989, 1992; Greene, 1997). Even after descriptive researchers began to examine gender differences, findings pertaining to identity development, prejudice, and other important topics were insensitive to the unique issues experienced by LGBT people of color. Thus, generalizations about these issues in the lives of LGBT people did not necessarily apply to LGBT people of color. An acknowledgement and exploration of the unique experiences of LGBT people of color were missing.

The 1980s saw a dramatic increase in writing about and research with racially and ethnically diverse LGBT people. Much of this literature concerned clinical psychology and the issues relevant to assessing and treating LGBT people of color. Authors have challenged psychologists to conceptualize identity with more sensitivity and complexity. Race, ethnicity, and culture precede the development of an LGBT identity and impact the experience of that identity in a number of ways (Garnets & Kimmel, 1993; Greene, 1997). Greene (1997) has described the areas in which race, ethnicity, and culture can influence the development and/or expression of an LGBT identity. These areas include gender roles and the part played by reproductive sexuality in a particular culture, the importance of family and familial roles, and the importance of religion as a source of community and support. LGBT people of color grapple with the difficult and often painful task of negotiating multiple stigmatized identities (Chan, 1989, 1992; Croom, 2000; Martinez & Sullivan, 1998; Mays & Cochran, 1988).

Although the literature certainly turned its attention to the experiences of racial and ethnic LGBT individuals (e.g., Cochran & Mays, 1994; Fukuyama & Ferguson, 2000; Greene, 2000; Mays & Cochran, 1988; Peplau, Cochran, & Mays, 1997), particularly in the 1980s and 1990s, attention has increasingly turned to the ways in which individuals whose identities encompass more than one stigmatized group navigate those multiple and often overlapping identities. For instance, LGBT people of color experience racism among White LGBT communities and antigay prejudice to various degrees within their own ethnic communities, and they have sometimes been forced to choose between two cultures that may be antagonistic to one another, sometimes prioritizing one over the other or relinquishing one altogether (Croom, 2000). Chan (1993) observed that, because “identity development is a fluid, ever changing process, an individual may choose to identify and identify more closely with being lesbian or gay or Asian American at different times depending on need and situation factors” (p. 383). The management of multiple identities has presented itself as one of the next major challenges for the field of psychology. Greene (2007) observed:

When working with members of multiply marginalized groups. . . psychologists are insufficiently equipped to understand the multiple layers of effects of social disadvantage that such members must negotiate psychologically. The absence of these considerations obscures therapists’ understanding of how identity is affected when individuals belong to a mix of disparaged and privileged groups simultaneously. Psychology has much to learn about how the development of any one of those identities affects the other (pp. 49–50).

The interactive and cumulative effects of multiple marginalized identities pose challenges to researchers, educators, and clinicians alike. The examination of within-group variations in multiple stigmatized identities adds yet another layer to an already complex challenge. Nowhere do these challenges surface more clearly than in the study of LGB people of color at the beginning of the twenty-first century. Because every individual manages multiple identities in some way or another (some identities are more privileged than others), our understanding of human nature can only benefit from a more comprehensive and complex approach in psychological research, education, and training.

Bisexuality

Bisexuality (i.e., the capacity to experience sexual attraction toward and/or sexual behavior with persons of both sexes) has been documented by cross-cultural research for many years (Fox, 1996). However, it has only been regarded as a valid sexual orientation for the past 15 years or so. Prior to this, bisexuality was viewed as a transitional or transient state in a dichotomous model of human sexuality. This dichotomous model held that human beings are either heterosexual or

homosexual, and, traditionally, heterosexuality was regarded as the healthy outcome of psychosexual development.

The removal of homosexuality from diagnostic nomenclature and the results of psychological research (e.g., Klein, 1993; Klein, Sepekoff, & Wolf, 1985; Weinberg, Williams, & Pryor, 1994) have facilitated the recognition of bisexuality as a viable sexual orientation for some individuals. In 1993, Fritz Klein authored *The Bisexual Option*, which presented a comprehensive overview of bisexuality that challenged the “either/or” conceptualization of sexual orientation. It also included the Klein sexual orientation grid (KSOG), which essentially expanded on the Kinsey scale (Kinsey, Pomeroy, & Martin, 1948); however, Klein addressed more than actual sexual experiences. The KSOG also includes items about sexual attractions, fantasies, emotional preference, social preference, lifestyle, and self-identification.

In 1998, the American Institute of Bisexuality was formed by Fritz Klein in an effort to educate professionals and the public about bisexuality and to promote and fund research on bisexuality. In 2001, the *Journal of Bisexuality* (now a Routledge publication) began publishing a wide range of articles (e.g., research reports, essays) pertaining to bisexuality. Topics that have been addressed include bisexual issues in therapy; differences from the heterosexual, lesbian, and gay communities; marriage; and polyamory. However, to date, bisexuality continues to present important challenges. The use of discrete sexual orientation categories is no longer viewed as adequate to address the complexity of human sexual experience. Research has shown that sexual behavior, identity, and desire are not highly correlated (Firestein, 1996; Rothblum, 2000). Moreover, conceptualization and operational definitions of bisexuality present challenges to researchers (cf. Diamond, 2008; Paul, 1996). Research continues to be needed to explore the unique issues and experiences of bisexual men and women.

Relationships, Families, and Parenting

A good deal of information emerged in third-generation research about LGB relationships, families, and parenting. Contrary to some of the myths about same-sex relationships, research has revealed that many LGB people want, and have, committed relationships. The quality of same-sex relationships has been found to be equivalent to that of cross-sex relationships (cf. Peplau & Beals, 2004; Peplau & Spaulding, 2000). Despite the relative absence of social support for same-sex relationships, LGB people have been shown to form relationships that are stable over time. For instance, surveys have shown that 8–21% of lesbian couples have lived together for 10 years or more (e.g., Blumstein & Schwartz, 1983; Falkner & Garber, 2002; Kurdek, 2003). The major differences between LGB and heterosexual couples involve sexual behavior, gender-role enactment, and the social stigmatization of LGB relationships (Garnets & Kimmel, 1993). Gender differences have been found in survey data that show that 40–60% of gay men and 45–80% of lesbians are in romantic relationships (e.g., Bradford, Ryan, & Rothblum, 1994; Falkner & Garber, 2002; Morris, Balsam, & Rothblum, 2002); in large measure, these findings reflect the relative importance of relationships for women.

Although what we now know about the relationships of LGB people highlights the many ways their relationships are similar to those of their heterosexual counterparts, one difference continues to pose major challenges. That difference is the social stigma with which LGB people must contend and impact upon their lives. Most heterosexual couples do not have to deal with the same condemnation.³ Research shows that LGB individuals and couples experience economic disadvantages (e.g., Badgett,

³Interracial heterosexual couples have had to contend with prejudice (e.g., laws were written to forbid them to marry). Heterosexual couples in which the woman is much older than the man also have experienced stigma.

2001). They also are at greater risk of harm to themselves, their families, and property (D'Augelli, 1998; Herek, Gillis, & Cogan, 1999). Recent political campaigns and legislative initiatives against same-sex marriage have served to remind same-sex couples of the societal antipathy and animosity they face; the animosity is often fueled by religious fundamentalism and fear.

The family issues of LGB people are rendered more complicated by the fact that LGB people do not usually share the sexual orientation status of the rest of their families. This can cause difficult conflicts within the family of origin. In some cases, LGB family members are rejected once the LGB individual's sexual orientation is known. Third-generation research has indicated that "coming out" to one's family of origin can be a long-term process (Ben-Ari, 1995; Mattison & McWhirter, 1995) and that the initial period of rejection, if present, is usually short lived (Laird, 1996; Mathews & Lease, 2000). Some authors have described the family of origin's process of coming to terms with its member's LGB orientation as a loss—particularly for the parents. The family sometimes requires time to adjust to the loss and to accommodate the new information about its LGB member. The disclosure of one's nonheterosexual orientation to one's family of origin is a major issue in the lives of LGB people. The responses of families—and of individual family members—can vary dramatically.

Families headed by LGB people traditionally have been the result of previous heterosexual relationships in which one or both LGB couple members have children (Patterson, 1996; Patterson & Chan, 1996). However, the increased availability of alternative reproduction techniques and the loosening of legal restraints against adoption have contributed to a "gay baby boom" (Johnson & O'Connor, 2002). As third-generation researchers explored the families of lesbians and gay men, the myths about LGB parenting—often expressed in the legal system in legislation and court decisions—were shattered. Fears included the concern that the children of lesbian and gay parents would have more difficulty with sexual identity, psychological adjustment, interpersonal relationships, and victimization by peers than would children of heterosexual parents. There were also fears that children living with gay or lesbian parents would be more likely than other children to be sexually abused by the parents or by friends or acquaintances of the parents. Research does not support any of these fears (Patterson, 2000, 2004; Perrin & The Committee on Psychosocial Aspects of Child and Family Health, 2002; Tasker, 1999). Rather, findings indicate that the psychological health and well-being of the children of lesbian and gay parents do not differ from that of children of heterosexual parents (Patterson, 2004). To be sure, LGB parents may be challenged and distressed by prejudice and discrimination; however, research suggests that they provide as supportive and healthy environments for their children as do their heterosexual counterparts (Patterson, 2000, 2004).

Third-generation literature also revealed a phenomenon among LGB people, which is referred to as "families of choice." "Family of choice" is a term used to describe nonbiologically related individuals who come together to form a supportive group or network that performs many or all of the functions a family of origin serves. Families of choice are sometimes created when acceptance is not forthcoming from the family of origin (Dahlheimer & Feigal, 1994; Mathews & Lease, 2000). They can also be a source of protection, socialization, support, and self-esteem for their members (Mathews & Lease, 2000). Members of these families of choice may include LGB couples and individuals as well as supportive heterosexual friends and couples, and these families may be more important to LGB people than their families of origin are (Weston, 1992).

Lesbian, Gay, and Bisexual Youths

In the 1980s, the focus of third-generation literature included LGB youths, and serious problems were revealed that underscored the need for greater attention to their mental health needs and life

circumstances. Research shows that LGB youths are at risk for a variety of mental health problems (including drug and alcohol abuse) and that they engage in sexual behavior that increases their risk of HIV infection (cf. Anhalt & Morris, 1999; D'Augelli, 2006; Rotheram-Borus & Langabeer, 2001). The most disturbing findings, however, are those associated with higher suicide risk among LGB youths. Halpert (2002) noted the higher rate of suicide attempts in LGB youths as compared to heterosexual youths. A number of studies based upon convenience samples have also shown higher suicide attempt rates among LGB youths (e.g., Gould, Greenberg, Velting, & Shaffer, 2003; McDaniels, Purcell, & D'Augelli, 2001).

LGBT youths do not usually have the same sexual orientation status as other members in their family of origin and may not be likely to be able to rely upon their family's support. In fact, as youths come to terms with their LGBT orientation, the need for secrecy may prevail. Hershberger and D'Augelli (2000) have summarized the research that supports the need for concern regarding familial responses to disclosure of an LGB orientation. Initial reactions of parents, siblings, and friends have frequently been negative (Robinson, Walters, & Skeen, 1989; Rotheram-Borus et al., 1994). Even when family members and friends are supportive, they may have little or no experience with the LGBT community and little idea of how to help the LGBT youth cope with heterosexism and stigma.

Victimization of LGB youths also has emerged as a major concern (D'Augelli & Dark, 1994; D'Augelli, Hershberger, & Pilkington, 1998). Hershberger and D'Augelli (2000) noted that lesbian and gay youths are, in fact, more likely than heterosexual youths to be physically or sexually abused. Indeed LGB youths are more apt to be victimized than LGB adults are, and the mental health problems that stem from this victimization may be more severe (D'Augelli, 1998). D'Augelli (2006) found gender differences in the nature and frequency of victimization; gay male youths are more at risk than their female counterparts.

Sexual Prejudice and Heterosexism

One of the most important areas in LGB psychology is the study of sexual prejudice (i.e., negative attitudes toward individuals because of their sexual orientation). Heterosexism, an important component in understanding sexual prejudice, has been defined as "the ideological system that denies, denigrates, and stigmatizes any non-heterosexual form of behavior, identity, relationship, or community" (Herek, 1995, p. 321). Heterosexism has dominated the theory, language, research, and clinical interventions of psychology (Anderson, 1996; Brown, 1989) as well as the education of psychologists (Hancock, 2000; Pilkington & Cantor, 1996) for most of the twentieth century. Sexual prejudice against LGB people and its psychological, behavioral, and institutional manifestations have been closely studied by third-generation researchers. Sexual prejudice and victimization also have taken a significant toll upon the mental health and well-being of LGB individuals (DiPlacido, 1998; Greene, 1997; Herek et al., 1999; Meyer, 2003). Negative attitudes toward LGB people have been shown to be related to gender (Herek, 2002), gender identity (Herek, 2000), and religiosity (Herek & Capitanio, 1995; Plugge-Foust & Strickland, 2000; Schope & Eliason, 2000). However, more positive attitudes are related to personal contact with LGB people (Herek & Capitanio, 1995, 1996).

The impact of sexual prejudice and heterosexism upon the mental health and well-being of LGB people has also been an important cornerstone of third-generation literature. It has been found that, when LGB people internalize negative societal attitudes, they may be at higher risk for a variety of mental health problems (Gilman et al., 2001). These problems may include lowered self-esteem

(Gonsiorek, 1993; Herek, Cogan, Gillis, & Glunt, 1998), depression (Garofalo, Wolf, Wissow, Woods, & Goodman, 1999; Herek et al., 1998; Meyer, 2003; Shidlo, 1994), alcoholism and other substance-related problems (Cochran, Keenan, Schober, & Mays, 2000), sexual dysfunction and other relationship problems (Meyer & Dean, 1998), and stress (Cochran, 2001). More recently, anti-gay marriage initiatives have taken their toll (Russell, 2000; Rostosky, Riggle, Horne, & Miller, 2009). A particularly distressing example of this is the US state of California. Following a court decision that same-sex couples could marry, hundreds of couples did so. A majority of citizens then voted for a proposition (Proposition 8) that outlawed same-sex marriage. The political landscape continues to change on this matter, however, and a several other US states have recently legalized same-sex marriage.

Comments, Current Trends, and Future Directions

When it comes to improving the human condition—and most certainly the mental health and well-being of LGBT people, psychology is at its best when psychologists with varied foci within the field (i.e., science, practice, public interest, and education) combine their knowledge, skills, and expertise to do so. The changes in the conceptualization and treatment of homosexuality and bisexuality have been the direct result of psychological research, the clinical observations and experience of practitioners, the organizational advocacy of LGB psychologists and their allies, and academic psychologists (many of whom conduct research on and/or practice in the area of LGBT psychology) whose educational and training efforts are informed by this evidence-based work. Second- and third-generation literature in LGB psychology is a profound example of this. Psychology changed its approach to nonheterosexual orientations dramatically in the second half of the twentieth century.

What Does It Take? A Brief History

Changing the way in which psychologists think about homosexuality was not necessarily an easy thing to do. To be sure, there were confrontations. Groups of lesbian and gay psychologists were known to challenge presenters openly at conferences and, in some cases, to confront them on stage about the pathologizing perspectives they represented and/or the absence of lesbian and gay voices in their work. When second-generation research started to show that homosexuality was not a mental illness, the American Psychiatric Association removed homosexuality as a mental illness from its diagnostic nomenclature in 1974. About the same time, a group of psychologists organized the Association of Gay Psychologists (later called the Association of Lesbian and Gay Psychologists). This group, which continued for about 20 years, provided a safe place in which to study and discuss issues pertaining to homosexuality. After its first 10 years, serious efforts were made to integrate the concerns of lesbians into the association, and the policy of gender parity in leadership and a change in the organization's name were adopted. Members of this association also assisted with efforts to get the American Psychological Association (APA) engaged in these matters by joining existing divisions, boards, or committees and by advocating for the study of the psychological issues of lesbians and gay men.

Organized psychology provides a platform from which to study important issues and implement changes in education, training, practice, and psychology in the public interest. The literature produced by the second and third generations provided psychology with the impetus to move forward

on LGBT issues. Beginning with a single policy statement approved in 1974 (Conger, 1975) that “homosexuality per se implies no impairment in judgment, stability, reliability, or general social or vocational capabilities,” the APA adopted its position regarding nonheterosexual orientations. In 1980, the association created a standing committee to explore these issues within the organization and the field and to make recommendations. Following this, in 1985, a division was created to provide a forum for psychologists to share the results of studies and to discuss important issues related to research, practice, education, training, and public policy with lesbian and gay people. The members of Division 44 and those who supported its creation produced the literature summarized in this chapter. This literature has informed, and continues to inform, the field at large about LGBT people. It provides the basis for the education and training of psychologists and for an informed professional practice. In 2000, the first set of practice guidelines was adopted for working with lesbian, gay, and bisexual clients in psychotherapy (American Psychological Association, 2000).

The creation of journals is an important phenomenon because it indicates an ongoing interest on the part of professionals in the subject matter. In 1974, Charles Silverstein created the *Journal of Homosexuality*. Initially, this journal contained only empirical research. Later, as research on nonheterosexual orientations was more widely accepted for publication in other psychological journals, the focus of the *Journal of Homosexuality* widened to include articles that focused upon historical analysis and other subjects. It is important to note that APA’s Division 9 (the Society for the Psychological Study of Social Issues [SPSSI]) published an issue of its *Journal of Social Issues on Psychology and the Gay Community* (Morin, 1978) that discussed the study of homosexuality, recent developments in theory and research, and the activities of the Association of Gay Psychologists. Empirical research and theoretical and applied articles on LGBT issues are now published in most of the major professional journals.

Where is psychology headed regarding LGBT issues? There are a number of possible paths for the next generation’s literature—some of which are already being pursued.

Gender/Transgender Issues

With a similar combination of approaches to those described above, transgender psychologists have advocated for a closer look at issues of transgender and gender-variant individuals. Gainor (2000) observed:

The very existence of transgendered or gender-nonconforming individuals challenges the core of our social, psychological, and even political structures by forcing us to examine our preconceived notions of sex, gender, gender roles, gender identity, and sexual orientation. Transgendered children, adolescents, and adults face unfair treatment and oppressive gender expression (pp. 156–157).

With patience and a good deal of courage, transgender psychologists have worked within APA to educate psychologists about the needs and mental health issues of transgender and gender-variant individuals. These issues may prove to be some of the most important and controversial issues in psychology.

Historically, the stereotypes regarding LGB people have included the simplistic notion that, on some level, gay men really want to be women and lesbians really want to be men. Although there does appear to be some relationship between cross-gender behavior in children and homosexuality or bisexuality in adulthood, the relationship does not appear to account for adult homosexuality and bisexuality entirely. Golombok and Fivush (1994) concluded that the relationship is complex and not completely understood:

It is important to remember that simply because an association exists between cross-gender behavior in childhood and homosexuality in adulthood, or because differences have sometimes been found in the patterns of parenting experienced by homosexual and heterosexual men and women, this does not mean that all or even most adults who identify as homosexual were unconventional in their gender role behavior as children or were raised by dominant mothers and distant fathers. The retrospective studies show that a substantial proportion of homosexual adults report no or few cross-gender behaviors as children and that many had good relationships with their parents (p. 143).

The desire to understand the relationships between gender, gender identity, and sexual orientation presents an opportunity for psychologists to explore the most fundamental aspects of human nature; however, it also presents challenges. There are a number of terms used—each depicts a different group of individuals and requires definition or explanation—under the broad heading of *transgender*. Gainor (2000) observed, for example, that there are *transgender* individuals who live full- or part time as the other gender and may even take hormones, and there are *transsexual* individuals who experience more profound gender dysphoria and who wish to fulfill a desire to live out their lives as members of the other gender. Transsexual persons experience more discomfort, identify as the other gender, and are the most interested in cross-living, obtaining hormones, and seeking genital reassignment surgery (GRS). There are also *transvestites* who dress in clothing of the other gender for erotic pleasure and/or emotional satisfaction. Although transvestite individuals can be LGB, most are, in fact, heterosexual men (American Psychiatric Association, 2000). There are *androgynous* persons who manifest stereotypical characteristics of both genders and who may choose not be identified as a member of either gender, and there are *intersex* individuals who have “medically established physical or hormonal attributes of both the male and female sexes” (Gainor, 2000, p. 141). This list and its associated literature confronts psychologists with a complicated picture—one that challenges our definitions of gender.

Rothblum (2000) has raised the issue as to whether or not classifications such as the ones described above are accurate or even useful. Examination of these terms presents a very basic question: Is our understanding and definition of gender adequate? “The transgender movement is beginning to underscore the fact that an understanding of sexual orientation needs a better framework for thinking about gender itself” (Rothblum, 2000, p. 202). Psychologists are now in a position to explore realms of human nature where the dichotomous categories of “male” and “female” are difficult to discern. Yet, people depend upon these basic categories or constructs. Demonstrations that the sex/gender categories may, in fact, not be distinct and reliable are not likely to be well received or supported in many areas of society.

Embaye (2001) noted that the treatment issues of transgendered persons may include relationship, family, and occupational problems; victimization and harassment; depression; issues related to presentation to self and others; posttransition issues; and other psychiatric difficulties. Transgender children grow up pretending to be as they are expected to be. They can be abused and bullied at school, and they are given the message early in life that they should not be who they are. Brown and Rounsley (1996) described the feelings of betrayal, shame, despair, and anger in transgender adolescents. In adulthood, transgender individuals may or may not pursue gender reassignment surgery (GRS). The protocol for GRS, however, involves required psychotherapy, and few psychologists are really prepared to deal with gender dysphoria and the other issues with which transgender and gender-variant people must contend. In 2008, the APA approved a resolution on *Transgender, Gender Identity, and Gender Expression Non-Discrimination* that supports research, the creation of educational resources, the provision of mental health services, and access to appropriate health-care services. Attention has turned to this aspect of psychology, and a focus on it will remain active for some time to come.

Sexual Orientation

Just as the notion of gender is evolving away from the categories of “female” and “male,” new and more complex frameworks for understanding sexual orientation are also on the horizon. The recognition of bisexuality as a valid sexual orientation, as well as a transitional state, challenged the dichotomous heterosexual/homosexual model of sexual orientation. Some authors (Firestein, 1996; Peplau & Garnets, 2000; Rothblum, 2000) have urged psychologists to discard the older perspective in favor of paradigms that account for what actually occurs and to describe the different ways in which individuals identify themselves and behave sexually. Multidimensional models of sexual orientation have been proposed in an effort to account for the complexity researchers continue to find and to conceptualize sexual orientation with a number of variables that must be considered (e.g., sexual attraction, sexual behavior, fantasies, identity, emotional preference, relationships status, and comfort with one’s own orientation) (Coleman, 1990; Klein et al., 1985)—some of which may not necessarily be consistent with the others. Factors such as culture, race, ethnicity, social class, education, and religiosity also have been mentioned as important influences on sexual orientation (Greene, 2000; Peplau & Garnets, 2000).

Another layer of complexity has been introduced in research that shows that sexual orientation in women tends to be fluid, responsive to social context, and may change over time (Peplau & Garnets, 2000, 2001), which suggests that biological determinants of sexual orientation may not be as important as once thought—at least for women. The literature pertaining to men reveals that sexual orientation appears to be more biologically determined and less fluid than it seems to be in women (Bohan & Russell, 1999; Kinnish, Strassberg, & Turner, 2005). Sexual orientation is not only multidimensional, but it may have very different dimensions, manifestations, and meanings according to gender and the personal experience of the individual. Separate models for men and women may be necessary to understand the nature of sexual orientation. Moreover, stage models of lesbians’ and gay men’s sexual development have also been described as no longer adequate or accurate (Diamond, 2000; Peplau & Garnets, 2001).

From Categories to Complexity: The Fourth Generation

The first three generations of LGBT psychology have produced a great deal of information and have refuted the notion of homosexuality/bisexuality as psychopathology. They have also painted a very complicated picture of identity, sexual orientation, and human behavior. Current literature in LGBT psychology challenges simpler notions of gender, gender identity, sexuality, sexual orientation, relationships, and family. Psychology has depended, for the most part, upon categories to explore and explain sexual orientation, identity, and LGB people. These categories have increased in number and specificity over time. Psychological researchers have attempted to increase our understanding of human nature by studying its parts without realizing what this does to the accuracy of our understanding of the whole. However, this methodology has become cumbersome and is beginning to reveal its limitations. Any approach that examines parts apart from the whole warrants critical attention and revision.

A fourth generation of psychologists will need to review and revise the structures that psychology uses to understand and explain sexual orientation. It will require a capacity for complexity beyond what has been previously employed. Research methodology and theoretical paradigms must be retooled for this generation—a generation that holds immense promise for understanding gender and human sexual experience.

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Part II
Research Methods

Chapter 5

Quantitative Approaches to the Study of Gender

Sarah K. Murnen and Linda Smolak

In the early 1900s, in the emerging field of psychology, reputed scholars expressed beliefs that women were incapacitated in various ways by their menstrual cycles. These sentiments did not go unchallenged. In 1914 psychologist Leta Stetter Hollingworth wrote:

It seems appropriate and desirable that women should investigate these matters experimentally, now that the opportunity for training and research is open to them. Thus, in time, may be written a psychology of woman based on truth, not on opinion; on precise, not on anecdotal evidence; on accurate data rather than on remnants of magic (Hollingworth, 1914).

Leta Stetter Hollingworth applied her research skills to the question of “functional periodicity” and to other commonly held beliefs about gender. She was described as the “scientific pillar” of the first wave of feminism in that she insisted that scientific data, not prejudiced beliefs, be used to address questions related to gender (Shields, 1975, p. 855).

How far have we advanced in our ability to use scientific data to address questions of gender? Quantitative methods, particularly the experiment, define the scientific approach in the field of psychology. The purpose of this chapter is to discuss the contemporary use of quantitative methods to study gender-related behavior. Psychology has explored issues of gender from a scientific perspective since Hollingworth’s time, especially since the second wave of the Women’s Movement in the 1960s and 1970s led to renewed interest in the subject of gender. However, as will become clear, gender is a complex variable, and there are limits in the applicability of experimental methods. In many cases nonexperimental quantitative methods such as correlational designs are employed to allow for more information about how context influences gender-related behavior. If the correlational design is longitudinal and includes a variety of statistical controls, causal models can be tested. The application of multiple research approaches has helped us to make significant advances in our understanding of gender-related behavior within its rich societal context.

The Scientific Study of Gender

To approach gender from a scientific perspective we need to consider that the goals of science are to describe, predict, determine causation, and explain the relationship between variables (Shadish, Cook, & Campbell, 2002). In science we assume that there are causal relationships between variables

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(the philosophical assumption of determinism), and we try to uncover these relationships through research. Although the description of relationships between variables is an important part of the scientific process, scientists also want to predict precisely when those relationships will occur. The preferred tool for identifying causality has been the experiment.

The experiment is initiated by a hypothesis that describes the proposed relationship between the independent and the dependent variable. Researchers then manipulate the independent variable under controlled conditions and measure its presumed effect on the dependent variable using statistical methods. In its simplest form there is an experimental group that receives the treatment or manipulation and the control group that does not. Researchers seek to make the two groups and the procedures they experience exactly alike except for the application of the independent variable to the experimental group. Random assignment of participants to groups is required so that variables associated with participants do not get confounded with the relationship under study. Other procedures might be used to protect against further contamination of the relationship. For example, “double blind” refers to a procedure where neither the experimenter nor the participant knows who is assigned to which group.

If the experiment includes random assignment and the use of other means of control, and the application of the independent variable leads to measurable changes in the dependent variable, the temporal precedence of the application of the independent variable to changes in the dependent variable allows us to claim that we can predict the relationship. This relationship is very likely to be dependent on the context of the experiment, though, so, if researchers can replicate the result and extend it to other settings, we then get closer to saying that the application of one variable causes changes in another. As indicated by Shadish et al. (2002, p. 16), “Observations can approach a more factlike status when they have been repeatedly made across different theoretical conceptions of a construct across multiple kinds of measurement and at multiple times.”

Demonstrating that a relationship occurs predictably does not guarantee that we can understand it, though. For example, suppose that our hypothesis is that exposure to images of unrealistically thin “ideal” women currently portrayed in the media leads to body dissatisfaction in young adult women. We randomly assign a group of women to one of two conditions; in the experimental condition women view slides of advertisements with thin, attractive women, and in the other condition women view slides of these same women with pictures manipulated so that the women appear to be about 30 lbs heavier (close to the average weight of women). We find that the experimental group has statistically significantly higher levels of body dissatisfaction than the control group does. We replicate the results and determine that there is a predictable change related to viewing the images. Although the relationship is predictable, we do not necessarily understand why it occurs. It is likely that a variable mediates between exposure to thin images and body dissatisfaction, such as cognitions about one’s own body or social comparison processes, and this will need to be better understood.

So the next step is to develop a framework to try to explain the data; that is, a theory. The theory should be able to explain all of the data and lead to hypotheses that could potentially be falsified by new data. According to the historian Kuhn (1970), when a group of scientists shares a theory, resulting laws, and a group of methods, they share a paradigm that will advance our knowledge of a subject. Experiments conducted within one paradigm can build a knowledge base of findings that can be legitimately compared to one another. Even if the theoretical framework turns out to be falsified by the data from experimentation, it will have functioned to further our knowledge. A new theory will then be developed to explain the existing data, new hypotheses will be derived to test, and research will proceed. If we have two competing theoretical perspectives and can derive a hypothesis that allows us to falsify one theory and support the other, we will learn a great deal about the relations between variables.

Validity Issues

The experiment has been a preferred approach in psychology because the well-controlled randomized experiment is associated with high levels of *internal validity*, which is our ability to determine that the application of the independent variable caused changes in the dependent variable. However, there are at least three other types of validity to consider, according to Shadish et al. (2002). *Statistical validity* is the extent to which the statistical tests we have conducted allow us to test the relationship between the variables accurately. For example, the researcher should ensure that the test is sufficiently powerful to detect a relationship between variables. To provide readers with some indication of statistical validity, the American Psychological Association has advised researchers to report the effect sizes of relationships in their research reports (Wilkinson & Task Force on Statistical Inference, 1999). *Construct validity* refers to our ability to represent the constructs of interest through the use of our particular operational procedures. In the media and body dissatisfaction examples above, we would want to make sure that our manipulation of thin media images and our measure of body dissatisfaction are representatives of those constructs. *External validity* is our ability to generalize beyond the particular “persons, settings, treatments, and outcomes” (Shadish et al., 2002, p. 83) associated with our particular experiment. Researchers are usually interested in applying whatever they have learned in this particular experiment to understand behavior outside of the experimental context. When an experiment has particularly high internal validity due to isolation of variables and a high degree of control, there is less ability to generalize results. Thus, we need to consider that internal and external validity can work in opposition to one another. In addition, as indicated earlier, a study that is theoretically driven is more likely to advance our knowledge of a particular topic. The extent to which a study contributes to theory has been called *hypothesis validity* (Wampold, Davis, & Good, 1990). All types of validity need to be considered when interpreting the findings of a particular study.

In addition to the well-controlled experiment that takes place in the laboratory setting, there are experiments that take place in the “real world,” which are sometimes called *field experiments*. If researchers have the controls of random assignment to groups and isolation of the independent variable in the field experiment, it could have high levels of both internal and external validity. Further, there are instances when we want to conduct an experiment with high external validity but have to sacrifice control, such as the random assignment of participants to groups. This design is called *quasi-experimental* because it does not meet the high level of internal validity of the true experiment. For example, suppose that there are two middle school health classes, and we expose one class to a media literacy program and the other class serves as the control, and then we measure health-related attitudes. Because there is no random assignment to groups, we are less likely to be able to determine causal relationships.

Experimental Approaches to the Study of Gender

In considering the application of experimental methods to understand gender-related behavior we need to define the variable of gender. Many psychologists distinguish between biological “sex” and socially constructed “gender.” In the usual course of development males and females can be distinguished by their sex chromosomal pattern; by their internal gonads that start the circulation of varied amounts of particular types of hormones (females - higher levels of estrogens, males - higher levels of androgens including testosterone); and by their external genitals (Fausto-Sterling, 2000). Hormonal differences between females and males continue after birth and are accentuated at

particular points in development, such as puberty and later in life (e.g., menopause for women). Thus the variables of chromosomal sex pattern, internal gonads, and hormone levels are often described as aspects of biological sex, although they might not unambiguously assign people to the two categories of male and female.

Other variables comprise a more socially constructed distinction between the genders. For example, in the United States much is made of the distinction between boys and girls in a process Bem (1993) called gender polarization. There are gendered expectations for behavior in many realms including appearance, social roles, and accompanying behaviors. A child becomes aware of the gender distinction and its importance to the culture through cognitive processes, and there are a number of social processes that operate to influence gendered behavior. Our social structure is partly organized around the variable of gender, which leads women and men to occupy somewhat different social spheres that affect their life experiences and expectations for their behavior. Gender differences are associated with status differences in patriarchal cultures, which is believed to lead to expectations for power-related gender differences in behavior.

Gender is sometimes treated as if it is a “fixed” factor that represents just one immutable construct. For example, people often assume that if there is a statistically significant gender difference in a behavior, somehow the fact the difference exists is explanatory in some way; for example, they might think that the gender difference implicates a biological difference (Caplan & Caplan, 1999). However, given the complexity of variables involved in sex and gender, it is more accurate to think of gender as a summary or composite variable that is associated with many different factors including biological variables, gender roles, and the lived experiences of being female or male. Various theories differentially emphasize the role of biological and social factors in attempting to explain gender-related behavior. For example, evolutionary theory emphasizes the role of genes and gender-differentiated brains and hormones (e.g., Buss, 2004); other biologically oriented theorists emphasize the role of hormones (e.g., Hampson & Moffat, 2004; Hines, 2004); developmental theorists might examine cognitive processes related to children’s understanding of gender (e.g., Martin & Ruble, 2004) and social learning processes that shape behavior (e.g., Bussey & Bandura, 2004); and social theorists might concern themselves with the effects of gender stereotypes (e.g., Deaux & LaFrance, 1998; Deaux & Major, 1987) and gendered social roles on behavior (e.g., Eagly, Wood, & Diekmann, 2000; Eagly, Wood, & Johannesen-Schmidt, 2004).

Given the complexity of the variable gender, how can the experiment be used to study its processes? Even if it were ethical to do so, we simply do not know how to manipulate some variables, such as brain differences, that are believed to result from genetic differences between women and men or changes in cognitive development that are believed to influence children’s understanding of gender. Furthermore, it is unethical to manipulate some variables in humans, such as prenatal hormone exposure. Sometimes hormones are manipulated in animals, but the construct and external validity problems associated with applying these data to understand human experience makes generalization questionable. Most experimentation associated with gender concerns the manipulation of social and cognitive processes.

For example, one line of experimental research in social psychology manipulates the construct of “stereotype threat.” This research paradigm was developed to understand the phenomenon that African American students sometimes perform worse on standardized exams than European American students do. There are stereotypes available in the culture that suggest that African Americans are not as intelligent as European Americans. Steele and Aronson (1995) argued that the playing field is not level in that stereotypes about group intelligence are likely to have an impact on the group targeted. They tested this idea with an experimental manipulation. In the first four experiments on this topic, they put one-half of their Black and White research participants in a

situation where the racial stereotype was primed (e.g., the task was described as an “accurate measure of your ability”) and the other one-half in a situation where the racial stereotype was not primed (e.g., in one study instructions indicated that “we are not evaluating your ability on these tasks”; Steele & Aronson, 1995, p. 803). SAT scores were controlled in the analyses. It was found that race interacted with threat condition, such that Black students performed worse under conditions of threat and White students did not.

This paradigm has been used to manipulate stereotype threat in women concerning the widely held belief that women are not as good at math as men are. Spencer, Steele, and Quinn (1999) found that mathematically talented women performed worse than men on a test “shown to produce gender difference” (p. 10). This effect did not occur when the test was described as one that did not produce gender differences. There have been more than 100 articles published on the topic of gender stereotype threat and its implications (Shapiro & Neuberg, 2007). The manipulations of threat have varied from reminding participants of the negative stereotype to having people watch television commercials that portray gendered stereotypes. There have been found to be a variety of additional consequences to being threatened by a stereotype besides decrements in performance, including decreased feelings of efficacy in the domain tested and increased feelings of anxiety. Various moderators of the relationship have been found, such as being the lone member of a stereotyped group in the testing session.

The manipulation of stereotype threat is experimental (although the comparison of the gender or racial groups is not), and, although it has been difficult to specify the processes that mediate between the threat and the low performance (e.g., anxiety), it is clear that something is happening in this laboratory setting. Given that the testing situation is realistic, both the internal and external validity of this research are high. This research shows that an experimental manipulation can be used successfully to study some processes related to gender. When the experiment is not an option for ethical or practical reasons, psychologists turn to other research methods.

Nonexperimental Research

In nonexperimental quantitative research designs, instead of manipulating the independent variable researchers measure existing levels of the variable(s). Sometimes the nonexperimental design looks like an experiment in that there are two or three groups being compared on one measure. However, if there is no manipulation of the independent variable, then it is not an experiment. Some researchers refer to this type of study as a *between-groups design*. Often psychologists study a range of variables on both the independent variable and the dependent variable. In this *correlational design*, the relationship between each person’s relative score on one measure is compared to their relative score on the other measure. A Pearson correlation coefficient can be used to examine the extent to which a linear relationship describes the association, and other statistics can be used to test curvi-linear or other relationships. Researchers sometimes distinguish a correlational design by calling the presumed causal variable the “predictor” and the affected variable the “criterion.” (This is especially true when regression is used as the analytic tool.)

If we wanted to study the relationship between media exposure and body dissatisfaction in a correlational study, we could ask people to report on the frequency of media exposure and complete a body dissatisfaction scale, and then we could look at the relationship between the variables. We can determine the extent to which the relationship can be described as linear by using the Pearson correlation. Beginning statistics students learn that “correlation does not determine causation” because there is no manipulation of a variable, so internal validity is generally low. We do not know if greater

media exposure causes body dissatisfaction, if those with body dissatisfaction seek out more media exposure, or if there are other variables involved in explaining the relationship between the predictor and the criterion. However, in correlational designs, researchers can concurrently measure other variables believed to confound the relationship between the predictor and the criterion and statistically examine and/or control these variables. For example, researchers sometimes study the relationship between several variables to examine the possibility of mediating (or moderating) effects using procedures suggested by Baron and Kenny (1986). Suppose we think that social comparison mediates the relationship between exposure to media and body dissatisfaction. We would measure all three of these processes and test for mediation effects by demonstrating that the predictor and criterion are correlated, that the predictor and mediator are correlated, that the mediator predicts the criterion after the effects of the predictor are controlled, and that the strength of the relationship between the predictor and the criterion decreases once the mediator is added to the model. We can test the effects of moderating variables, variables that might heighten or weaken a relationship between a predictor and a criterion, by introducing interaction terms into regression equations.

Researchers can examine models with many variables using structural equation modeling (SEM), which is a set of procedures used to analyze predicted causal relationships. One frequently used technique is path analysis, which uses correlational data to test the feasibility of a theoretical explanation of the relationship between variables. The researchers lay out a model of a sequence of relationships, or “paths,” between variables. Then the techniques of correlation and regression are used to test the proposed paths between variables. Although some people refer to path analysis as “causal modeling,” this is incorrect because the data are correlational. That is, researchers cannot use path analysis to determine the causal direction of the relationship between variables and can only indicate whether the pattern of path coefficients is consistent with what is proposed by the theory (unless the data are longitudinal). Path analysis is limited in that it can be affected by the reliability of the measures used, and it can only be used to study nonreciprocal relationships. Thus, other techniques have been developed to examine the tenability of relationships proposed by a theoretical model.

Longitudinal Designs and Statistical Control

If researchers study behaviors over time in a longitudinal design, and employ procedures of statistical control, a great deal can be learned. Kraemer et al.’s (1997) influential article on defining risk factors made two major contributions. First, they distinguished between “fixed” and “variable” risk factors. Fixed risk factors may mark risk, and may even be causal, but they cannot be modified, and so are often of limited interest to psychologists. Gender is often treated as a fixed risk factor (Jacobi, Hayward, deZwaan, Kraemer, & Agras, 2004), a position that we challenged earlier. The variable risk factors, whose levels or influence can be altered, such as media images, tend to receive more attention.

Second, Kraemer et al. (1997) delineated the requirements for establishing a risk factor as *causal*. First, the variable has to show temporal precedence to the outcome variable. This is the minimal requirement for establishing a causal relationship, and outside of experimental designs it can only be achieved with prospective, longitudinal data. Second, following the tradition of empiricism, one must demonstrate, preferably through experimental manipulation, that changes in the levels of the putative risk factor lead to changes in the levels of the outcome in predictable ways. This might be accomplished in studies that directly examine the impact of the risk factor (e.g., Calogero, 2004) or as part of a prevention/intervention study (e.g., Stice, Presnell, Groesz, & Shaw, 2005).

Certainly experimental or quasi-experimental studies can be longitudinal, as in eating disorders prevention programs with up to 2 years of follow-up measures (e.g., Smolak & Levine, 2001). This

is not the most common use of longitudinal designs, however. Longitudinal designs are often purely descriptive; the researcher's aim is to describe developmental changes in a behavior, attitude, or characteristic. For example, in support of the gender intensification hypothesis, Galambos, Almeida, and Petersen (1990) demonstrated an increased adherence to gender roles, particularly among boys, as children moved through early adolescence. Such studies are not designed to understand causal relationships. Rather, they are an important first step in providing information on sequences of development. One important advantage of longitudinal over cross-sectional designs is that the former can provide information on both group changes over time and individual differences in the process under study. Cross-sectional designs, which study various age groups all at the same point in time, can only provide information on group differences.

The other major, and perhaps most common, use of longitudinal data is to try to suggest causal relationships between a set of variables and an outcome. For example, in a recent study, Grabe, Hyde, and Lindberg (2007) demonstrated that gender differences in body surveillance predated gender differences in depression. In accord with Kraemer et al.'s (1997) criterion, Grabe et al. (2007) argued that they may have identified a causal relationship. They were careful, however, to note that, without experimental data, they could not claim causality.

Yet, realistically, one wonders how the relationship between self-surveillance and depression could be tested experimentally. Certainly there would be important ethical concerns in increasing an adolescent's exposure to objectification. One possibility is that there could be an intervention program to reduce objectification and self-surveillance. Presumably, there would have to be a fairly lengthy intervention before one could expect any positive effect on depression. It would be difficult to maintain the levels of control in this type of study. How, for example, might objectifying messages from family members, peers, strangers, and the media all be regulated? In addition, it is difficult to produce successful prevention programs for deeply ingrained social behaviors such as objectification (see, e.g., Levine & Smolak, 2006, for a discussion of eating disorders prevention). Thus, although it may be important on a variety of levels to attempt an intervention, that intervention cannot be treated as the only possible test of a causal relationship between self-surveillance and depression. The effects of a variety of experiences important to feminist researchers – including objectification, sexual harassment, and sexual violence – are not easily examined in an experimental or quasi-experimental design.

One alternative to experimental designs is to introduce controls into correlational–longitudinal research. The advantage of using a longitudinal design to identify temporal precedence is maintained and the critical feature of experimental design (i.e., control) is added. Typically, the control is statistical rather than rooted in the preferred experimental design method of random assignment to conditions. There are at least five methods of statistical control available to psychologists who employ correlational–longitudinal designs (McCartney, Burchinal, & Bub, 2006).

By far the most common statistical method used to introduce controls is multiple regression (McCartney et al., 2006). In multiple regression, a variety of “control” variables can be measured and included in the equation used to “predict” the outcome variable. Such control variables can reflect demographic information (e.g., gender or ethnicity) or behavioral/psychological characteristics (e.g., self-surveillance or gender role endorsement). Typically, Time 1 measurements are used to predict a later measure of the outcome variable. The equation also usually includes the Time 1 measure of the outcome variable to ensure that changes in the outcome are indeed being assessed. Often, the variables are entered in a hierarchical manner so that the researcher can see how much variance is associated with the presumptive “causal” variable once the “control” variables are in the equation.

The challenge of this approach lies in selecting the “correct” control variables, a challenge that also applies to experimental designs. If one “undercontrols” the study, then the effects attributed to the causal variable may be overestimated (McCartney et al., 2006). One way to reduce this problem

is to use a fixed effects analysis. In a fixed effects analysis, difference scores replace individual observed scores (McCartney et al., 2006). If unmeasured variables are similar to measured ones in their impact at each time of measurement, then the difference scores will remove the random error associated with individual variability on the omitted variables. In this way, the analysis resembles a correlated group's *t* test or repeated measure's ANOVA.

A third form of analysis that was designed to remove the bias associated with unmeasured variables is instrumental variables analysis. Two other forms of analysis, propensity score analysis and regression discontinuity analysis, mimic random assignment (McCartney et al., 2006). All of these analyses require large sample studies (McCartney et al., 2006; Tabachnick & Fidell, 2007). Large samples can be difficult to achieve in longitudinal designs, which often suffer 10% or greater attrition every year (Smolak, 1996).

These five methods introduce control into correlational–longitudinal data. However, Newcombe (2003) has argued that it is possible to overcontrol a study. One of the major feminist critiques of experimental designs is their relative lack of ecological validity (e.g., McHugh, Koeske, & Frieze, 2004). Newcombe (2003) suggested that the same thing can happen in correlational design studies. She cited the example of a study that demonstrated a link between number of hours spent in nonmaternal care weekly since infancy and externalizing behavior at the transition to kindergarten (National Institute of Childhood Health and Human Development [NICHD] Early Childhood Research Network, 2003), a finding with important policy implications. Among the numerous variables controlled in the regression that produced these findings were maternal income and maternal depression. Newcombe (2003) noted three important points about these variables. First, maternal income and maternal depression are substantially correlated with nonmaternal care. Second, higher maternal income is associated with lower levels of maternal depression. Third, higher maternal income and lower maternal depression are associated with lower child externalizing behavior problems. In real life, then, maternal employment may indeed lead to increased use of nonmaternal child care, which may hold some increased risk for child behavior problems. But, maternal employment also leads to higher maternal income and lower maternal depression, which may attenuate the negative effect. The potentially protective aspects of maternal employment were lost in the NICHD study by the decision to control for these variables.

Does this mean that researchers should ignore some potential confounding variables? Newcombe (2003) suggested that structural equation modeling (SEM) be employed to elucidate the processes involved in the development of behaviors or characteristics. SEM is frequently used with cross-sectional data (e.g., Keery, van den Berg, & Thompson, 2004). In such cases, even a strong theoretical basis for the model does not permit causal inferences to be made. But with longitudinal data, which can establish temporal precedence, a strong theoretical model that results in appropriate identification of control and process variables, including mediators, may yield SEM results that are as able to identify causal links as experimental data are. Indeed, such data are arguably superior to experimental data because they have not completely eliminated the context within which behaviors occur. Instead, researchers are able to build the context into the causal model.

Meta-analysis

Another quantitative technique that is used by gender researchers is meta-analysis. Some of the earliest research in psychology examined gender differences in various behaviors (Deaux, 1999). The available research on gender differences was reviewed by Maccoby and Jacklin (1974) in their book, *The Psychology of Sex Differences*. They compiled all of the available data using a vote-counting

method to see the number of studies that showed men and boys had higher scores, the number that showed that women and girls had higher scores, and the number that showed no difference in scores. They concluded that the research established differences in four areas: mathematics ability (men/boys scored higher), spatial ability (men/boys scored higher), verbal ability (women/girls scored higher), and aggression (men/boys scored higher). In other areas they found that there were no differences or that there was not sufficient research to reach a conclusion. This qualitative review technique has been criticized for its lack of precision. Simply counting the number of studies that show a particular outcome does not give us precise information about the magnitude of the relationship effect size, for example. Further, all studies are given equal weight in such an evaluation regardless of validity issues.

The application of meta-analysis to quantitative reviews of available data was an important development in gender differences research. The effect size d is often used to represent the difference between the means of two groups expressed in standardized units of measurement. In the area of gender, the d represents the difference between the mean score of men and the mean score of women expressed in standard deviation units. A statistical test is used to determine the significance of d , and there are guidelines on evaluating its size. For example, Hyde (2005) suggested that d values of 0.10 or smaller are essentially 0, values between 0.11 and 0.35 are small, values between 0.36 and 0.65 are moderate, values between 0.66 and 1 are large, and values above 1 are very large. There is often much variability in the size of the d across the studies collected, and one can examine whether the variability in d is systematically associated with predicted variables by using procedures analogous to analysis of variance (e.g., Lipsey & Wilson, 2001). Thus, researchers can test for the possible effects of mediating or moderating variables on the proposed relationship.

The procedures of meta-analysis were revived in the late 1970s (the first recorded use was by Pearson in 1904; Shadish et al., 2002) and began to be applied to the study of gender differences shortly thereafter. Hyde (2005) recently reviewed 124 sets of effect sizes that tested for a variety of gender differences including cognitive, social, and personality variables. She concluded that there is more evidence for “gender similarities” in the data than for gender differences in that 78% of the effect sizes were small or close to 0. The gender differences that showed the largest effect sizes were in the area of motor performance (e.g., men generally throw a ball faster and farther than women). Two sexuality-related measures showed large gender differences: rates of masturbation (women report lower rates) and attitudes toward casual sex (women respond less favorably). There were age trends in some data sets that support the idea that many differences are not stable across time or age cohorts.

As indicated above, it is possible in meta-analysis to examine whether various study characteristics predict variation in the size of the effect across studies, and these data reveal the complexity of gender differences. For example, in Eagly and Crowley’s (1986) analysis of gender differences in helping behavior, the size of the gender difference varied across studies in ways consistent with gender stereotypes. Men helped more than women when the situation was one in which public, “heroic” behavior was required. In contrast, women helped more than men when the situation was more private and consistent with nurturing behavior. LaFrance, Hecht, and Paluck (2003) found that the gender difference in smiling (women smile more) was more pronounced when participants were being observed than when they were not.

Content Analysis

One final quantitative technique that has been used to study gender issues is content analysis, which involves analyzing various features of media (e.g., text, images, pictures) to determine the underlying

messages they contain. The research is generally descriptive in nature, although it can be used to test hypotheses. For example, one might predict that the ideal body size of women portrayed in the media has changed across time and that hypothesis could be tested by analyzing the pictures across time. Indeed, Spitzer and colleagues (Spitzer, Henderson, & Zivian, 1999) found that both Miss America pageant contestants and *Playboy* centerfold models have become thinner across time and that the ideal body portrayed by these women is unrealistically thin. In parallel research concerning images of men, it was found that *Playgirl* centerfold models became significantly more muscular between 1973 and 1997 (Leit, Pope, & Gray, 2001).

Research Approaches in Contemporary Gender Research

Which quantitative methods are used in contemporary research and which methods have most advanced scientific goals? To understand more about the contemporary use of quantitative methods in gender-related research we examined all of the articles published in 2007 in three gender-related journals: *The Psychology of Men & Masculinity*, *The Psychology of Women Quarterly*, and *Sex Roles*. There were 213 articles in these journals in 2007, and a quantitative approach (as opposed to a qualitative approach, such as interviewing) was used in more than 85% of the articles. The experiment was used in almost 20% of the articles ($N = 42$ experiments). The experiment was used most often to examine social psychological and cognitive perspectives. In the nonexperimental designs, some of the studies compared groups, and some employed correlational designs, usually with more than two variables. Some studies used path analysis and other SEM techniques. Only 14 of the studies (7%) were longitudinal in design, which underscores the substantial challenges of this important approach. Reports of content analysis (16 articles, 7.51%) and meta-analysis ($N = 2$, 0.94%) also appeared.

Across all different types of research designs there were three general content areas that received much research attention: research on gender and power-related behaviors, research on body objectification, and research on gender and sexual violence. Below we review the use of various quantitative approaches in each of these three areas of research to discuss important validity issues associated with different techniques. The research we examined for this analysis is generally theory-driven. We briefly discuss the theoretical approaches that informed the research on these three topics and then examine the studies in more detail, highlighting their quantitative approaches.

Relevant Theories

Gender and Power-Related Behaviors

In patriarchal societies the roles and behaviors associated with men tend to be consistent with their typically higher status, whereas women's roles and behaviors tend to be more deferential (e.g., Ridgeway & Bourg, 2004). According to social role theory, women and men occupy different social roles that influence the behaviors they exhibit as well as the stereotypes people form about them (Eagly et al., 2004). Men are more likely to be in roles that require dominance and agency, whereas women are expected to be in roles that require them to express more communal characteristics such as warmth and nurturance. Despite some changes in women's roles, behavior is still gender stereotyped. These stereotypes help to guide people's behavior. According to a role congruity perspective (Eagly & Diekmann, 2005), people whose behavior fits expected gender norms are viewed more positively.

Objectification Theory

A theory that received a lot of attention in the 2007 journals is Objectification Theory (Fredrickson & Roberts, 1997), which seeks to explain women's high levels of body dissatisfaction. According to this theory, the existence of high levels of objectification of women in the culture can lead women to internalize the objectification and to engage in habitual body monitoring. This self-objectification is believed to lead, in turn, to lack of awareness of internal body states, fewer "flow" experiences (i.e., peak motivational states), greater appearance and safety-related anxiety, and greater body shame. In turn, these processes are believed to predict eating disorders, greater depression, and particular sexual dysfunctions that women experience. The links between self-objectification, body shame, and eating-disordered attitudes have been supported in both experimental (e.g., Fredrickson, Roberts, Noll, Quinn, & Twenge, 1998; Calogero, 2004; Roberts & Gettman, 2004) and correlational research (e.g., Miner-Rubino, Twenge, & Fredrickson, 2002; Tiggemann & Lynch, 2001). There are internally valid techniques of manipulating self-objectification (e.g., Fredrickson et al., 1998), and there are measures of self-objectification, self-surveillance, and body shame (McKinley & Hyde, 1996) that have good construct validity.

Gender and Sexual Violence

Researchers who study gender and sexual violence note that many types of violence are gendered; women and girls are often the victims of various types of violence from men including "everyday" sexism, sexual harassment, and rape. Although evolutionary theory has been used to try to understand this gendered violence (e.g., Thornhill & Palmer, 2000), it did not inform the research in the 2007 journals we studied. Instead, a more social constructivist approach was employed. In such approaches the existence of gendered violence is believed both to reflect and to perpetuate the patriarchal nature of most societies. Gendered violence lowers women's status in that it makes them fear for their safety and need to seek protection from men (e.g., Yodanis, 2004). Various social supports exist for gendered violence including sexist jokes, traditional gender roles, rape myths, pornography, and mass media portrayals that reinforce stereotypes of men as extremely sexual, aggressive, and dominant and women as sexually objectified and controlled by men (e.g., Sheffield, 2007).

Experiments

The theories explained above helped to frame the experimental research we reviewed. One experiment we examined concerned the issue of gender and wage entitlement (Hogue, Yoder, & Singleton, 2007). There is a long-standing wage gap between women and men (men tend to earn more money) that might be partially related to gender differences in the sense of wage entitlement. Higher status people expect to get more rewards. In a prior experiment the researchers tried to manipulate status by telling female and male participants that they would be engaging in a task at which women excelled (Hogue & Yoder, 2003). The manipulation was designed to raise women's status and threaten men's. Consistent with expectations, it was found that women exposed to the status manipulation rated their competency as higher, and paid themselves more, than women in the control group did. However, men were not influenced by the manipulation as expected. Men in all groups rated their competency as high and paid themselves accordingly. The researchers concluded that it was easier to raise women's status than to lower men's. The purpose of the 2007 study was to examine men's behavior in more detail. The researchers measured men's competency beliefs as a possible mediator between status and outcomes. They manipulated status threat in a similar manner. Men whose status should

have been threatened by the manipulation actually felt more competent than men in the control group did. The researchers wanted to untangle whether it was gender or status that contributed to competency beliefs, so, in another group of participants, they employed the gender status manipulation and then measured masculinity beliefs as well as entitlement attitudes. Sense of entitlement, but not masculinity, was associated with higher self-competence ratings and self-pay. The authors concluded that what looks like a gender difference is probably a status difference, and men are reluctant to give up the high status that is associated with feelings of entitlement.

In the second experiment we examined, Sanchez and Kwang (2007) manipulated the construct of "relationship contingency" (i.e., derivation of self-worth from romantic relationships) to determine its effects on variables in the objectification theory paradigm. The researchers argued that women are socialized to be concerned about maintaining romantic relationships with men and that the media stereotype these relationships such that women who meet cultural body ideals are more likely to be portrayed as romantically successful. Like self-objectification, basing one's self-worth on romantic relationships might put women at risk for self-surveillance, body shame, and eating disorders. The researchers wanted to examine the relationship between romantic concerns, self-surveillance, and body shame in an experimental manner. In one study Sanchez and Kwang (2007) primed relationship concerns by highlighting items on a relationship contingency scale. The control group received the same items, but they were not highlighted. Women in the experimental condition expressed more relationship concerns (which shows that the manipulation worked), and they also had higher scores on measures of surveillance and body shame. In a second experiment the priming consisted of asking women in the experimental group to write about two reasons why they might feel bad about a boyfriend, whereas the control group women wrote about bad grades. This manipulation was also associated with higher concerns with romantic relationships, surveillance, and body shame in the experimental group. The researchers also conducted a correlational study to examine relationship contingency scores, body shame, and eating-disordered attitudes, among other measures. They used SEM and found support for the proposed model that body shame mediated the relationship between relationship concerns and eating-disordered attitudes.

The experiment on gender and sexual violence that we examined concerned the role that alcohol intoxication and past victimization history might play in women's resistance to attempted acquaintance rape (Stoner et al., 2007). Past research has shown that both alcohol intoxication and past victimization history are related to women's use of less active resistance strategies in response to unwanted sexual activity, but the mechanisms through which these variables might operate are unclear. The authors proposed a model that alcohol intoxication and victimization might lead women to appraise situations in a way that does not lead to effective resistance. For example, women might feel uncertainty about the situation or might be overly concerned with the man's feelings in the situation. The researchers advertised for "unattached female social drinkers, age 21–35" (Stoner et al., 2007, p. 347) to participate in their research and paid participants \$10 an hour. In the first session participants completed questionnaires that included measures of past victimization history (i.e., child sexual assault and abuse, acquaintance rape). In the second session returning participants were randomly assigned to the various conditions of the experimental portion of the research where the amount of alcohol intoxication was varied to create participant-blind conditions of moderate dose of alcohol, high dose, placebo, or control. (The researchers used a breathalyzer test to ensure that participants' level of intoxication was consistent with their randomly assigned experimental condition.) Participants then read a stimulus story of an acquaintance rape situation and were asked to project themselves into the scenario. After the man in the story made unwanted sexual advances toward the woman, the participants rated the likelihood of various thoughts they would experience including concerns about the man's feelings, uncertainty about the situation, conflict about the situation, and shock. The story continued with the man clearly intending to rape the woman at which

point resistance strategies were assessed by presenting women with measures of the likelihood that they would respond with assertive resistance strategies (e.g., “push him away”), polite resistance strategies (e.g., “nicely or apologetically telling him I don’t want to have sex”), passive resistance (e.g., “go along with what he is doing even though I don’t really want to”), and consent. To summarize a few findings, it was found that conflict about what to do in the situation was associated with decreased assertive resistance and increased passive and polite resistance. Further, intoxication increased uncertainty, which was associated with increased polite resistance. Previous experience with acquaintance assault was negatively related to assertive resistance intentions.

What can we learn from these three experiments in different areas of research? First, we see that researchers have found some innovative ways to manipulate important social constructs. The status threat manipulation did not appear to lower men’s status, but it did lead to some interesting results that led us to learn more about how gender and status influence men’s sense of entitlement. Given the fact that one’s sense of entitlement probably develops over time, it might be difficult to lower that attribute in an ethical way in a short-term experiment. The relationship contingency manipulation showed high construct validity as the researchers used two different means to manipulate the construct and conducted manipulation checks. Researchers interested in this variable now have means of manipulation to explore in future research. In the third study the researchers manipulated alcohol intoxication using previously developed procedures to examine the role that alcohol might play in influencing resistance to acquaintance rape (Stoner et al., 2007).

It is interesting that none of the studies relied on a simple experiment alone to learn about the relationship between the variables. In the status threat experiment researchers examined men’s scores on personality inventories to explore feelings of entitlement further. In the objectification theory study the authors examined how relationship contingency related to eating-disordered attitudes in their correlations. In the alcohol study the role of past victimization history was examined, and it is unlikely that this variable could have been manipulated in an experiment in a valid manner. Thus, these researchers seem to have realized that a simple experiment alone might help us to predict a relationship but does not allow us to understand its complexity. The use of multiple methods in one study helped to achieve greater understanding.

Nonexperimental Quantitative Methods

There were many examples of nonexperimental studies to choose among for our analysis. In the area of gender and power, we examined a between-groups study with much ecological validity in that it took place in a real-world setting. Barbuto, Fritz, Matkin, and Marx (2007) collected data from 56 business leaders and 234 of their employees. Leaders who were participating in a leadership development conference distributed surveys to their employees that measured their perceptions of the leaders’ style of leadership and use of influence tactics. The responses were averaged across the group of employees for each leader. Neither gender of leader nor educational level of leader alone influenced the variables, but a statistical interaction between these two variables predicted some of the ratings. Employees of female leaders at the lowest level of education (i.e., leaders who were high school graduates) rated their leader as more likely to favor a style of “management by exception” and to use more pressure tactics than did employees of male leaders with the lowest level of education. Male leaders with a high school degree were perceived to use more powerful leadership techniques such as “transformational” and “intellectual stimulation.” Although the researchers did not integrate their findings with theory on gender and power, these results could be interpreted to imply that women with the lowest status due to less education do not have the same opportunity to exert legitimate authority as do men with that same level of education.

For body research, we chose a study by Szymanski and Henning (2007) in which path analysis was used to test relationships proposed by objectification theory. Although previous research has supported the proposed links between self-objectification, body shame, and disordered eating, the role of awareness of internal body states and “flow” has not been supported, and there is less research on how these constructs relate to depression. Thus, Szymanski and Henning (2007) examined how several variables might work together to predict depression in a group of community college women aged 18–63. The researchers developed their own measure of “flow” because previous researchers had used measures of questionable construct validity, and they used a different measure of depression than had been used in past research. The researchers found support for a model where self-objectification was related to habitual body monitoring, which in turn was related to lower “flow,” which then predicted higher depression scores.

For the gender and violence area, we examined a study of men’s experiences with intimate partner violence (IPV) conducted by Hines (2007) who pointed out that there is much more research on the consequences for women than for men who experience IPV. Hines (2007) proposed that men would experience posttraumatic stress (PTS) symptoms if they experienced IPV, as many women do, and that both individual difference and cultural variables would predict severity of symptoms. She analyzed data from the International Dating Violence Study (IDVS), which was conducted at colleges in 60 places around the world. Individual difference variables of severity of IPV, socioeconomic status, and sexual orientation were examined along with cultural variables. For example, Hines argued that men who experience IPV might be influenced by the general acceptance of violence in the culture, as well as the extent to which the culture acknowledges that men can be victimized by women in relationships. Thus, she examined the cultural variable of level of hostility toward men, along with the cultural variable of amount of violent socialization among children. The use of hierarchical linear modeling (HLM), which is based on multiple regression procedures that assume nested data, allowed her to consider both the individual difference and the cultural variables in the same model. She found that severity of IPV was associated with PTS symptoms, and the relationship was stronger in cultures with lower levels of violent socialization of children and greater levels of hostility toward men.

From these three nonexperimental methods we learned a great deal about behavior. A major advantage of a correlational design is the ability to study multiple variables at one time in a very economical manner. Such was the case with both of the correlational studies. In these studies the researchers were able to test somewhat complicated models of the relationship between variables as suggested by previous research. The use of path analysis by Szymanski and Henning (2007) was very advantageous. The use of HLM allowed Hines (2007) to examine both individual difference and cultural variables in one model. However, we still cannot determine that these relationships are causal. The Barbuto study (Barbuto et al., 2007) had much ecological validity in that it studied behaviors in the context in which they occurred, and it included a larger range of behaviors than could have been studied in an experimental setting. Thus, although these studies lack the internal validity of experiments, they provide us with much information about the relationship between variables.

Longitudinal Studies

Longitudinal studies have at least three advantages over cross-sectional, correlational designs. First, these studies allow researchers to track developmental pathways and to describe both stability and change over time. Second, because each participant provides multiple data points, individual differences in development can be examined. Such individual differences might reflect genetic or biochemical differences, personality characteristics, or life events. Third, the prospective nature of

longitudinal designs often permits the establishment of temporal precedence of one variable over another. This is the first step in establishing causal relationships. All three of these advantages are evident in the selected examples of studies of status, objectification, and sexual violence.

In their study of gender role attitudes and careers, Corrigan and Konrad (2007) employed 10 years of data from a national survey. The emphasis in this study was to evaluate two competing theoretical perspectives by ascertaining whether late adolescent gender roles predicted adult earnings and work hours as well as later gender role, or whether work hours and earnings as well as marriage and children predicted later gender role. The former temporal order would indicate a stable gender role that influences decisions across at least early adulthood. The latter order would indicate that gender role is adapted to fit the demands and opportunities of adult experiences and roles. This is the type of question that longitudinal, but not cross-sectional, data can address. The researchers used moderated hierarchical regression analysis to evaluate their hypotheses. Their sample was large enough to permit them to generate separate equations for men and women. They did find evidence of gender stability for women, such that women with earlier egalitarian gender role worked more hours and earned more money. For women, having children, but not being married, reduced egalitarian gender roles, whereas earlier work hours increased egalitarian roles. Men's gender role was not affected by marriage or the presence of children.

Grabe et al. (2007) examined the temporal relationships of depression and objectification in adolescents. Their first round of data was collected when the children were in fifth grade, and the second wave was collected when they were seventh graders. The fifth-grade data collection allowed the researchers to examine depression and objectification before the previously established emergence of gender differences in depression around age 14 (e.g., Wichstrom, 1999). The findings indicate that girls engaged in more surveillance and body shame than boys did even in fifth grade, but gender differences in depression were not evident until seventh grade. Thus, the gender difference in objectification predated the gender difference in depression. Furthermore, the researchers used SEM to evaluate whether seventh-grade body shame and rumination mediated the relationship between fifth-grade self-surveillance and seventh-grade depression. Although cross-sectional data would have permitted a mediational analysis, only longitudinal data can evaluate whether the hypothesized *developmental* pathways fit the data. For girls, both mediators were significant, whereas for boys there was no significant relationship between fifth-grade surveillance and seventh-grade depression, so a mediation test was not particularly meaningful. The authors noted that self-surveillance was related to body shame but not to rumination. These findings are interesting for two reasons. First, in line with objectification theory, self-surveillance did predict rumination and depression among the girls. Second, the data suggest that self-surveillance is not only more common among girls than among boys, but it also may carry different implications for the genders.

Finally, McMullin, Wirth, and White (2007) investigated the effects of sexual violence on the gendered personality attributes of agency and communion. Specifically, they evaluated whether these characteristics are stable or whether they were modified following an experience of sexual violence. Thus, this study demonstrates the longitudinal advantages of examining developmental trends as well as individual differences. This 5-year study compared a group of victims to a group of non-victims over time using latent growth modeling (LGM). This allowed the researchers to evaluate whether there was stability or linear change in these gender attributes and whether change varied as a function of sexual violence experiences. Multiple models were tested. The results indicated that sexual victimization may lead to decreases in communion that may negatively affect close personal relationships; comparable decreases in communion were not evident among the nonvictimized women. Thus, the longitudinal approach provided powerful evidence that sexual victimization disrupts normal developmental processes.

Meta-analysis

The use of meta-analysis in gender research is not limited to examinations of gender differences. Researchers can compare two different groups (e.g., heterosexual women and lesbian women) on some kind of index or statistically summarize a correlational relationship across a variety of studies related to a gendered phenomenon. There were two meta-analyses in the 2007 data, and we reviewed them both as they are relevant to the research areas we chose to examine. Stuhlmacher, Citera, and Willis (2007) examined research on “virtual negotiation.” They pointed out that women’s social roles might lead them to be less successful in negotiations because they are not expected to persist in behavior to “get their way.” Thus, in a face-to-face negotiation, such as buying a car, men might have more success than women in negotiating a lower price because their social role allows them to persist and be dominant and hostile if necessary. Women who engage in such behavior might be disliked. The researchers argued that, if negotiation takes place over the internet or in some other “virtual” manner, it should relax social roles expectations. Under such conditions women might be able to persist in their negotiation and obtain better outcomes. They compiled all of the research on the success of negotiations in face-to-face interaction versus virtual interaction and examined this difference by gender of participants. Across all studies compiled, women exhibited more hostility in virtual negotiations than in face-to-face negotiations, but this was not true of men who were equally hostile in both types of negotiations. There was also a tendency for women to profit more in virtual negotiations than in face-to-face negotiations. This research supports the idea that social roles impact behavior in ways consistent with status and differences in expected social roles.

In the second meta-analysis we examined, Murnen and Kohlman (2007) statistically summarized the available data on the relationship between athletic team membership and fraternity membership on indices related to sexual aggression. It was argued that traditional gender roles support the existence of sexual violence, and there are particular all-male groups associated with “hypermasculine” or “hostile” masculine beliefs that have been associated with sexual violence (Murnen, Wright, & Kaluzny, 2002). It was found that college athletes had higher hypermasculinity scores, exhibited greater rape myth acceptance, and gave higher self-report of sexual aggression than did college men who were not athletes. Similar (but smaller) relationships were found in studies that compared fraternity men to nonfraternity men.

The advantage of a meta-analysis is that it can summarize a large body of research with precise, quantitative indexes. Meta-analysis can also test variation in the effect size across studies to see if it is related to variables as predicted by theory. For example, Murnen and Kohlman (2007) found heterogeneity in the fraternity status effect. Therefore, they did additional analyses to see if effect sizes were larger among older students than among younger students, and this was the case for the relationships between the fraternity status and the criterion variables, which suggests that fraternities might play a role in encouraging these attitudes among men. The internal validity of a meta-analysis is only as good as the studies that are involved in the analysis, although one can try to code the validity of the individual studies to see if the variation in effect size relates to validity. For example, Murnen and Kohlman (2007) found that, when the purpose of the study was disguised (e.g., questions about fraternity status and sexual aggression were some of many questions asked on an anonymous questionnaire), the effect sizes were sometimes larger than when the purpose of the study was more obvious. The external validity, and perhaps the construct validity, of meta-analysis is high because researchers can compare findings across different “persons, settings, treatments, and outcomes” (Shadish et al., 2002, p. 83). Often the meta-analysis can point to fruitful future research directions. For example, based on the virtual negotiation meta-analysis, one might want to design an experiment to manipulate social pressure in various settings to see how it affects gender differences in negotiation tactics and outcomes.

Content Analysis

Our final analysis concerns the procedure of content analysis. There were quite a few examples of content analyses in the research we reviewed. We examined two studies that relate to the theories of interest. Schmader, Whitehead, and Wysocki (2007) conducted an analysis related to gender and power when they examined actual letters of recommendation for male and female applicants for faculty positions in chemistry and biochemistry at a large research university. In these male-dominated, high-status fields one might expect men to be described more favorably than women. The researchers used text analysis software to look for evidence of bias in terms of language use. They hypothesized that letters for female applicants compared to male applicants would be shorter and that they would contain more negative and fewer positive words. They examined the effects of gender of applicant and position type (chemistry vs. biochemistry) on words used and found more differences related to position type than to gender. One gender difference that was statistically significant was that more male than female applicants were described with more “standout” adjectives, such as “outstanding, unique, and exceptional,” even when the effects of the qualification of the applicants were controlled. We can only speculate about the implications of the findings, but the data from this content analysis add to a richer understanding of the text that was examined.

Another content analysis concerned the portrayal of male and female characters on video game covers (Burgess, Stermer, & Burgess, 2007). Many different forms of media have been examined to determine how female and male characters are differentially portrayed. The authors argued that the domain of video games is important given that it is one of the most prevalent forms of entertainment for children. They examined the human characters portrayed across 225 video game covers ($N = 173$ human characters). Some of the highlights of their findings were that male characters were more likely than female characters to be portrayed, and, when female characters were portrayed, they were more likely to be physically objectified. For example, almost one-half of the female characters (46%) were portrayed as “busty” or “super-busty,” whereas about 25% of the male characters were portrayed as “muscular” or “super-muscular.” Finally, male characters were four times more likely than female characters to be portrayed as violent. These data add to the descriptive data on the prevalence of gender stereotypes and the objectification of women.

Summary

Thus, all of the different quantitative methods that have been reviewed contribute something to our understanding of gender. It is likely that all types of methods are necessary to get a full picture of complicated gender-related behaviors. For example, in regard to objectification theory, experimental researchers have examined specific links in the model. For example, self-objectification has been manipulated in a handful of studies and related to other constructs such as body shame and eating-disordered attitudes. The correlational research has allowed us to look at multiple variables at the same time and examine proposed models, particularly when multivariate techniques, including SEM, are used. Meta-analytic results have shown that the media are a source of objectification linked to body dissatisfaction in both experimental (Groesz, Levine, & Murnen, 2002) and correlational studies (Murnen, Levine, Smith, & Groesz, 2007). In a longitudinal study Aubrey (2006) studied college women over the time period of a year and found that exposure to sexually objectifying media at Time 1 predicted increases in trait self-objectification at Time 2. Further, though, she found that Time 1 trait self-objectification predicted decreased exposure to sexually objectifying media at Time 2. (Internalization of the thin ideal and global self-esteem moderated

these relationships.) These data show the complexity of the relationship between variables that can be studied in multivariate longitudinal designs. Research on objectification theory has expanded to determine whether some of the predictions can explain body image issues in men (Moradi & Huang, 2008). For example, in the 2007 journal articles we examined, one study concerned the effects of exposure to objectified media images on men (Johnson, McCreary, & Mills, 2007), and another provided evidence that gay men might be more vulnerable to body image ideals than heterosexual men are (Tiggemann, Martins, & Kirkbride, 2007). The results from these many different studies that have employed varied methodologies show that moving beyond the initial experimental data has allowed us to expand our understanding of the relationship between objectification and body image issues.

Conclusion

The research we examined in three journals published in 2007 used a variety of techniques to examine gender-related behavior. More than 85% of the studies used a quantitative approach. Although the experiment has been a favored quantitative approach in psychology due to its association with high internal validity, it was only used in about 20% of the published articles examined. Gender is a complex variable, and the various processes associated with gender are not easy to manipulate in experiments, so researchers often use other approaches. We evaluated representative research with various types of research designs including correlational, longitudinal, content analysis, and meta-analysis. We examined issues of internal validity in the research we examined, but also external validity, statistical validity, construct validity, and hypothesis validity. When a variable cannot be manipulated due to ethical, practical, or validity issues, other approaches can be very fruitful. Correlational designs can more easily examine multiple variables at one time, and specific models can be tested. Further, if the data are longitudinal, temporal change can be examined. Meta-analysis can be used to summarize the results of many studies and perhaps to test hypotheses when the relationship between variables is not homogeneous across the body of research. Content analysis can provide descriptive data concerning how phenomena are represented in the “real world.” We need multiple approaches to forward the goals of science to describe, predict, determine causation, and explain the relationship between variables that are associated with gender-related behavior.

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Chapter 6

Qualitative Inquiry in Gender Studies

Mary M. Gergen

This type of work is not for the “fainthearted,” and it often requires attention to detail, perseverance in the face of chaos, and a knack for tolerating ambiguity. . . . The journey is a site where the personal and the political merge, and multiple truths are discovered and voiced where there had once been silence.

Sharlene Nagy Hesse-Biber (2007b, p. 348)

Qualitative inquiry is in the midst of a renaissance within the social sciences. Through it, gender researchers are engaged in some of the richest and most rewarding explorations of their careers. This bounty is the outcome of a host of historical convergences. Despite the hegemonic reign of quantitative inquiry as the queen of methods in many fields, critiques of this approach to research have been numerous, and many alternatives have been advanced (Harding, 1986, 2004; Hesse-Biber, 2007a; Holstein & Gubrium, 2008; Lather, 1991; Longino, 1993; Smith, 1990). Regarding research on gender issues, critiques have centered on the ways that traditional scientific methods have been sexist and homophobic (Bohan, 1992, 1996; Bohan & Russell, 1999; Cosgrove, 2003; M. Gergen, 1988). In the main, the critiques have centered on the relative exclusion of women in all facets of the research endeavor, the use of the “male” as the standard for humanness, the (false) claims of value neutrality in the research realm, and the assumption of heterosexuality as the healthy norm for humans.

Qualitative inquiry has also enticed scores of scholars who have found their disciplinary traditions narrow and are constraining to incorporate new forms of expression (e.g., Camic, Rhodes, & Yardley, 2003; Crawford & Kimmel, 1999). This engagement has not been without costs, as qualitative investigators have been warned that their research will not pass muster with granting agencies, gatekeepers on editorial boards, or promotion and tenure committees (Lykes & Stewart, 1986; Reinhartz, 1992). Yet, through persistence and creativity, they have often prevailed against the dominant hierarchies. They have discovered in qualitative research, space for creative inquiry, societal critique, and political activism, as well as opportunities for literary, artistic, and dramatic expressions (M. Gergen, 2001; Russell & Bohan, 1999; Weis & Fine, 2004). Further, critical theoretical and meta-theoretical debates that are sweeping across the intellectual world – variably indexed as post-foundational, post-structural, post-Enlightenment, and postmodern – have also lent support to these challenges to the dominant epistemological terms of logical positivism (Ashworth, 2008; Gavey, 1989; K. J. Gergen, 2001; Leavy, 2007). These turbulent interchanges have produced profound challenges to the ways in which research on gender issues is understood and practiced.

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What Are Qualitative Methods?

Central Characteristics of Qualitative Methods

Within the social sciences, including psychology, the distinction between quantitative and qualitative methods has long prevailed. Qualitative methods have been considered a holistic form of inquiry in which the lives of various individuals or groups are framed, for example descriptions of the experience of being marginalized within a dominant group (Hooks, 2000). These modes of inquiry have tended to foster close, often non-hierarchical encounters between researchers and participants. In contrast, quantitative methods have been concerned with differences within a constricted aspect of people's lives, with the emphasis on "how much." Thus, a quantitative question might be: How much greater is one group's average score on a personality scale compared to another's? To facilitate the answer to this query, statistical analysis has served as a handmaiden of quantitative research. The promise of quantitative research is that, under certain methodological conditions, including agreed-upon measures of reliability and validity, cause-effect relationships can be discovered.

Qualitative methods have emphasized a depth approach to understanding, in which a rich or "thick" description of the topic is involved (Geertz, 1994). They encourage complexity over simplicity. This approach diverges from the practice within quantitative methods of reducing complexity to simplicity in order to facilitate statistical analysis, as it often requires that the verbal reports of the participants retain their integrity; thus, forms of expression are allowed to remain intact. Various forms of inquiry deal with the entirety of the participants' contributions, without condensation.

Qualitative and quantitative methods often commence in the same manner, first with intuitive notions of how the world works and a curiosity about some unanswered questions. To answer them researchers often use such methods as interviews, observations in various settings, and self-reports in their work. In this sense, almost all quantitative work includes aspects of qualitative inquiry. The ways in which the research questions are framed and the data are gathered and analyzed separate the two forms. Generally, the analytical form of qualitative research is interpretive; the researcher adds a level of meaning to that provided by the respondent, but during the analysis the researcher is open to alternative interpretations. In addition, the presence of the researcher within the process is not hidden from view. The participants are fully informed of the researchers' plans, and are often treated as co-constructors of the research. With quantitative research, however, the emphasis is on presenting the outcomes as derived from objective methods, which are value-neutral, impersonal, and as sound as statistical procedures declare them to be. The researchers attempt to resist alternative explanations of the outcomes of the research through counter-arguments against them. The research is designed to move toward some sense of truth, and research agendas are designed to progress from one stage to a higher one, as facts are accumulated. In Thomas Kuhn's (1970) words, researchers are problem-solving within an established framework of a paradigm.

Characteristics of Qualitative Inquiry in Gender Research that Have Challenged the Mainstream

In order to appreciate the potentials of qualitative methods in the area of gender research, it is helpful to understand the importance of certain attributes of this research. Within five areas, in particular, great challenges have been raised to traditional ideas of research. They are delineated in more detail below. These five are: situated knowledge; value-based research; researcher/researched/reader relationships; representation; and, reflexivity.

Situated Knowledge

In contrast to the view that Truth is universal and waiting to be discovered, qualitative researchers tend to see “truth” as located within particular communities at particular times (cf. Landrine, 1995). There is no overarching or transcendental truth, or as Donna Haraway (1988, p. 581) argued: There is no “God’s Eye View.” Within feminist research traditions, the epistemological position that took up this notion of situated truth telling is called the “feminist standpoint position” (Harding, 1986; Naples, 2003). The basic premise of this view is that knowledge is always from a particular perspective, that is, it is dependent upon one’s specific location in the world; for some feminists, women’s traditional roles in society as homemakers and mothers allowed them a particularly authentic view of knowledge (Hartsock, 1983, 1987). This approach to gender studies, which arose in the 1980s, challenged methods of doing research that made claims to discovering universal truths and general laws. Instead they argued that these were only male-oriented truths (Fonow & Cook, 1991). Within the U.S., especially, the work of Carol Gilligan and her colleagues (Belenky, Clinchy, Goldberger, & Tarule, 1986; Brown & Gilligan, 1992; Gilligan, Lyons & Hammer, 1990; Gilligan, Rogers, & Tolman, 1991; Jack, 1991) offered exemplars of qualitative methods used to understand women in a new framework, as did the feminist scholars at the Stone Center at Wellesley College (Jordan, Kaplan, Miller, Stiver, & Surry, 1991; Miller, 1976). Among the most well-known books in this tradition are *In a Different Voice* (Gilligan, 1982), *Women’s Ways of Knowing* (Belenky et al., 1986) and *Toward a New Psychology of Women* (Miller, 1976). In Volume 18 of *Feminism & Psychology* (2008), a special section titled *Reflections on the Work of Feminist Theorist Jean Baker Miller* edited by M. Suzanne Zeedyk and Ronni M. Greenwood (2008) indicates the powerful influence that Miller continues to have within this domain of gender research.

The dominant discourse of the feminist standpoint position created resistance among minority groups, Black feminists in particular, who challenged the control of White, upper middle-class academic women by claiming that the standpoint position they represented did not address the situated realities of oppressed groups (Smith, 1987). The standpoint from which women’s knowledge was being described was not as universal as some authors suggested. Patricia Hill Collins (1989, 1991, 2000), in particular, argued that subjugated groups, including African American women, Asian American women, Latina lesbians, and others with distinctive viewpoints, could develop truth claims that would approach objective understandings of their social situations based on their own experiences. The notion of situated knowledge has also been a powerful position useful to researchers who take phenomenological and socialist approaches (Hartsock, 1987; Naples, 2003). Each of these groups emphasizes the truth of women in their various societal conditions, who should be able to “tell it like it is” against the hegemonic truths proclaimed by the dominant group of traditional researchers. Methods of inquiry that have been especially valued in this tradition include the in-depth interview, narrative study, focus groups, and self-narrated reports.

Value-Basis of Research

Because much of gender research is allied with a political agenda in that the practitioners not only are interested in developing knowledge claims about a particular issue, but also in enacting and encouraging social change agendas, it is openly value-based (Hurtaldo, 2000; Mohanty, 1995, 2003; Olesen, 2000; Palmary, 2006). There are certain preferred outcomes and actions openly advanced within research projects, such as equal rights for women in general, as well as for gay men and lesbians, transgendered people, old people, and other oppressed groups (Kessler, 1998; Rosenfeld, 2003). This stance is in sharp contrast with traditional scientific notions that researchers should be value-neutral and agnostic in terms of the outcomes of their research (cf. critiques by Baker, 2006;

Bhavnani, 1993; Lather, 1993; Marshall, 1986; Reinharz, 1992; Roberts, 1981). As editors Norman Denzin and Yvonne Lincoln (1994) radically proposed in the first edition of their *Handbook of Qualitative Methods*, “A poststructural social science project seeks its external grounding not in science. . .but rather in a commitment to a post-Marxism and a feminism position. . .A good text is one that invokes these commitments. A good text exposes how race, class, and gender work their ways in the concrete lives of interacting individuals” (p. 579).

Not all gender researchers are as openly encouraging of value-based research as Denzin and Lincoln are, especially if specific values are prominent in the exposition of the research. Some gender researchers worry that cementing a political agenda to the inquiry process threatens to create a new form of marginalization (Eagly, 1995). If one wears one’s heart on one’s sleeve too boldly, one’s value as a researcher may be undermined because the outcomes of the research are not trustworthy. The freedom to innovate and risk divergent forms of research that are value-based has also been seen as a limit in that not all qualitative research has been taken seriously or cited within the larger field. Well-known gender scholar, Jeanne Marecek (2003, p. 1) has called the enactment of this type of research “dancing through minefields.” Although it seems obvious to many that all research is value-based, how boldly or unconventionally the values are advocated within the research project may determine how rhetorically successful it is (Unger, 1983). However, in important ways, there is no escape from a value-orientation, regardless of methodological choices, or so qualitative researchers argue. For example, psychologists may study the problem of adolescent pregnancy in order to discover how to reduce the incidence of early age childbirths. Regardless of whether the inquiry methods are qualitative or quantitative, values related to some ideal of motherhood are present.

Another aspect of the concern with values is the idea that all research should be sensitive to ethical considerations. As long as researchers are engaged in obtaining and reporting their interpretations of the lives of others, questions of what is ethically appropriate occur (Brinkmann & Kvale, 2008; Christians, 2000; Fine, Weis, Weseen, & Wong, 2000). Issues of confidentiality, trust, authority, and sensitivity to others’ needs for respect are raised. Gender researchers of all types have been especially sensitive to ethical issues because they recognize the significance of the researcher–researched relationship in the inquiry process. Review boards have been established at universities and other research institutions in order to judge the ethical standards of research from an external perspective, but criticisms have been raised about the nature of the review boards and their practices, for example, controlling research practices without training in the discipline involved (Buch & Staller, 2007). However, it is important to underscore that there is a strong tradition in qualitative inquiry circles (especially those dealing with gender issues) to place a high value on addressing ethical questions (Ribbens & Edwards, 1998). Of special concern is how to bridge the differences between Western researchers and those from other parts of the world (Macloud & Bhatia, 2008; Mohanty, 1995, 2003; Patai, 1991; L. Smith, 1999) or between researchers who are bound by legal and ethical constraints and participants who violate them. For example, as a researcher, if you witness some form of abuse, you may have to balance “confidentiality agreements you’ve made with those you are studying, legal reporting requirements . . . and your own ethical stance” (Buch & Staller, 2007, p. 204).

Researcher/Researched/Reader Relationship

In contrast to most quantitative research in which there is a claim of affective neutrality in the relationship between the researcher and the research, relationships between gender researchers and study participants in a qualitative inquiry are usually of longer duration, more intimate, and friendlier. Qualitative researchers posit that there is no such thing as an encounter between humans that is

not relational (M. Gergen, 1988). How the relationship is to be instantiated is of concern to these researchers. Efforts are generally made to minimize the power differences between the research participants and the researchers and to find ways to reach some form of equilibrium (Taylor, 1998; Way, 2001). Such research might involve collaboration with entire families and sometimes with whole communities. There is often a high degree of self-disclosure, both for the participants and for the researchers, as the research unfolds. For example, in their innovative, qualitative research, Patti Lather and Chris Smithies (1997) worked over a long period of time in a support group composed of women with the AIDS virus. The resulting volume on these women's lives includes the women's own narratives, along with anything they wished to share with the world about their conditions. Rather than obscuring their own positions as part of the group, the investigators devoted special sections of the book to their own experiences and understandings, as well as to scientific reports about the nature of the virus. Finally, the entire volume was submitted to the participants for their comments, so that the participants could affirm the ways in which their contributions were to appear. In each facet of the research, concerns about the nature of the relationships between Lather and Smithies and the women in the group were paramount.

A research project by Karen Fox (1996) involved interviews of a man (who was in prison for sexually abusing his granddaughter) and his step-daughter (who was also abused by this man). The research report was written in three columns, and recreated a conversational form, in which the three involved participants, which included Fox, "spoke" to one another, with words taken from the interviews. Each person's words were confined to one column, and it read much like a stage drama. Fox allowed both parties an opportunity to reflect on the other's words. Fox herself had experienced childhood abuse, and she too took sides and expressed her opinions in the text of the pseudo-conversation. The results allow the reader to gain a broader understanding of the abuser and those who had been abused.

Another illustration of this sharing of positions is the work of three researchers, who were also the objects of their mutual study (Ellis, Kiesinger, & Tillmann-Healy, 1997). For 5 months the trio met in various places to discuss the topic of bulimia. Two of the researchers had long histories of eating disorders. The culmination of their research was a jointly written and edited account, in which they described a dinner at an elegant restaurant. This setting was provocative because of their particular involvements with food, and it permitted complex relations to be treated. The text of their combined efforts also revealed the private reflections and active engagement of each within the relational narrative.

One of the dangers of this type of connection between the parties to a research project is that there often seems to be an implicit promise to the participants that the relational ties that are established during the project will continue after it is ended. There is a danger that participants will feel abandoned after the project is over. As Judith Stacey (1991, p. 107) described it, "The greater the intimacy, the apparent mutuality of the researcher/ researched relationship, the greater the danger." There are also issues of confidentiality that often become difficult to manage. How does one protect the "secrets" that have been revealed in the name of friendship to someone whose task it is to tell them? How does one balance the diverse obligations of friendship and scholarship without betraying either (Akers, Barry, & Esseveld, 1996)? Many researchers struggle with this issue. A special feature titled *Secrecy and Silence in Research* (Gill & Flood, 2008) in *Feminism & Psychology* provides consideration of many aspects of this issue. For example, Heidi Nast (2008) who studied the life of royal concubines in a 500-year-old palace in northern Nigeria, wrote about her difficulties maintaining relationships with the people there and how she was thwarted in her efforts to gain access to the spirit house by people who feared her power and disliked her. Researchers have also found that as their relationships change over time within a research setting, their participants also change. What was true of them at the beginning of a study later becomes false. Researchers shift in their

interpretations of events as their interactions become altered (M. Gergen & Davis, 2003; Reinharz & Chase, 2002; Williams & Lykes, 2003)

Rarely has the nature of scientific relatedness extended to the audience for the research. However, among gender researchers the effort has often been made to engage participants and the public, readers and reviewers, in a manner that may include social change, political activism, and interpersonal rapport (Fine & Torre, 2008). For example, *Standing Ovation: Performing Social Science Research about Cancer*, a play about women with breast cancer, enacted by women with metastasized cancer and their therapists, was produced in an effort to train medical staff in ways of engaging with sick people in a more humane manner (Gray & Sinding, 2002). The major thrust of this research relationship was designed to appeal to the audience.

Representation: Inclusivity and Its Limits

Given a plethora of options for inquiry, the nature of representation becomes a politically charged issue in qualitative research. As Denzin (2000, p. 898) put it, "Writing is not an innocent practice." Two central issues are of major importance for gender researchers: How does one represent marginalized groups, the focus of one's study, and what are the limits in so doing? How does one speak for others, if they are from different cultural worlds, especially if they have not had the opportunity to project their own visions in their own terms? Increasing resistance among those subjected to social science inquiry has intensified, perhaps because of the expansion of Western cultural influences in local areas around the world. Feminists were among the first to issue complaints, both for omissions and commissions in regard to characterizations of women in the research literature (Bohan, 1992; Cannon, Higginbotham, & Leung, 1991; Opie, 1992; Sherif, 1979). Lisa Cosgrove (2006) has written about her research on the "disorder" of premenstrual syndrome (PMS): "One of the most striking aspects of our study was that PMS discourse has gained such cultural currency that women expect to have PMS" (p. 99). An alternative explanation is that medical/pharmaceutical industries have created this "disorder" for their own economic gain. "PMS" also supports a feminine stereotype. From Cosgrove's perspective, women are persuaded that irritability and anger are inauthentic feelings caused by hormonal changes, and, thus, are not true reactions to offenses; these feelings are not a violation of the feminine norm that requires a serene comportment. Nice girls do not get angry! Cosgrove's work reveals the representational power of public media to characterize young women, particularly.

Minority group members have become increasingly aware that the longstanding critiques of the public media's distortion or misrepresentation of their lives apply no less to human science research (Gamson, 2000). The psychiatric establishment was among the first professional group to be targeted when it was forced by gay activists to withdraw homosexuality from the diagnostic manual of mental illness. African Americans angered by a social science literature that depicts them as unintelligent or criminal have delivered a similar message. The elderly, AIDS victims, psychiatric "survivors," and many others have joined together to question the rights of scientists to represent another group's experience, actions, and/or traditions (Collins, 1989, 2000).

Michel Foucault's (1979, 1980) disquisitions on power/knowledge have figured centrally in these critiques. For Foucault, knowledge-generating disciplines – including the social sciences – function as sources of authority, and as their descriptions, explanations, and diagnoses are disseminated throughout the culture, they enlarge the potential realm of subjugation. The PMS example cited earlier is an example of this. In gerontological circles, evidence suggests that, as men age, they increasingly discipline their bodies through diet and exercise. They have been given the message that everyone who is not fit or healthy at any age is regarded as stupid or immoral (Slevin, 2008). The implications of such arguments are sobering to the research community. Increasingly painful

questions must be confronted: To what extent does research convert the common sense, unexamined realities of culture to disciplinary discourse? In what ways does research empower the discipline as opposed to those under study? Does research serve agencies of surveillance, increasing their capacities of control over the research “subject?”

In light of this Foucaultian argument, qualitative researchers ask: What right does any person or group have to represent (depict, explain) the lives of others? This question is one that has been of central concern within gender studies. At one extreme it could be argued that no one can speak for another because there are always significant differences separating one person from another, and the results of any research serve to instantiate the interpretation of the researchers. This stance, of course, would effectively halt qualitative research of any kind. However, on the other side of the argument, there would be no limitations as to how a researcher could characterize others, no matter how different they were from each other. Difference, from this position is the source of new knowledge. This tension is unresolved, but it is a worthy concern for ethically engaged researchers.

Reflexivity

The notion of reflexivity refers to the researchers’ reflections on their theoretical orientations, personal investments, and political complicities as they engage in a specific research project in a particular historical time period in a particular place (Finlay, 2002, 2005; Macleod & Bhatia, 2008; Morawski, 1994). So that readers will be aware, investigators often reveal their historical and geographic situatedness, their personal investments in the research, various biases they bring to the work, their surprises and “undoings” in the process of the research endeavor, the ways in which their choice of literary tropes lend rhetorical force to the research report, and/or the ways in which they have avoided or suppressed certain points of view (cf. Behar, 1996; Kiesinger, 1998). As Katriona Macloud and Sunil Bhatia (2008, p. 579) suggested, “Our mindfulness of our politics of location in our research has to work toward disclosing and making visible those assumptions that are intractably embedded in our autobiographical trajectories of class, race, and the location of our work in either the ‘First World’ or ‘Third World’ academies.”

Reflexivity has also been tied to the feminist practices of “consciousness raising” or enhancing “self-awareness.” For example, Collins’ (1991) awareness of marginal status as the “outsider within” provided the Black female intellectual with a unique Black feminist standpoint from which to analyze self, family, and society. The need for reflexivity is paramount in work that crosses from the Western industrial base to the postcolonial world.

In the act of reflexivity the author ultimately asks the reader to accept the text as authentic – that is, as a conscientious effort to “tell the truth” about the making of the account. Yet, each telling is itself situated in a particular place and time and within a particular discursive tradition. We thus approach the threshold of an infinite regress of reflections on reflection. Reflexivity is relative and partial, but a useful qualifying act in presenting one’s research work to others (Fonow & Cook, 1991; M. Gergen & Davis, 2003).

Diverse Approaches to Qualitative Methods

At present there are various ways to define gender researchers who engage in qualitative work. For many, qualitative research resonates with an empiricist or “scientific” approach, which emphasizes quantitative work; others consider qualitative research to be incompatible with quantitative work. The latter group tends to affiliate with constructivist/constructionist, critical, and interpretive perspectives (J. Smith, 2003). In the majority are those who accept eclectic approaches; they consider

qualitative methods appropriate when used either alone or in a “mixed methods” approach (Fine et al., 2003; Griffin & Phoenix, 1994; Jayaratne & Stewart, 1991; Taylor & Rupp, 1991; Yardley & Bishop, 2008).

Empiricist Perspective

From an empiricist perspective, qualitative methods are very useful in several ways. It is often through observational research that curiosity is raised and preliminary notions about the phenomenon are developed. From these early qualitative investigations, new theories, and potential hypotheses, which can be tested empirically, are derived. During the data collection period, qualitative methods may co-mingle with quantitative ones as researchers combine measures such as tests, scales, multiple-choice questions, experimental manipulations, and demographic statistics with open-ended questions, interviews, participant narratives, focus groups, and reflections on self and others. During data analysis, the qualitative inquiry is used to enhance, support, and explain the statistical outcomes. For example, Q-sort methodology combines both strategies (Kitzinger, 1987). A recent example of a mixed method study involved research that explored differences between American and German mothers and grandmothers in terms of their ethnotheories of child rearing (Keller & Demuth, 2006). Mothers and grandmothers were interviewed about their childcare practices and also filled out questionnaires. The researchers combined the two approaches in their analysis. In general, quantitative researchers use qualitative material to enhance presentations of research results. Stories are employed to give concrete examples of a phenomenon and to interest readers in the results.

There is also an increasing recognition that formulating various hypotheses, observations, results, discussions, and conclusions is essentially an exercise in interpretation. From this perspective, research labeled as quantitative is inextricably entwined with qualitative forms of inquiry (Behar & Gordon, 1995; M. Gergen, Chrisler, & LoCicero, 1999; Visweswaran, 1994).

Constructionist Perspective

Within this framework, several aspects of qualitative inquiry create issues of incompatibility with quantitative research. As mentioned above, the relationship between the researcher and the researched is highly significant and value-laden, as opposed to neutral. Qualitative methods support the creation of open and honest liaisons with participant populations. In contrast to experimental methods, in which participants are often deceived about the purposes of the research, in qualitative research it is often extremely important that participants are not only aware of the nature of the research, but form a partnership with the researchers in doing the work. The point of the inclusive nature of the research is both an ethical choice and a means for gaining a depth of understanding that could not be gained from more directed and superficial means, for example, questionnaires, scales, or experimental manipulation.

Qualitative inquiry within the constructionist perspective also expands the range of discursive possibilities for representing social science research, particularly the replacement of traditional realist discourse with forms of writing cast in opposition to “truth telling.” For example, the investigator’s descriptions may take the form of fiction, poetry, or autobiographical invention. The use of literary styling signals the reader that the account does not function as a map of the world (and indeed, that the mapping metaphor is flawed), but as an interpretive activity addressed to a community of interlocutors. For many qualitative researchers, such writing is especially appealing because it offers a greater expressive range and an opportunity to reach audiences outside the academy (Diversi,

1998; Jones, 1998; Richardson, 1997, 2000; Rinehart, 1998) and thus to accomplish significant political work (Austin, 1996; Behar & Gordon, 1995). Claims that these forms are not appropriate for scientific representations are prevalent.

In the qualitative approach represented by constructionists, researchers often strive to include multiple voices within the research process in order to reduce the influence of the researcher over the outcome of the research. Some researchers also work collectively with their participants so that their conclusions do not eradicate minority views. Multiple voicing is especially promising in its capacity to provide a potentially rich array of interpretations or perspectives (Anderson, 1997; Hertz, 1996; Lather & Smithies, 1997; Reinharz, 1992; Reinharz & Chase, 2002).

Grounded Theory Approach to Doing Qualitative Research

One of the most well-known forms of qualitative research is the grounded theory approach. Although it is not so much a special method as a theoretical grounds for doing research, it has played a central role in gender research; today it has come to occupy a space between the older empirical position and the newer constructionist perspective. Derived from the theoretical work of Barney Glaser and Anselm Strauss (1967), the approach has been basically inductive, that is, the outcomes of the research are described as emanating from the participants, not from the predispositions of the researchers (Charmaz, 2000; Henwood & Pidgeon, 2003; Potter, 2003; Straus & Corbin, 1990). The typical research plan involves interviewing participants or collecting their narratives, coding the data, and then looking for outstanding themes that emerge from the data (Mayring, 2000). From this perspective the “data speak for themselves.” This orientation supports an empirical tradition. Today, researchers who do grounded theory work tend to emphasize a more constructionist approach; they recognize that researchers are heavily implicated in the research process as they design the project, conduct it, and interpret their findings (Charmaz, 2008). One of the advantages of this type of research is that it acknowledges the centrality of the participants in the formation of the conclusions; the researcher is positioned more as a handmaiden and less as the director of the research process (Bergman & Hallberg, 2005). In sum, the newest iteration of “grounded theory” research has left the ground, so to speak, and is now hovering in mid-air, as the place of the researcher in constructing the grounds for the research has been acknowledged; at the same time, the words of the participants are given central consideration.

Major Methods in the Qualitative Study of Gender

In the remainder of the chapter the various types of qualitative methods most frequently used by gender researchers are described briefly. These methods are arrayed in three groupings, along a dimension of the more traditional to the more avant-garde. Each of the modes of inquiry, however, has been influenced by recent developments in scientific worldviews. Finally considerations about the future potentials of qualitative research for gender studies are raised.

Case Study

The case study has a long tradition in gender psychology, and it is one of the most familiar examples of qualitative research. The major goal of this type of research is to delve deeply into the complexities of a single entity, most often a person, but it can also be a group of people, or an event that

has social and interpersonal consequences, such as a disaster (Creswell, 2003; Green-Powell, 1997; Kessler & McKenna, 1978; McHugh et al., 2008; Stake, 1995). To illustrate, Tara-Leigh McHugh and colleagues studied four 15-year-old girls as they talked about their bodies. Each girl's comments formed a case study, which revealed the distinct notions of the body for each girl. In the case study, the interpretive skills of the researcher are paramount; yet, it is recognized that the outcomes are always open to multiple views (Patton, 2002). When the case study involves one's own experiences, there is a crossover between what traditionally is called the case study and a more recent development of autoethnography. (See the section under ethnography for more examples of this approach to the case study.)

The strength of the case study is the depth of information revealed about the subject of inquiry. Case study has been especially important in clinical research and practice. More recently, a goal of the case study in gender research has been to advance notions of social justice and to raise awareness about people who have been previously silenced within the culture. Case studies have also been of value in mixed methods research in that they may give a richer texture or a clearer picture to otherwise uninteresting or very complicated statistical reports. The story of a person who has been affected in some manner may have more impact on an audience than a statistical test that summarizes the results of 100 participants.

The most frequent criticisms of case studies are that they are lacking in generalizability and that they are open to a variety of interpretations on the part of the researcher. The specific situatedness of the researcher (the age, ethnicity, gender, or value-orientation of the investigator) may have important implications for how the case is construed by the researcher. Participants are affected by differences among researchers, as well. For example, survivors from Hurricane Katrina from the 9th Ward in New Orleans may be more willing to share tales of grief with a researcher who seems similar to them than they would with an official researcher from the U.S. Department of Homeland Security.

Interviews

A second major means of long standing in qualitative inquiry is the interview. Interviews have featured in diverse forms of practice, but should be highlighted specifically as a mode of gender research. In contemporary gender research, interviews have taken on a liberatory function. This is exemplified in the description Sharlene Hesse-Biber (2007c, pp. 113–114) has given of her work: "I am interested in getting at the subjugated knowledge of the diversity of women's realities that often lie hidden and unarticulated. I am asking questions and exploring issues that are of particular concern to women's lives. I am interested in issues of social change and social justice for women and other oppressed groups. . . . I am aware of the nature of my relationship to those whom I interview, careful to understand my particular personal and research standpoints and what role I play in the interview process in terms of my power and authority over the interview situation." Through her perspective we see that the task of interviewing is complex, involves issues of power and participation, and can be helpful in advocating for social justice and advancing social change.

Researchers interested in women's lives are among the most active advocates of interviewing, but gender researchers studying men's lives are likely to use this format as well. Issues of masculinity are often the primary topic of research. For example, Pierrette Hondagneu-Sotelo and Michael Messner (1994) interviewed Mexican immigrant men in order to describe how they are demasculinized by their status in the U.S.; interview research by Thomas J. Gerschick and Adam Stephen Miller (1994) highlighted issues of masculinity among men with physical disabilities; and, in interviews by Messner (1992), topics of power, intimacy, and sexuality among male athletes were revealed.

Michael Kimmel's (2008) book, *Guyland*, involved 400 interviews with young men, which led him to conclude that young men fail to make commitments to adult gender roles because they are entrenched in an adolescent world of competition and masculinity performance. These are only a few examples of how interviews have been used to study diverse gender issues.

Interviews may be unstructured, following the inclinations of the person interviewed, within the range of topics that researcher wishes to explore, or they may be more superficial and direct, with specific questions asked in a particular order. Often, when interviews are conducted in an open and undirected fashion they are called "in-depth" interviews to signal that they are developed to answer questions about deeply significant and personal issues (Bergman & Hallberg, 2005). However, not all interviews are designed for this purpose; although qualitative researchers tend to be more inclined to use an open format, they are also less likely to use quantitative means for assessing the outcomes statistically and are more interested in the specific responses of each particular person.

Analysis of interviews is challenging, and there are various approaches to doing so (Tolman & Brydon-Miller, 2001). In an approach called the "Listening Guide: A Voice-Centered Relational Model," the researchers read and reread the interview transcripts several times and use different coding goals for each reading. For example, in one pass through the transcript, the researcher may "listen" for the "plot," that is, for the stories being told. Another pass allows the researcher to "listen" especially for the manner in which the researcher responds to the stories (Gilligan, Spencer, Weinberg, & Bertsch, 2003).

Interviews are highly valued in the qualitative inquiry realm, but there are limits as well as advantages to their use. Interviews are valuable means for gaining the articulations of diverse groups of people on issues of significance. However, the nature of the communication depends upon the subtle and shifting relationship between the researcher and the respondents, as well as the choice of respondents as a group. It is possible, for example, that over time, the position of the respondent may shift on a specific topic as the person feels more trusting or confident in the researcher's actions. The position of the researcher may also change as one is exposed to the views of the respondents (Flick, 2000; Franklin, 1997; Reinharz & Chase, 2002). Respondents are likely to hold multiple views on a topic, and the desire to appear consistent may block multiple perspectives from being expressed. Some points of view are more socially acceptable than others, and "acceptable" views are more likely to be forthcoming in an interview (M. Gergen & Davis, 2003).

Focus Groups

Focus groups have traditionally been associated with market research and organizational development. However, in recent years, they have become a mode of inquiry within the field of gender studies (Leavy, 2007). In focus group inquiry, a group of respondents is brought together to explore a specific gender-related topic, for example, lesbian and gay parenting (Wilkinson, 2004, 2006). Two of the major purposes of focus group methods are to explore a topic among people who may often be reluctant to discuss the matter in an individual interview and to encourage dialogue among the participants, which may lead to new perspectives on common problems and possibilities. Often in gender studies, the groups of interest are considered "silenced" or as having subjugated voices (Hyams, 2004). In terms of style, the focus group format has been described as a "happening" (Hesse-Biber & Leavy, 2006, p. 199). That is, the group context and the structure are pre-arranged by the researchers, but the actual dynamic of the meeting is open to the creative impulses of the participants. Depending on the research goals, the moderator (researcher) provides more or less control over the discussion. It is important that the researchers listen carefully to the conversations, as the knowledge building

process is often haphazard, multiply voiced, and free-flowing. There is not necessarily agreement, a single point of view, or a final conclusion that may be drawn from the conversations of a focus group, but the exploration is generally rich in new ideas and is helpful in building a sense of a shared community of concern. In some cases, several focus groups are run on the same topic with various interest groups segregated so that the divergence of opinions can be revealed, as for example one group of women and one group of men. In other cases, the design encourages a diversity of membership from the starting point.

Ethnography

In ethnographic work, a major mode of inquiry in anthropology, the researcher becomes embedded in a social and physical world that is not her/his own, as, for example, in another sub-culture, or ethnic group (Ellis & Bochner, 1996; Miller, Hengst, & Wang, 2003). Michelle Fine and Lois Weis, and their colleagues and students at City University Graduate Center in New York, have been involved with “critical” gendered ethnography for over two decades. Among other projects, they have explored the lives of young people who are living on the borders of conventional society (Weis & Fine, 2000, 2005). Their goal has been to support and reveal the public and private spaces these youth inhabit and what their daily lives are like. In this approach, the researcher becomes highly integrated into a particular community, and the outcomes reveal this participation directly or indirectly. Ethnography carries a reflexive aspect in that researchers tend to become intensely aware of their own positions in relation to the others with whom they engage in the project. The process is also reflexive in that it is possible to engage with participants about the nature of the research, including the dilemmas and conflicts of interest that might be posed by the research activities and the ways that these issues become part of the research outcomes (Crossley, 2000).

Critical ethnography can also be framed as societal critique. For example, Eugenia Kaw (2003) drew on data from structured interviews with physicians and patients to study the decision by Asian American women to undergo cosmetic surgery such as a double-eyelid operation or a nose bridge. Kaw took the position that the surgery is encouraged by gender and racial stereotypes in the culture that preferences White female facial forms. Her research integrated many forms of inquiry to produce a general critique of the oppressive standards of beauty prevalent in Western cultures.

Portraiture is a highly involving and complex form of ethnography. This method expands upon the metaphor of painting in the creation of a life. Through interviews and historical research, a picture of a person emerges, which implicates the involvement and decisions of the researcher/artist (J. Davis, 2003). The portraitist documents “the specifics, the nuance, the detailed description of a thing, a gesture, a voice, an attitude as a way of illuminating more universal patterns” (Lawrence-Lightfoot, 2005, p.12). Through an accretion of details the researcher attempts not only to reveal the important aspects of one person’s life story, but to suggest historical truths about others as well. As the major proponent of portraiture, Sarah Lawrence-Lightfoot (2005, p. 11) has written that it is an “instrument of inquiry, an eye on perspective taking, an ear that discerns nuances, and a voice that speaks and offers insights.” An early exemplar of her work with J. Davis (Lawrence-Lightfoot & Davis, 1997) was *The Art and Science of Portraiture*. At the heart of this research was the endeavor to reveal the lives of Black women, their struggles and their triumphs, and to rectify the silence that has generally prevailed in social science literature with regard to profiles of minority groups (Dixson, Chapman, & Hill, 2005; Hill, 2005).

Although portraiture shares many features with case study methods, and might be considered a special form of it, the practitioners stress the aesthetic qualities of the work to a much greater

extent. Jessica Hoffmann Davis (2003, pp. 199–200) emphasized the centrality of the narrative line in creating the portrait and called the outcome an “interpretive product” that forges “bridges across social science and art.” Portraiture “rewrites both the form and function of traditional case studies. . . . [it] embraces the notion of a ‘good’ whole. . . and relies on inductive rather than deductive analysis. . . to speak through relevant voices. . . thereby reaching a broader audience.”

Much ethnographic research goes beyond simple reporting of the researcher’s constructions of events to an emphasis on changing the community’s outcomes. Wendy Luttrell (2003, p. 147) described her research with pregnant adolescents as “activist” ethnography, “which enables researchers and those who are the subjects of research to change how they see themselves and are seen by others” (p. 147). In Luttrell’s research, the girls created a collaborative book in which self-portraits were organized, along with their descriptions of their own pictures. These became the basis of reflection and encouraged a consideration of positive changes in self-images and future activities.

Autoethnography is a variant on traditional ethnography in which investigators explore in depth the ways in which their own personal history becomes the focus of the inquiry (Ellingson & Ellis, 2008; Lockford, 2004; Reed-Danahay, 1997; Ronai, 1992). The researcher’s own body becomes a sensate instrument revealed through self-report (Jago, 2006). The reader experiences second-hand the personal responses of the researcher in the context of certain events, which might never have been possible otherwise. For example, Carolyn Ellis (1995), a distinguished autoethnographer, examined her personal experiences over the course of her first husband’s terminal illness. Through this exposure readers can better comprehend the complexities of life in this difficult situation. This form of research has been frequently used with illness narratives (Frank, 2002). (Also see articles featuring personal narratives of illness in Ellyn Kaschak’s (2001) special issue of *Women & Therapy* titled *Minding the Body: Psychotherapy in Cases of Chronic and Life-Threatening Illness*.) Autoethnography is popular within the gender studies community in part because it allows the researcher to explore areas of high interest without high investment, outside of personal valor. At the same time, autoethnography can be criticized for being highly idiosyncratic and narcissistic (Marcus, 1998).

Memory work is a dynamic form of ethnographic study that involves the collaborative reconstructing of a normative gender expectation (Personal Narrative Group, 1989; Stephenson & Kippax, 2008), which was created by the German, socialist feminist, Frigga Haug, whose qualitative methods linked her political stance with research. She and her colleagues (1987) published *Female Sexualisation: A Collective Work of Memory*, which was directed toward the ways in which women “experienced” their sexuality. This qualitative method allowed women to question the oppressive social structure in which they had grown up and to develop for themselves new, less inhibited interpretations of their sexuality. In an important sense, as they collaborated with each other in a group, they reconstructed their memories, and thus their experiences of themselves. Five women in Australia, under Haug’s influence, developed a similar project. They met together over a lengthy period of time in order to reconstruct emotion-filled events from their childhoods (such as saying “I’m sorry”) in order to understand the oppressive social forces that had molded them into proper girls and then, through their conversations together, to create new and more fulfilling understandings of themselves (Crawford, Kippax, Onyx, Gault, & Benton 1992).

Institutional ethnography, advanced by Dorothy Smith (1990, 2002), is a newer form of research that occupies a small segment of the ethnographic terrain (see also Devault, 1994, 1999). As Smith (2002, p. 130) has written, “I want it to function like the arrow you see on maps of malls that tell you ‘you are here!’” In this type of ethnographic work, the focus is on the social norms and ideals that help to reproduce the social structure, so as to advantage some people and disadvantage others. The activities that are mapped are those that coordinate and reproduce systems of oppression, and the insights drawn from these interpretive studies provide a useful orienting device for action

research. The goal is to present the informal processes, the contradictory activities, and the subtle shifts that occur in particular social or institutional locations that are “under the radar” of official regulations and laws. The production of social maps is analyzed in relation to the experiences of the people involved in them, and the analysis makes visible how economic and governing processes evolve together to create ways of doing things. One might ask, for example, why the rate of boys dropping out of school is much higher than it is for girls in the local high school. What invisible social structures seem to organize life for adolescents in a particular direction?

Narrative Research

Another prominent form of qualitative gender research, clearly allied with discourse analysis, involves explorations of narratives (Crossley, 2000; K. J. Gergen & M. M. Gergen, 1988; Murray, 2003a, 2003b). Narratives often take the form of stories people tell to make sense of their lives. Narratives provide a plethora of forms within each culture, and these forms define the kinds of events that are appropriate for a story and the structure of the story itself. In Western cultures, we are familiar with tragic and comic stories, as well as melodramas, for example. As Catherine Riessman (1993, p. 5) wrote, “Culture ‘speaks itself’ through an individual’s story.” In psychology, a series on narrative inquiry edited by Ruthellen Josselson and Amia Lieblich, who were later joined by Dan McAdams, promoted the study of narratives in gendered lives (e.g., Josselson & Lieblich, 1993, 1995; Josselson, Lieblich & McAdams, 2003). Volume 2 of this series, *Exploring Identity and Gender*, was dedicated to the gendered narratives of women and men (Lieblich & Josselson, 1994). Narrative methods have been one of the predominant forms of qualitative research used by gender researchers. Judi Marshall (2000, p. 203), for example, has specialized in the narratives of women managers from a social constructionist/critical theoretical perspective. In describing her approach, she has used the metaphor of the facet: “I have chosen the imagery of facets to name the multi-stranded analytic approach I am taking. For me it implies looking from different angles which constitute different types of analysis.”

My work on popular autobiographies concerns the differences in story forms that women and men have used to shape their lives (M. Gergen, 1992); men’s typically following a heroic monomyth, or quest-story, and women’s stories weave various story forms of love and achievement together in a more chaotic manner. Research on narratives of the body also illustrates the differences in import that the physical aspects of identity have for women’s accounts as opposed to men’s. For men, the body is rarely a part of a story, but, if it is mentioned at all, it is a tool, a weapon, or a conveyance; it is a means to more abstract ends involving the structure of the story, whereas women’s stories always include their bodies in concrete detail. Women are on intimate terms with their bodies (M. Gergen, 2001).

In the Oral Narrative History project (Vaz, 1997), the stories told by women in minority groups have been collected and are vividly presented. Each of the chapters describes how oral histories were created with Africana women as participants and researchers, the form of their interactions, the mode of analysis, and the ethical issues of doing this research (Green-Powell, 1997; Obbo, 1997). One of the questions of interest in narrative study has to do with the absence of stories. Often such stories do exist, but are uncollected or ignored (Smith, 1999). One may also ask: Who does not have a story, and when do stories end? One critical absence involves aging narratives. As people age, the stories told about them become denigrating or they disappear altogether (M. Gergen, 1990; see also Van den Hoonard (2007). Both genders suffer from this absence of voice as they age. For example, stories of powerful men who engage in heroic acts conclude in middle age, and older men, especially

gay older men, join an “invisible, paradoxical, and unmasculine social category” who have few good stories to tell (Bennett & Thompson, 1991; Rosenfeld, 2003; Spector-Mercel, 2006, p. 68).

Contemporary Forms of Qualitative Inquiry

Discourse Analysis

One of the most rapidly developing forms of qualitative gender research in the past two decades has been focused on the language used by people within a social context (Burman et al., 1996; Coates, 2003; Gavey, 1989, 1996, 2005; Kitzinger & Wilkinson, 1995). The assumption is that what is critical in understanding an event or a relationship is the form of communication that people use and the shared realities that are produced. From this perspective, people engage in activities that create emotions, facts, events, evaluations, and actions (Gavey, 1989, 2005; Hollway, 1989; Morgan & Coombes, 1991). At the heart of these activities for gender researchers is the focus on the socially constructed nature of various realities. Margaret Wetherell (1986), for example, argued that femininity and masculinity are ideological practices despite the “common sense” view that their differences are the necessary outcome of biological processes. For Wetherell, discursive approaches to the study of gender pay attention to the linguistic repertoire in the culture and its ideological implications, rather than to the unique individual. This emphasis often highlights contradictions in verbal representations, rather than stabilities. In contrast to the typical empirical approach, which seeks simple, stable categories of responses, discourse analysis allows for the discovery of ambiguity, diversity and instability. To illustrate, Nicole Gavey’s (2005) *Just Sex? The Cultural Scaffolding of Rape* demonstrates how everyday discourse about heterosexual relations supports the double standard and unequal power relations between men and women that limit women’s choices and that create cultural “scaffolding” that permits rape. In a recent article, Sue Jackson (2005) reported on her analysis of letters to one magazine’s advice column from adolescent girls. She described how the sexual subjectivities of the girls are constituted in the letters, as are the cultural resources drawn on within them. In her feminist analysis, Jackson was critical of the magazine’s editorial stance that both encouraged the expression of sexual desire and then acted to suppress it. In a study that highlighted feminist issues regarding identity, the ethnicity of Asian women living in East London was examined (Wollett, Marshall, Nicolson, & Dosanih, 1994). The research report included excerpts from interviews with these women. The discourse analysis of these interviews undermined mainstream cultural psychology’s position that ethnic identity is stable; rather it illustrated that the dualism between being “Asian” and being “Western” should be problematized. Celia Kitzinger and Sue Wilkinson (1995) used a discourse analysis to study the process by which women underwent transitions from heterosexuality to lesbianism. Studies of menopause have concerned the discourse by which this embodied transition has been made into a disease by the medical establishment; otherwise menopause could be viewed as a neutral or even a beneficial life event (M. Gergen, 1989; Komesaroff, Rothfield & Daly, 1997; Martin, 1999). Other studies of girls’ and women’s lives reveal how people are positioned in such a way as to limit their possibilities. For example, Valerie Walkerdine (1989) has investigated how the school environment actually impedes girls’ abilities to learn mathematics.

Other articles in feminist journals present analyses of the discourse of menstruation (Behar, 1996; Kissling, 1996; Malson & Ussher, 1996), and a special issue of *Theory & Psychology*, edited by Hendrikus Stam (1996), examined the body within discourse analysis frames. Wendy Hollway’s (1989) work has been to analyze various styles of romantic conversations among heterosexuals. Many other gender research projects have used discourse analysis to explore issues of power (Miles,

1993; Palmary, 2006); identity (Henriques, Hollway, Urwin, Venn, & Walkerdine, 1984); oppression, (Moane, 1999); heterosexual masculinity (Cameron, 1997; Pelias, 2007), and subjectivity (Crossley, 2000).

Conversation Analysis

One might consider conversation analysis a subfield of discourse analysis; however, it has taken on a life of its own. Its purpose is to analyze human communication and interaction, especially the basic resources and structures of talking together. Such research has become increasingly similar to quantitative inquiry in that the coding practices have become very detailed and conventional. In a typical analysis, researchers give a symbolic significance to each utterance, sigh, pause, and emphasis in pronunciation; the researcher counts, for example, how long a pause might be, or how quickly a participant responds to a query. The finished product is unintelligible to the naive reader. A foremost proponent of conversational analysis in gender research is Celia Kitzinger (2000), who, with her students and colleagues, has amassed a large repertoire of relevant cases. In order to engage in conversational analysis, it is necessary to achieve a working knowledge of the coding system. Practitioners are enthusiastic about the potential of this form of analysis to identify and map important aspects of communication precisely (Kitzinger, 2000; Wilkinson & Kitzinger, 2003, 2007). Currently Kitzinger is using conversation analysis to explore the ordinary reproduction of heterosexism in everyday talk-in-interaction.

Developing Forms of Qualitative Inquiry

Action Research

Action research involves the use of social science methods to help local people create social change (Lykes, 1997; Russell, 2000; Scheurich, 1997; Taylor, 1998). In feminist psychology, for example, Niva Piran (2001) studied the students at a highly selective dance school using open forum meetings with the girls over a long period of time. Piran was concerned about how the culture of the school had evolved in terms of the way these young dancers experienced and perceived their own bodies and those of others. Through her encounters with the girls Piran was able to help them not only to see how damaging certain perceptions and practices were, but also to visualize and change their feelings about their own bodies, so that they could transform certain unhealthy practices of teachers and other students that had undermined their experiences of their bodies.

Participatory action research (PAR) is a term that has been reserved for political action research, often associated with liberation workers engaged with oppressed populations (Kamali, 2007; Lykes & Coquillon, 2007; Reason & Bradbury, 2008). For example, Barbara Biglia (2006) has studied the political activism of "Latin" women involved with social movements that seek autonomy, libertarian, and/or anti-capitalist goals. Michelle Fine and her students (Fine et al., 2003) have engaged in participatory action research with women prisoners. Geraldine Moane (2006) created a 10-week course entitled Liberation Psychology for Women as part of a certificate in Women's Studies offered at University College, Dublin. The curriculum was based on her interviews with 16 Irish women activists (Moane, 1999). In her participatory action research (based on focus groups and observational work), Moane was able to discover how the women in the course became more radical in their willingness to pursue political ends. The aim of the research was to transform internalized oppression into an externalized energy for political action.

Performance-Based Research

The so-called linguistic turn or postmodern turn in literary theory and in other disciplines, including many of the social sciences, suggested that there is no ultimately correct manner in which to describe, explain, interpret, or alter events and opinions (Denzin, 2000; K. J. Gergen, 2001). This point of view encouraged researchers to include a much greater range of symbolic and aesthetic devices in their research work. Thus, forms of artistic expression, including music, drama, cartoons, fiction, film, poetry, and multi-media performance, have all become relevant resources for inclusion in the research endeavor (e.g., Abu Odeh, 1993; Case, 1997; Huss, 2007; Reavey & Johnson, 2008). These hybrid projects often produce tensions among performance-oriented researchers and others because this work blurs the boundaries between the social sciences and the arts. Although this may seem to be a problematic situation, “these tensions create the open and dialogic spaces in which arts-based research perform social reconstruction” (Finley, 2008, p. 72). Qualitative researchers have been particularly responsive to these new opportunities; a few exemplars of what is now called performance-based research are described below.

Glenda Russell (Russell, 2000) responded with performative work to the passage of Amendment 2 to the Colorado state constitution, which removed legal recourse from those who encountered discrimination based on sexual orientation. Russell used themes and statements taken from the transcripts of interviews with people opposed to the legislation, and she became involved in developing a highly sophisticated and complex artistic project, a five-part oratorio entitled *Fire*, written by Bob McDowell, professional composer, and later performed by Harmony: A Colorado Chorale. She also co-produced a video for public television from interviews with outgroup activists, entitled *Inner Journeys, Public Stands*. Both projects are described in Russell’s *Voted Out* (2000). This work blurred the boundaries between professional and amateur, insider and outsider, researcher and researched, and performer and audience.

Diverse forms of writing that combine the advantages of fictional writing, poetry, and drama are considered to be part of the performative research domain (Fox, 1996; Tillmann-Healy, 1996). Poetry is the central form of expression for A. M. Davis (2007), whose work entitled *S.I.P* (school-induced psychosis) is a reflection on her daughter’s struggle to enter a desegregated, predominantly White, high school as an African American with high family expectations of success. She described her daughter’s ancestors: “This long line of women in Black face, snakes back through tomorrow, to hold her up today, at full length, in depression’s eve. She presses her face toward the sun” (p. 924). The strength of using a performative style in this approach to prejudice and discrimination, rather than a more traditional empirical research style of reporting, is that it evokes stronger responses in the reader, and it encourages more direct activity and perhaps greater empathy than another form might do.

Ronald J. Pelias (2007), in his provocative piece, *Jarheads, Girly Men, and the Pleasures of Violence*, explored how violence and pleasure are closely associated among both hyper-masculine and effeminate men and how this connection might be renegotiated. In describing his purpose, he wrote, “I write to uncover how I have become trapped within a cultural logic that pulls me into a sadistic desire to be or identify with a person in power. . . . I write so that I might maneuver without causing harm, without taking pleasure in violence. I write . . . to show how being a girly man can be a resistant strategy” (p. 945). Here the author stresses the self-discovery that may occur when writing from a personal perspective.

Another form of writing that brings fiction to the forefront is the work of Marcelo Diversi (1998), who has used the short story as a form for describing his work with Brazilian street children, who have often been treated by the local shopkeepers and citizens as though they were vermin to be exterminated. Some of them have been shot and killed by people annoyed by their presence in urban

commercial centers. Through his short stories *Diversi* reveals the lives of these children and youth; at the same time he is selective and compressive in representing his hours of contact with them. The truth of the telling is not in the precise details of events, but in the ways they are meaningful within a narrative structure. For example, by collapsing attributes, activities, and relationships of many children into a sustained and small cast of characters, he is able to explore many significant questions about street children, but he does so by building up specific characters, a small enough number so that the reader can identify with their individual biographies

Performance has been especially significant in gender research as it has been useful in exploring issues that are alive with emotional and political significances (e.g., K. J. Gergen & M. Gergen, 2001; McHugh et al., 2008). The use of performance to describe gender is especially appropriate, given the theoretical perspective that gender, itself, is a performance (Butler, 1990; West & Zimmerman, 1987). This definition of gender suggests that people “do” gender rather than “have” gender; this formulation of gender leads to the question of what happens when the performance is spoiled by mixed messages, such as being born with genitals of both sexes (Kessler, 1998). Two examples of my own work with performance include a monologue that decries the fate of older women as they are “disappeared” from social significance and a performance developed to decry the masculine domination of the postmodern movement (M. Gergen, 2001).

To reiterate, these are major questions related to performance modes of doing research: Do such activities belong within the humanities and various literary traditions or do they belong within the social sciences? Why is a poem, a short story, or a drama social science, rather than art? Is it possible that it can be both? To summarize the performance researcher’s position, these modes of inquiry can serve as a bridge crossing between two major domains. In addition, performance activities elicit emotional responses to an issue, and they often emphasize the body, an iconic element in gender studies. Performative projects also encourage self-revelation – of the researcher, the researched, and/or the reader. They demonstrate directions for political action. Such research is also rich in evocative stimulation, as it leads to greater questioning of a conventional stance or wisdom. Artistic modes are helpful in muddying the clear-cut divisions of true and false, right and wrong. “If . . . one takes the view that the dominant function of arts in research [is] to provide an evocative image that generates the conditions for new telling questions and for fruitful discussion, . . . then the need for consensus on what is signified might be less addressed” (Eisner, 2008, p. 9). It is also important to allow for fresh perspectives on old issues. “Art often creates such a powerful image that as a result we tend to see our world in terms of it, rather than it in terms of our world”. Put another way, “Art does not always imitate life. Life often imitates art” (Eisner, p. 11). For Erich Eisner, there is too much constriction of the “research criteria that are needed in the social sciences” (2008, p. 9). He suggested that teams of researchers, those gifted in the social sciences and those in the arts, work together to achieve successful research projects because “such collaboration might provide a way to combine both theoretically sophisticated understandings and artistically inspired images” (p.11).

Again, in moving toward performance, investigators expand the range of communities in which these ideas can be explored. New journals, websites, and affinity groups are springing up to receive the creative talents of gender researchers across the continents. For example, *Qualitative Inquiry*, *International Review of Qualitative Research*, and *Qualitative Research in Psychology*,¹ a repository of exciting work that combines diverse performative styles (e.g., film, photographs, visual images,

¹A listserv newsgroup that supports performance social sciences can be found at <http://www.jiscmail.ac.uk/cgi-bin/webadmin?SUBED1=performsocsci&A=1>. For the Special Issue of Performative Social Science, which includes 42 new pieces on performative social science, the majority of which are gender related, go to <http://www.qualitative-research.net/index.php/fqs/issue/view/10>

drama, fictional presentations); critical discussions of the use of performative approaches in qualitative inquiry can be found on the Forum for Social Research, an open access electronic journal² that emanates from Berlin, Germany. Creative Approaches to Research is a new trans-disciplinary electronic journal that reflects the convergences between epistemology, pedagogy, and technology, and incorporates multiple forms of text including academic work. Kip Jones, at the University of Bournemouth in the U.K. hosts a listserv with information about performative social science. He has examples of his performative work in gender on his website: <http://kipworld.net>.

Future Directions in the Qualitative Study of Gender

Challenges for Qualitative Methods Within Gender Studies

Although qualitative methods are continuing to gain interest in the gender research domain, a certain skepticism lurks among the more assiduous followers of traditional positivist modes of research. The major unease is related to the loss of certainty that the traditional lore accredits to certain empirical methods, as bolstered by sophisticated statistical methods. Issues of loss of objectivity, reliability, validity, and researcher control over the process are important points of concern. At base, critics seem to fear that a loss of respect and authority might befall the research if the field becomes “less scientific” in the sense of a natural science ideal. This might well be the case. On the other side, sophisticated qualitative researchers question the assumptions of objectivity, validity, and the efficacy of “evidence-based practices” (Torrance, 2008), and they question the charge that “anything goes” in the qualitative domain (Hepburn, 2000). They have pointed out that the rhetoric of traditional science is misleading in its suppression of its values and its presumption of a “God’s eye view” of events and people. Qualitative researchers are excited about the possibilities of engaging with diverse, and often subjugated and silenced cultural groups, and are willing to enter into the research engagements with an egalitarian, participatory, and relational perspective (Israeli, 1993); they are eager to share the nature of the outcomes with the participants. The desire to enhance goals of social justice and change are also part of the promise of a qualitative approach.

Gender/Women/Feminism/ and Qualitative Methods

Throughout this chapter, from the author through the text to the references, readers might become aware of the preponderance of research produced by women. Volume co-editor, Don McCreary noted this trend and asked me whether most of the gender researchers in the qualitative realm were women, and, more broadly, were most qualitative researchers women. Although the answer to the first question seems to me to be quite clearly “yes,” the latter question is more difficult to answer. I made an informal survey of the 10 handbooks of qualitative methods that have been central to my work on this chapter. One example, *Qualitative Research in Psychology: Expanding Perspectives in Methodology and Design*, edited by Paul M. Camic et al. (2003), exemplifies the gender imbalance of their author list, 25 women to 10 men. And this book is not about gender specifically. Thus, it might seem that women are more likely to be identified as experts in qualitative methods in psychology than men are. The American Psychological Association (APA) Directory yielded more indirect evidence in answer to McCreary’s questions. The Society for the Psychology of Women, Division 35, is

² www.qualitative-research.net/fqs/fqs-eng.htm

35 years old as of 2008; Division 51, Men and Masculinity, is less than 10 years old; Division 35 has over 2,000 members; Division 51 has 400 members. Gender researchers are most likely to be affiliated with these two divisions, and because each division tends strongly to attract same-sex members, the women outnumber the men 5–1. Although APA has a majority of women as members (56%), most of the divisions that are strongly associated with quantitative methods are male-dominated; For example, Division 5 (Evaluation, Measurement, and Statistics) has a membership that is 71% men.

I think that women have been more interested in gender issues as a result of the “second wave of feminism” in the 1960s–1970s, and they have found that qualitative methods have more resonance with the types of topics they are interested in researching in the manner they prefer to use. Quantitative research involving hypothesis testing with statistical methods in laboratory settings is less relevant to social justice issues and actions. This same argument may apply to other researchers interested in minority group topics, as well. The rejection of positivism that characterizes many of these researchers is at the heart of the rise in the popularity of qualitative methods. Yet, as a sign of the future, in 2008, researchers involved in qualitative methods have been invited to join the APA’s Division 5, which had formerly been strictly quantitative.

Lastly, as previously mentioned, quantitative methods have always been considered the most sophisticated, powerful, and prestigious approach to doing research in psychology. As in other fields of endeavor, the most powerful and most rewarding positions tend to be occupied by men. The involvement of so many women in qualitative inquiry could also be seen as another example of gender bias. Perhaps, as with other professional groups, the more men who join the qualitative research scene, the more prestigious and rewarding it will become.

Divergent Paths for Qualitative Methods Within Gender Studies

In my view, the future of qualitative inquiry in gender research is very bright. On the horizon are many rich possibilities (K. J. Gergen & M. Gergen, 2000). The British Psychological Society has created a qualitative division, which has quickly grown to be the largest in the entire organization. The expanding potential of new modes of research, and the elaboration and extension of older forms, such as case studies and focus groups, have also enhanced the repertoire of researchers. At both the undergraduate and graduate levels, new courses, new textbooks, and new segments of traditional courses now feature qualitative methods (Ponterotto, 2005), and new publication outlets, both electronic and paper, provide places in which gender researchers may publish. A plethora of recent handbooks have provided researchers with helpful guides for pursuing qualitative research in diverse settings. Of particular note are the *Handbook of Qualitative Methods* (Denzin & Lincoln, 2000, 2005); *Handbook of Constructionist Research* (Holstein & Gubrium, 2008); *Qualitative Research in Psychology* (Camic et al., 2003); *Handbook of Feminist Research: Theory and Praxis* (Hesse-Biber & Leavey, 2007); *Sage Handbook of Qualitative Research in Psychology* (Willig & Stainton-Rogers, 2008); *Sage Handbook of Action Research: Participative Inquiry and Practice* (Reason & Bradbury, 2008); and *Sage Handbook of Social Science Methodology* (Outhwaite & Turner, 2007). In addition, helpful guidance may be gained by exploring journals with an emphasis on qualitative methods including *Qualitative Inquiry*, *Qualitative Research in Psychology*, *International Review of Qualitative Research*, *Journal of Contemporary Ethnography*, *Qualitative Report*, *Qualitative Health Research*, *Culture & Psychology*, *Journal of Counseling Psychology*, *Journal of Gender Studies*, and *Feminism & Psychology*.

Finally, as computer programs are increasingly being designed to deal with verbal materials, the boundary between qualitative and quantitative research is becoming another liminal space. Not

only are researchers of all varieties utilizing qualitative modes of study, but also within the qualitative domain, the acceptability of doing numerical and computerized analysis is gaining ground (Lewins & Silver, 2007; Silver & Fielding, 2008). The split that has existed between the two major groups (qualitative and quantitative) is becoming obscured, and the tensions within the qualitative group have become more evident. (Some qualitative researchers see computer software programs as Trojan horses that are bringing into qualitative research a grave, but subtle danger, which may be characterized as the elimination of the human in the meaning-making process; defenders argue that software programs only act as prodigious servants of the creative researcher, not as controllers of the data. Despite these potential controversies, there is much to attract researchers to in the new outpouring of work in the qualitative domains, and much of it is due to the boundary crossing in all directions that is occurring at this moment (Creswell, 2003). For this trend to continue will require an increasing awareness and exposure to diverse activities in the field, as well as a tolerance among diverse groups, with somewhat different agendas, to appreciate the gifts provided by each type of endeavor (Sprague, 2005). One might imagine that, if a spirit of mutuality, multiplicity, and goodwill prevails, a most promising future for the field will emerge.

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Chapter 7

Measuring Gender: Options and Issues

Andrew P. Smiler and Marina Epstein

Measuring Gender: Options and Issues

In 1979, Carole Beere published an index of 235 gender-related measures. In her effort to update the volume a decade later, she reviewed over 1,400 measures (Beere, 1990a, 1990b). Although less than 10% of the newly published measures had been cited more than five times, the sheer volume of measures suggests that there is (or was) great interest in assessing gender-related phenomena, that there were many options for doing so, and that gender is a complex, multidimensional phenomenon. The plethora of measures also suggests that there were substantial disagreements about measurement and that there were (likely) fractures in the field.

This chapter emerges from a perspective that holds gender to be socially constructed, consistent with literature that has demonstrated changes in femininity and masculinity across times and places (Best & Williams, 1998; Gilmore, 1990; Kimmel, 1996; Smiler, Kay, & Harris, 2008; Twenge, 1997a, 1997b). Before we go further, we must clarify some terms. In this chapter, we use “sex” to refer to an individual’s biological status as female, male, or intersexual. We use the term “gender” to refer to a broad collection of personality characteristics, beliefs, and behaviors that are understood to be more “appropriate” for one sex than for the other (Unger, 1990). Gendered expectations are also applied to different “gender roles,” which specify what is normative and culturally “appropriate” behavior for men and women. Because the definitions of “masculinity” and “femininity” vary across scales, we do not offer a definition here. Moreover, we acknowledge that constructions of gender are necessarily culture-specific and cohort-specific, and illustrate dominant values that do not necessarily reflect individual differences. As most of the gender measures reviewed here have emerged from the Western world, this chapter largely reflects Western notions of masculinity and femininity, including the notion that there are only two genders (but see Herdt, 1994, for an alternate view).

In this chapter, we review three different classes of measures that assess gender-related constructs, and we discuss measurement and conceptual issues that we believe the field must address. Within each class, we identify major foci, and provide a brief description of commonly used measures. We highlight measures that have had a substantial impact on gender studies or, among newer scales that we believe have the potential to have a substantial impact. We give preference to measures that have been used within the past 10 years and for which at least one psychometric analysis has been published (beyond the initial publication of the scale). In our review, we focus on the internal consistency (i.e., Cronbach’s alpha), reliability (i.e., the scale’s ability to produce replicable results)

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and validity (i.e., evidence that the scale measures what it claims to measure), and factor structure of these scales. Finally, we address larger methodological and conceptual issues that remain unresolved in the field. Providing a complete list of all gender measures is beyond the scope of this chapter, and several other resources provide comprehensive reviews of existing measures (see Beere, 1979, 1990a, 1990b; Lenney, 1991; Thompson & Pleck, 1995; Thompson, Pleck, & Ferrera, 1992). This review should be understood as broadly based and conceptual.

Classes of Measures

The first class of measures assesses support for, or adherence to, cultural norms, including measures that assess masculinity and femininity as a pair of binary, either–or categories, measures that position masculinity and femininity as related but orthogonal categories, and measures of gender socialization. The second class focuses on stress or strain related to adhering to gender norms. Finally, the third class of measures assesses relations *between* the sexes, specifically sexism and feminist identity.

Measures of Support for and Adherence to Cultural Gender Norms

The first class of measures that we describe assesses the extent to which individuals support or conform to cultural norms regarding gender. Because group norms are often represented in stereotype content (Turner, 1999; Yzerbyt & Rocher, 2002), these measures may also be thought of as indicators of stereotypes or self-stereotyping. The measures in this class examine personality traits, ideological beliefs and attitudes, and behavior to assess gender support/conformity.

Trait Measures

The Bem Sex Role Inventory (BSRI; Bem, 1974) and the Personal Attributes Questionnaire (PAQ; Spence & Helmreich, 1978) are the most popular measures of personality traits that pertain to men and women (Beere, 1990a; Lenney, 1991). When first published, these scales were unique in their positioning of femininity and masculinity as independent constructs; earlier measures had positioned femininity and masculinity as polar opposites (e.g., Gough, 1960; Terman & Miles, 1936; also see Lippa, 2001, for a review). Bem's scale, in particular, helped to popularize the concept of psychological androgyny or the notion that an individual may possess both masculine and feminine characteristics.

Bem Sex Role Inventory (BSRI). From an initial list of 400 personality characteristics, Bem (1974) employed a sample of 50 female and 50 male undergraduates to identify “how desirable is it for a man [woman]” to possess a given characteristic “in American society” (p. 157). She was influenced by Parsons and Bales' (1955) description of femininity as expressive and masculinity as instrumental. Bem created the femininity scale from 20 items that both female and male participants considered more desirable in women and the masculinity scale from 20 items that both female and male participants considered more desirable in men. Mean scores for the desirability of same-gender characteristics (e.g., men's desirability scores for male targets) and other-gender characteristics (e.g., men's desirability scores for female targets) were nearly identical across genders. Twenty “filler” gender-neutral items (e.g., “adaptable”) were also included.

The scales were validated with two samples of undergraduates (279 and 77 women, 444 and 117 men). Participants indicate the extent to which each item describes them (e.g., “gullible,” “self-reliant”). Scale alphas were all ≥ 0.80 , and scores on the F and M scales were minimally (and mostly nonsignificantly) correlated (absolute value $r \leq 0.11$). Four week test–retest reliabilities with data from 28 female and 28 male participants revealed stability on both the F and M ($r_s = 0.90$) scales. Yanico (1985) reported strong correlations for 77 women’s F and M scores across a 3-year span ($r_s \geq 0.56$). Bem (1974) demonstrated construct validity through the expected gender differences (e.g., higher F scores for women) as well as small and/or nonsignificant correlations with existing unipolar measures of gender. She argued that the low correlations indicate that the measures tap different aspects of the gender construct. Factor analyses have been inconsistent; the modal pattern appears to be a single F factor and two M factors (for a review, see Choi & Fuqua, 2003). In response to concerns about the factor structure and other critiques (e.g., Pedhazur & Tetenbaum, 1979), Bem’s interpretation of the scale shifted from “self-concept” (Bem, 1974) to “gender schemas” (Bem, 1993) (for a review, see Hoffman & Borders, 2001). A children’s version has also been developed (Boldizar, 1991).

In Bem’s (1974) original scoring system, the androgyny score was the value of Student’s t-test for a participant’s M vs. F score. More widely known and used is the median-split categorization system, in which participants’ M and F scores are categorized as high or low in reference to the scales’ medians (Spence, Helmreich, & Stapp, 1975). This system provided a method to distinguish those with high scores on the M and F scales (“androgynous”) from those with low scores on the M and F scales (“undifferentiated”). Participants with one high and one low score are classified as “masculine” or “feminine” based on their high score (Bem, 1977). Yanico (1985) reported fairly stable categorizations (>58% consistency) for all groups except those originally classified as undifferentiated (36% consistency) across a 3-year span. However, this approach and other approaches to quantifying androgyny are highly contentious and driven largely by empirical, not theoretical, concerns (e.g., Lubinski, Tellegen, & Butcher, 1983; Reed-Sanders, Dodder, & Webster, 1985; Spence, 1984; Tellegen & Lubinski, 1984; Yarnold, 1994; for reviews, see Hoffman & Borders, 2001; Twenge, 1997b). Some researchers have chosen to use scale scores (i.e., mean or sum of all items) instead of androgyny scores (for a review, see Twenge, 1997b). Given concerns about its psychometric properties and its age, we caution against using the BSRI, except for replication (see Future Directions). The androgyny approach has been popular, but we suggest that the approach be used cautiously until the construct is further clarified.

Personal Attributes Questionnaire (PAQ). The PAQ was developed by drawing 24 personality characteristics from a larger pool of 155 items. A sample of 282 female and male undergraduates were then asked to rate each item twice: first as they fit either an “ideal” woman or man, then as they saw these traits in themselves. The 55 items that had the strongest gender differences were included in the initial version (Spence et al., 1975). The scale was later shortened to 24 items, which yielded three 8-item scales: masculinity (M), femininity (F), and bipolar masculinity–femininity (M–F) (Spence & Helmreich, 1978). The latter scale is consistent with Constantinople’s (1973) evidence of partial opposition between masculinity and femininity, but it is rarely used. The PAQ’s authors were guided by Bakan’s (1966) discussion of (feminine) communion and (masculine) agency, and Spence and Helmreich (1980) subsequently described the scales as assessments of instrumental (M) and expressive (F) traits.

To validate their measure, Spence and Helmreich (1978) relied on data from three groups: adolescents (756 boys, 1,013 girls), undergraduates ($n = 715$; no breakdown by sex reported), and academic scientists (143 men, 18 women). On this scale, participants report the extent to which each item describes them on a scale that is anchored by paired opposites (e.g., “not at all aggressive” and “very aggressive”). Spence and Helmreich used both the median-split categorization scheme (Bem,

1977; Spence et al., 1975) and the scale total scores (as continuous variables). The expected gender differences were present, as were significant but weak, correlations between the F and M scales for all three samples. Spence and Helmreich (1978) also reported results from several samples that had been recruited by their colleagues and students. Cross-national data from Lebanese undergraduates, Israeli adolescents, and Brazilian undergraduates demonstrated gender differences on the F and F–M scales, but not the M scale. Construct validity was demonstrated through comparisons between the original adolescent and undergraduate samples and other selected samples (e.g., gay men and lesbians, female varsity athletes, and male and female academic scientists), as well as predicted correlations with motivation and achievement scale scores (Spence & Helmreich, 1978). Across several samples, factor analyses suggest a single-factor solution for each scale (Helmreich, Spence, & Wilhelm, 1981). The extended PAQ (EPAQ; Spence, Helmreich, & Holahan, 1979), which adds two separate 8-item scales for negative (i.e., socially undesirable) characteristics associated with women’s and men’s roles, appears psychometrically valid and has been widely used. A children’s version of the PAQ also has been developed (Hall & Halberstadt, 1980) but rarely used. The PAQ has strong psychometric properties, but because of its age, we are cautious about its ongoing use. (This is addressed further in the Future Directions section.)

Ideology Measures

Gender ideology measures assess endorsement of a culture’s ideological beliefs about gender roles. Measures tend to tap into several of the common themes or discourses that make up feminine or masculine ideology. This approach incorporates an individual’s awareness of cultural pressure to conform to certain expectations regardless of what the individual might actually prefer. Men, for example, are expected to take risks and engage in casual sex, whereas women are expected to care for others and focus on their appearance. Ideology measures contain descriptive statements, such as “Men are tough” and “Women are naturally nurturing,” and prescriptive directives, such as “Men should not show emotion” and “Women should take care of their appearance.” Existing measures focus on either femininity or masculinity, not both.

The initial description of masculinity as an ideology is often attributed to David and Brannon (1976) who identified four areas of masculinity. “No Sissy Stuff” represented the notion that men must reject all feminine qualities, “The Big Wheel” emphasized the need for status and respect, “Sturdy Oak” portrayed men a big and tough, and “Give ’em Hell” placed value on aggression and daring. The subsequent 110-item Brannon Masculinity Scale (BMS; Brannon & Juni, 1984) is rarely used.

Male Role Norms Scale (MRNS). The MRNS (Thompson & Pleck, 1986) is one of the most popular measures of masculinity (Whorley & Addis, 2006) and was created by factor analyzing the original items from a 58-item version of the BMS based on data from 233 male undergraduates. Three factors were identified: status, toughness, and antifemininity. The 26-item MRNS assesses the degree to which participants endorse traditional masculine norms by responding to items such as “Success in his work has to be man’s central goal in this life.” Internal reliabilities were 0.81, 0.74, and 0.76, respectively, for the subscales. The factor structure of the MRNS was validated by McCreary, Newcomb, and Sadava (1998), whose findings appeared invariant across sex, and challenged by Fischer, Tokar, Good, and Snell (1998), who found that a four-factor solution (with toughness broken up into body image toughness and aggressive toughness) best represented the measure. Thompson (1990) found that the MRNS was not related to the BSRI and was positively correlated with the Attitudes toward Women Scale (AWS; Spence & Helmreich, 1978), which supports divergent and convergent validity. The MRNS appears to have reasonably strong psychometric

properties, although it is unclear if there are one or two toughness factors. We cautiously recommend this scale.

Male Roles Attitudes Scale (MRAS). Pleck and colleagues subsequently created the 8-item MRAS (Pleck, Sonenstein, & Ku, 1993). Seven items were adapted directly from the three factors of the MRNS, and an additional item about promiscuity was added. This measure was developed based on data from a large nationally representative adolescent male sample ($n = 1880$), with a reliability alpha of 0.56. Seven of the eight items focus on men's role (e.g., "It is essential for a guy to get respect from others," "I admire a guy who is totally sure of himself") and one compares men and women ("It bothers me when a guy acts like a girl"). Exploratory factor analysis was inconclusive; two factors emerged to explain a total of 43% of the variance (Pleck, Sonenstein, & Ku, 1994). However, the authors judged the second factor to be weak, and used the MRAS as a single-factor scale. MRAS scores were not associated with attitudes toward women's roles, which suggests divergent validity, and were positively associated with attitudes toward (general) gender roles in the same sample, which suggests convergent validity. Further, results indicated that the MRAS was a better predictor of attitudes toward condom use than (general) gender roles, which suggests construct validity (Pleck et al., 1994). Although this scale has been widely used, we are concerned about its low internal consistency score and ambiguous factor structure. We believe the MRAS should be used only when logistical considerations require a particularly short measure.

Adolescent Masculinity in Relationships Scale (AMIRS). Chu, Porche, and Tolman (2005) developed a measure that examines endorsement of masculinity specifically in the context of interpersonal relationships. The AMIRS builds on the MRAS (Pleck et al., 1993) and contains 12 items, many of which are worded similarly to the MRAS but express masculinity in more relational terms (e.g., "A man always deserves the respect of his wife and kids" became "In a good dating relationship, the guy gets his way most of the time"). Exploratory factor analysis, based on data from 114 seventh-grade boys, 133 eighth-grade boys, and 31 high school-aged boys suggested the measure's unidimensionality, but explained only 18% of the overall variance. Moreover, internal consistency was also low with alphas < 0.71 for each subsample. AMIRS scores had moderate correlations (0.29–0.54) with other measures of masculine ideology, which suggests that it taps a distinct aspect of masculinity. The AMIRS was not associated with the BSRI, which suggests discriminate validity (Chu et al., 2005). We are concerned about the relatively small amount of variance explained and the low levels of internal consistency of this measure, but excited about its unique and contextualized focus on relational masculinity among adolescents. More empirical validation, including with girls, is needed.

Male Role Norms Inventory (MRNI). The MRNI (Levant, Hirsch, Celantano, & Cozza, 1992) is also a revision of the BMS. The MRNI expanded the scope of the BMS to measure seven areas of masculine ideology: Avoidance of Femininity, Homophobia, Self-reliance, Aggression, Achievement/Status, Attitudes toward Sex, and Restrictive Emotionality. The 58-item scale was originally developed based on a sample of 169 female and 117 male undergraduates. Most of the items are worded as prescriptive statements such as "A man should never reveal worries to others" and "A man should always be ready for sex." Although the measure was designed to include seven aspects of masculinity, its factor structure could not be confirmed. Post hoc confirmatory factor analysis (CFA) indicated that a three-factor structure fit the data better than a seven-factor model. The CFA indicated that items from the Avoidance of Femininity, Homophobia, Achievement/Status, Attitudes toward Sex, and Restrictive Emotionality subscales all loaded onto a single factor ("Factor 1") ($\alpha = 0.93$), and Self-reliance ($\alpha = 0.62$) and Aggression ($\alpha = 0.48$) made up the second and third factors. Male participants reported greater endorsement for all three factors than female participants did. The scale has been used with a variety of ethnically and culturally diverse samples, women, and adolescents (see Levant & Richmond, 2007 for a review).

Multiple forms of the MRNI exist, including the shortened MRNI-49 (Berger, Levant, McMillan, Kelleher, & Sellers, 2005) and the revised MRNI-R (Levant, Smalley et al., 2007). The 53-item MRNI-R was developed with a mostly female sample (38 men and 132 women) of undergraduate and graduate students. No factor analysis was reported; a new seven-factor structure was conceptualized by the authors. The MRNI-R had higher internal reliability than the original MRNI; alphas ranged from 0.75 to 0.91 across the seven subscales. Five of the new subscales corresponded with subscales in the original MRNI scale; the Achievement/Status and Self-reliance subscales were re-conceptualized as Dominance and Extreme Self-reliance. No concurrent or discriminant validity tests were reported. We recommend using the MRNI-R with caution until more rigorous examinations of its factor structure and validity are reported.

Conformity to Male Norms Inventory (CMNI). Unlike the measures reviewed so far that assess endorsement of masculine ideology, the CMNI (Mahalik et al., 2003) measures the degree to which participants *adhere* to these norms. One of the strengths of this measure is that it expands the scope of masculine norms by assessing 11 separate areas of masculinity: Winning, Emotional Control, Risk-taking, Violence, Power over Women, Dominance, Playboy, Self-reliance, Primacy of Work, Disdain for Homosexuals, and Pursuit of Status. The 94-item scale contains self-descriptive statements that reflect individual enactment of each of the eleven themes (e.g., “Winning is important to me”). The eleven factors emerged based on initial exploratory factor analysis with 752 undergraduate men and explained 44% of the total variance. An additional sample of 245 women was used to test for gender difference in conformity. Men scored higher than women on 9 of 11 subscales (no differences were found for Primacy of Work or Pursuit of Status). Internal consistency coefficients were 0.72–0.91 (Mahalik et al., 2003). Smiler (2006b) subsequently validated the scale for women and men of middle and older ages as well as for non-college young adults. Convergent validity was supported with significant moderate correlations between CMNI subscales and other measures of masculinity (Mahalik et al., 2003; Smiler, 2006a, 2006b). Divergent validity was supported with largely nonsignificant correlations with the PAQ-M and -F scales (Smiler, 2006b). Test–retest reliability coefficients ranged from 0.51 to 0.95 over a 2–3 week time period (Mahalik et al., 2003). A short form that contains the two highest loading items from each of the 11 CMNI subscales and generates a total score has been developed. The CMNI-22 correlated with the full CMNI at 0.92. Internal consistency in a sample of 213 stay-at-home fathers was 0.65 (Rochlen, McKelley, Suizzo, & Scaringi, 2008). The CMNI’s strengths include robust measures of validity and reliability and high internal consistency. However, the length of the measure may be prohibitive for some research. Until the factor structure is validated, we cautiously recommend the use of this scale.

Adolescent Femininity Ideology Scale (AFIS). The 20-item AFIS (Tolman & Porche, 2000) was one of the first measures to assess adherence to feminine ideology. The scale’s two themes are derived from Brown and Gilligan’s (1992) research on middle-class, White adolescent girls and assess Inauthentic Self in Relationships (ISR) and Objectified Relationship with Body (ORB) (Tolman & Porche, 2000). Items were developed from focus groups with adolescent girls, and the scale was piloted with primarily White samples of adolescent girls ($n = 393$) and college-age ($n = 299$) women. Examples of items include “I often look happy on the outside in order to please others, even if I don’t feel happy on the inside” and “I think that a girl has to be thin to be beautiful.” The original two-factor structure was derived theoretically and items were refined with Cronbach alpha scores. Tolman, Impett, Tracy, and Michael (2006) confirmed the two-factor structure of the AFIS with confirmatory factor analysis, although three items were dropped as a result of low factor loadings. ISR was significantly correlated with MRAS (Pleck et al., 1993) and ORB was correlated with other measures of body image, which supports convergent validity. Discriminant validity was shown by weak correlations between AFIS and BSRI (Tolman & Porche, 2000). Given its robust factor structure and high validity, we recommend this measure for use with women and girls.

Femininity Ideology Scale (FIS). Levant, Richmond, Cook, House, and Aupont (2007) created the FIS, which assesses endorsement of five areas of femininity for women: Stereotypic Images and Activities, Dependency/Deference, Purity, Caretaking, and Emotionality. The scale contains 45 prescriptive statements such as “Women should act helpless to attract a man” and “Women should have large breasts.” Exploratory factor analysis with an undergraduate sample of 192 men and 210 women was used to determine the factors, and the five-factor structure explained 50% of the overall variance. Cronbach alphas ranged from 0.79 to 0.85. Discriminant validity was supported by nonsignificant correlations between the FIS subscales (except Caretaking) and women’s BSRI-F scores, as well as nonsignificant correlations between all FIS subscales and men’s BSRI-M scores. Convergent validity was demonstrated by correlations between the total FIS score and the passive-acceptance stage of the Feminist Identity Development Scale (Bargad & Hyde, 1991; see later). Men and women did not differ in their endorsement of two of the five subscales, and men scored higher (i.e., more conservative) than women on Stereotypic Images and Activities, Dependency, and Purity. Although the validity and reliability indicators of this measure are robust, the factor structure has not yet been confirmed; so the scale should be used cautiously.

Conformity to Feminine Norms Inventory (CFNI). The CFNI (Mahalik et al., 2005) examines adherence to traditional feminine norms and was developed to correspond to the CMNI (Mahalik et al., 2003). The 84-item scale is the most thorough existing measure of femininity and examines eight feminine norms: Nice in Relationships, Thinness, Modesty, Domestic, Care for Children, Romantic Relationship, Sexual Fidelity, and Invest in Appearance. Examples of items include “I always downplay my achievements” and “I am always trying to lose weight.” The CFNI was developed using a female undergraduate sample ($n = 733$). The eight subscales were established based on an exploratory factor analysis, and the eight-factor structure explained 40% of the overall variance. Internal consistencies ranged from 0.77 to 0.92. When women’s scores on the eight subscales were compared to men’s ($n = 98$) scores, women reported higher conformity on six of the eight subscales (no gender differences were found for Modesty and Romantic Relationship). Recently, Hurt et al. (2007) validated three of the subscales (Thinness, Invest in Appearance, and Romantic Relationship) with a sample of 282 female undergraduates. All three subscales had acceptable internal consistency scores ($\alpha = 0.81\text{--}0.85$), and adherence to the three norms was negatively correlated with identifying oneself as a feminist, which suggests divergent validity. Hurt and colleagues also found that adherence to the three norms was positively correlated with the Surveillance subscale of the Objectified Body Consciousness Scale (OBCS; McKinley & Hyde, 1996), which suggests convergent validity. Similar to the CMNI, the CFNI shows robust psychometric properties but its length may be an impediment for some research, and its factor structure has not yet been confirmed. Until further validated, we cautiously recommend this measure.

Gendered Behavior Measures

The behavioral conformity measures assess gender-typed behavior. The majority of the measures in this category were designed to address non-normative cases, such as those involving gender identity disorder (GID), congenital adrenal hyperplasia (CAH), and intersexuality (for a review, see Zucker, 2005). For ease of presentation, we refer to these types of samples as “clinically referred” or “clinical.” These scales examine gender-typing by assessing behavior (e.g., toy preference, aggression), temperament (e.g., rough-and-tumble play), and appearance through interviews, questionnaires, and observations. Many of these measures seek to discriminate between clinical and nonclinical samples (e.g., girls with CAH vs. control girls) in order to isolate gender-atypicality related to the condition. Measures for younger children often rely on parents as informants. Measures commonly used with adolescents and adults focus on gender identity, adherence to traditional gender roles, and sexual

orientation, and employ self-report questionnaires and face-to-face interviews. We also review three measures that document *normative* development in nonclinical samples.

Games Inventory. One early example of a parent-report questionnaire is the Games Inventory (also known as the Child Game Participation Questionnaire, CGPQ; Bates & Bentler, 1973), which examines gender-typing of play activities among preschool boys. The measure was developed based on a sample of 175 mothers of nonclinical boys. Mothers rated on a yes/no scale whether their son played each of 120 games regularly or infrequently/never. A total of 64 games were clustered into Feminine-preschool (e.g., dress up, play school, slides), Masculine-nonathletic (play soldier, camping, card games), and Athletic games (e.g., basketball, wrestling) based on CBAQ scores (see below, Bates, Bentler, & Thompson, 1973). The athletic score was implicitly viewed as masculine. Internal reliability scores were 0.85, 0.74, and 0.83 (Kuder Richardson) and θ (K-R) 0.97, 0.94, and 0.93, respectively, for the three types of games. When 18 participants from the nonclinical sample were paired with 18 boys referred to a gender clinic, significant differences were found for each of the three game categories. The Games Inventory was also found to discriminate between homosexual and heterosexual boys and girls, between girls with CAH and control girls, and between nonclinical samples of boys and girls (Grellert, Newcomb, & Bentler, 1982; Berenbaum & Snyder, 1995; Meyer-Bahlburg, Feldman, & Ehrhardt, 1985). Meyer-Bahlburg, Sandberg, Yager, Dolezal, and Ehrhardt (1994) used exploratory factor analysis to examine 63 of the original items used by Bates and Bentler with a nonclinical sample of 355 girls and 333 boys. The authors proposed two solutions that reflected a one-dimensional (e.g., masculinity and femininity are polar opposites) and a multidimensional (e.g., masculinity and femininity are discrete) view of gender. The first solution was found to discriminate better between boys and girls, whereas the second solution best suited examinations of androgyny. We believe that this measure needs to be revalidated given the cultural shifts in accepted and expected behavior.

Gender Behavior Inventory for Boys/Child Behavior and Attitude Questionnaire (CBAQ). In another example of a parent measure, Bates et al. (1973) created the Gender Behavior Inventory for Boys to discriminate normal-developing boys from boys diagnosed with gender disorders. The 55-item scale assesses sons' normative and effeminate-gendered behavior. Initial scale validation used a sample of 175 mothers of boys from public schools (nonclinical sample) and 15 mothers of boys referred to a gender disorder clinic (clinically referred sample). Exploratory factor analysis yielded four factors that assess Effeminacy (e.g., "He plays with dolls"), Extraversion (e.g., "He is curious and explores things"), Behavior Disturbance (e.g., "He tells lies"), and Being a "Mother's Boy" (e.g., "He likes to keep his hair neat and clean"). The amount of variance explained was not reported. Further validation used a sample of 23 clinically referred boys (12 from the previous analysis) and a group of 23 nonclinically referred boys. The CBAQ successfully discriminated between clinical and nonclinical samples for three of the four subscales (no effect for being a Mother's Boy). Further, there was a significant correlation ($r = 0.56$) between clinical boys' scores on Effeminacy and independent clinical rankings conducted by trained graduate students. No agreement was found between scores on Extraversion and Behavior Disturbance and clinical rankings ($r = 0.02-0.14$). In another sample of boys referred to a gender disorders clinic, clinical boys without gender-related problems, and nonclinical boys, the measure discriminated between gender-clinical and non-gender-clinical boys on Effeminacy and Extraversion, but did not discriminate nonclinical from clinical boys without gender problems (Bates et al., 1973). Although the CBAQ appears to be effective at discriminating between clinical populations with gender-related problems, we are concerned about its age and recommend against its use, except for replication (see discussion in Future Directions).

Child Behavior and Attitude Questionnaire for Females (CBAQ-F) and Child Behavior and Attitude Questionnaire for Males (CBAQ-M). Meyer-Bahlburg and colleagues (Meyer-Bahlburg et al., 1994) adapted the CBAQ by expanding the number of gender-role behavior questions to 71

items (CBAQ-M). They also created a parallel 68-item questionnaire to be used with girls (CBAQ-F) by adapting existing items (e.g., “She fights”) and by including gender-role behavior items for girls (e.g., “She dislikes wearing attractive girls’ clothing”). A nonclinical sample of 355 girls and 332 boys (age 6–10) was used to validate the measures, both of which were administered to both boys and girls. The authors used exploratory factor analysis and a priori design considerations to construct a Femininity–Masculinity (FEM) scale, a Cross-Gender (CG-A) behavior scale for use with all, and separate cross-gender scales for boys (CG-B) and girls (CG-C). The amount of variance explained was not reported. Internal consistencies were 0.93, 0.55, 0.53, and 0.62, respectively. The FEM scale clearly discriminated between boys and girls (Cohen’s $d = -5.67$), whereas the CG-A scale discriminated less strongly ($d = -0.33$). The advantage of this measure over the CBAQ and the Games Inventory is validation with girls and updated language and items. The FEM subscale of the CBAQ-M and CBAQ-F appears robust and effectively discriminates between girls and boys, and we support its use. However, we are concerned about the three cross-gender scales, which have low levels of internal consistency. We recommend caution when using this scale until the factor structure is validated.

Gender Dysphoria/Identification questionnaire (GDI). The 8-item GDI (Zucker, Bradley, Oliver, & Blake, 1996) contains five items that directly assess gender dysphoria (e.g., “In the past 12 months, how often have you wished that you had been born a boy instead of a girl [girl instead of a boy]?”) and three items that indirectly assess gender identification (e.g., “In the past 12 months, when reading books, have you imagined that you were the girl or woman [boy or man] in the story?”). Exploratory factor analysis confirmed a two-factor structure that explained a total of 43.9% of the variance. Internal consistency of the two factors was not reported. Zucker and colleagues used the GDI to compare 31 CAH women to 22 female siblings and cousins without a CAH diagnosis. CAH women did not differ from controls in levels of gender dysphoria, but they did report higher identification with the other gender. The validity and reliability indicators of the GDI are robust, but the factor structure has not yet been confirmed, so the scale should be used cautiously.

Recalled Childhood Gender Identity/Gender Role Questionnaire. The Recalled Childhood Gender Identity/Gender Role Questionnaire (Zucker et al., 2006) also assesses gender-typed behavior during childhood. The 23-item scale assesses adults’ recollections of childhood peer and toy preferences, fantasy play, and desire to be the other gender. The measure also contains items that measure relative closeness to each parent during childhood. Zucker et al. (2006) used a nonclinical sample of 219 adults to validate a two-factor structure of the questionnaire, which explained 45.2% of the variance. Factor 1 consisted of 18 items ($\alpha = 0.92$) that assess gender identity/gender role, and Factor 2 contained three items ($\alpha = 0.73$) that assess closeness to mother and father. Men and women significantly differed on both factors, such that men reported a more traditional pattern of gender role behavior and women reported feeling closer to their mothers than did men to their fathers. The authors also found that both factors of the scale discriminated between homosexual (24 men and 21 women) and heterosexual (26 men and 30 women) men and women, women with CAH ($n = 31$) and their unaffected sisters ($n = 15$), and between the salt-wasting status ($n = 19$) and simple virilizer ($n = 12$) CAH subtypes. The validity and reliability indicators of this measure are robust, but the factor structure has not yet been confirmed, so the scale should be used cautiously.

Gender Identity/Gender Dysphoria Questionnaire for Adolescents and Adults (GIDYQ-AA). The GIDYQ-AA (Deogracias et al., 2007) assesses cross-gender behavior and gender dysphoria in the past year. The 27-item measure was developed based on data from 462 participants (197 men, 265 women) recruited on a college campus and 73 adolescents and adults (51 boys/ men, 22 girls/women) assessed for gender dysphoria. Items were developed based on clinical experience and the *DSM-IV-TR* criteria for gender identity disorder. Items reflect subjective (e.g., satisfaction with being

a man/woman), social (e.g., presenting as a man/woman at work or school), somatic (e.g., bad dreams), and sociolegal (e.g., applying to legally change one's sex) aspects of gender dysphoria. Women's and men's versions were created by changing the gender labels where necessary (e.g., "In the past 12 months, have you felt satisfied being a man [woman]?") Exploratory factor analysis showed a unidimensional solution that explained 61.3% of the total variance. The GIDYQ-AA significantly discriminated between gender identity patients, homosexuals, and heterosexuals. For both genders, gender identity patients reported the highest scores on the GIDYQ-AA, followed by homosexual, and heterosexual participants. Drummond, Bradley, Peterson-Badali, and Zucker (2008) used the women's version of the GIDYQ-AA in a follow-up study of gender dysphoria among women ($n = 25$). The scale discriminated between gender dysphoric and non-gender dysphoric women (classified based on clinical interviews). The validity and reliability indicators of the GIDYQ-AA are robust, but the factor structure has not yet been confirmed, so the scale should be used cautiously.

Gender Identity. Egan and Perry (2001) developed a measure of gender identity that uses developmentally appropriate format to assess children's perception of membership in a gender category, perceived compatibility with the gender group, pressure to conform, and attitudes toward gender groups more generally. Based on data from a sample of 182 children (81 boys, 101 girls) in grades four through eight, Egan and Perry validated four subscales that assess Gender Typicality, Gender Contentedness, Pressure, and Intergroup Bias. Internal consistencies were 0.78, 0.79, 0.92, and 0.73, respectively. The authors computed separate exploratory factor analyses on items that reflected Gender Typicality and Gender Contentedness, items that assessed Pressure, and items that assessed Intergroup Bias; no factor analysis was reported for all of the items combined. Six-month test-retest reliability coefficients ranged from 0.56 to 0.82. Construct validity was demonstrated through small to modest ($r = 0.01-0.53$) correlations with participation in gender-typed activities (e.g., playing sports, helping in the kitchen), agentic and communal traits (e.g., taking risks, being polite), liking boys and girls, and heterosexual identity. Carver, Yungler, and Perry (2003) replicated many of these findings with another sample of 206 children from third through eighth grade. This measure appears to have strong psychometric properties, but its factor structure has not yet been validated. We cautiously recommend this scale.

Sex Role Behavior Scale (SRBS). The SRBS (Orlofsky, Ramsden, & Cohen, 1982) assesses four types of gendered behavior: Recreational Activities, Vocational Interests, Social/Dating Behavior, and Marital Behavior of adult men and women. The 240-item measure was based on an earlier 160-item measure (Orlofsky, 1981) to assess behaviors that were judged to be common for both genders but more preferable for men (Male-valued), more preferable for women (Female-valued), and those behaviors that are both more typical and more desirable for one gender or another (Sex-specific). The measure was validated with a sample of 520 undergraduates. Of these, 80 men and 80 women were asked to make judgments of desirability, and another 80 men and 80 women judged typicality of each of 366 behaviors. Finally, 100 men and 100 women provided self-ratings of the items. Scale membership was calculated by computing t-tests on desirability means by sex, and by testing whether typicality means significantly differed from the midpoint of "not more typical for one sex than the other" through t-tests. Items that were judged to be equally typical for men and women but more desirable for one gender were included in the Male-valued (e.g., sailing, accountant, being the one to initiate sexual interaction) or Female-valued (e.g., gardening, social worker, taking special care of one's appearance) scales. Items that were judged to be both more typical and more desirable for one gender (masculine: football, plumber, yard work; feminine: knitting, nurse, doing laundry) were included in the Sex-specific scale. Internal consistency alphas were >0.70 for the entire sample but lower (not reported) when the sexes were examined separately. In addition, 12 subscales were created based on the four types of behavior in each of the three scales (e.g., Female-valued Recreational Activities).

Self-ratings differed by sex such that men reported more Male-valued behaviors, more Masculine Sex-specific behaviors, and fewer Female-valued behaviors. Gender differences in Recreational Activities, Vocational Interests, Social/Dating Behavior, and Marital Behavior subscales were in the predicted direction. There was no gender difference for the Male Vocational interests subscale (Orlofsky et al., 1982). Orlofsky, Cohen, and Ramsden (1985) found moderate correlations between the Male-valued, Female-valued, and Sex-specific scales of the SRBS and the M, F, and M-F subscales of the PAQ, respectively, which suggests concurrent validity.

A short form of the measure was developed by Orlofsky and O'Heron (1987). This 96-item version was developed based on data from 411 undergraduates (200 men, 211 women) by selecting eight representative behaviors from each of the 12 subscales. Alpha coefficients were 0.83, 0.84, and 0.92 for the Male-valued, Female-valued, and Sex-specific scales, respectively, and ranged from 0.60 to 0.90 for the individual subscales. Participants' mean scores on the short-version subscales were similar (difference < 0.10) to their scores on the original subscales for all subscales except Male-valued Leisure Activities ($d = 0.21$). Scores on the short and long forms were highly correlated (≥ 0.90). McCreary, Rhodes, and Saucier (2002) conducted a confirmatory factor analysis of the short form of the SRBS based on data from a sample of 718 undergraduates (460 women, 258 men). They were unable to confirm either a lower-order model where individual items loaded onto 12 intercorrelated subscales, or a higher-order one where each of the three scales consisted of four subscales. We are concerned about the factor structure of the SRBS and recommend caution in its use.

Gender Diagnosticity. Another approach to measuring behavior conformity has been proposed by Lippa and Connelly (1990) through the use of gender diagnosticity, or the probability that a person is male or female based on gender-related identifying characteristics. Lippa and Connelly used discriminant analysis on the ratings of preference for 70 occupations (divided into seven sets of 10) and 22 hobbies (divided into four sets of five and six) of 117 men and 110 women to compute seven Bayesian probabilities based on occupation and four probabilities based on hobbies. Internal consistencies for occupations and hobbies for the sample as a whole (0.87, 0.69, respectively) were stronger than for just men (0.65, 0.29) or just women (0.66, 0.47). Scale scores and a combined score were strongly correlated with biological sex and correctly classified over 85% of participants into sex groups (i.e., male or female). Both subscales were significantly correlated ($r_s = 0.24\text{--}0.53$) in the predicted direction with participants' BSRI and PAQ scores. The authors also used exploratory factor analysis to show that gender diagnosticity was distinct from the M, F, and M-F scores of the BSRI and the PAQ. Lippa (1991) further validated the Gender Diagnosticity measure with a new sample of 264 undergraduates by computing gender diagnosticities based on preference of occupation, school subject, hobbies, and everyday activities. Gender diagnosticities were unrelated to the Big Five personality traits (Lippa, 1991). Gender diagnosticity represents an interesting approach to gender research, but we are concerned about the low levels of internal consistency in the scales.

Gender Socialization

Gender socialization, the process of learning about gender role norms, has been minimally assessed. With young children, it is typically measured in the family setting by assessing distribution of chores between the wife and husband, parents' interaction with their children, choice of child's room décor, and toy preference (e.g., Langlois & Downs, 1980; Raag & Rackliff, 1998). Among adolescents, researchers have typically focused on differential treatment of sons and daughters with regard to academic opportunities, chores, curfew, and car privileges (Crouter, Manke, & McHale, 1995; Eccles et al., 1993; Peters, 1994; Raffaelli & Ontai, 2004). These studies have relied on answers to one or two questions created by the authors or used instruments designed for the study without reliance on rigorous psychometrics. Parents' and children's attitudes are sometimes assessed with sexism

measures such as the Attitudes toward Women Scale (AWS; Spence & Helmreich, 1978; see later discussion) as a proxy for socialization (e.g. McHale, Crouter, & Tucker, 1999). Two recently developed scales assess gender socialization more directly and assess a broader range of children's and parents' beliefs and behaviors, as well as non-parental sources of influence.

Child Gender Socialization scale. The Child Gender Socialization scale (CGS; Blakemore & Hill, 2008) is a 28-item measure that examines parents' attitudes toward their children's gendered behavior. These authors used three undergraduate (and mostly non-parent) samples (total $n = 927$ women, 751 men) to develop the measure. Participants who were not parents were asked to imagine they were parents of a 6-year old, randomly assigned, boy or girl. A series of exploratory factor analyses were used for item reduction; the amount of variance explained was not reported. The final scale assessed participants' (imagined) reaction to their child's engaging with Toys and Activities Stereotyped for Girls (e.g., Barbie), Toys and Activities Stereotyped for Boys (e.g., toy trucks), Helping at Home (e.g., setting the table, cutting the grass), Family Education (e.g., "I would want my daughter's [son's] education to prepare her [him] for marriage"), and Disapproval of Other Gender Characteristics (e.g., "I would discourage my son from playing with girls' toys"). Internal consistency alphas ranged from 0.82 to 0.95. Blakemore and Hill also used a fourth sample of parents of young children ($n = 339$ women, 97 men) to validate the measure. They reported that the factor structure varied between the undergraduate and parent samples, but that constraining the factor structure of the parents' sample to match the earlier structure produced acceptable results (factor loadings 0.52–0.91, alphas 0.82–0.93). Test–retest reliability (at 1–2 months) with parents was 0.76, 0.67, 0.65, 0.76, and 0.64 for Toys and Activities Stereotyped for Girls, Toys and Activities Stereotyped for Boys, Helping at Home, Family Education, and Disapproval of Other Gender Characteristics, respectively. Construct validity was established for the Disapproval of Other Gender Characteristics subscale through correlations that indicate less egalitarian attitudes on the AWS, Modern and Old-Fashioned Sexism Scales, and the Ambivalent Sexism Inventory (Glick & Fiske, 1996; Swim, Aikin, Hall, & Hunter, 1995; described later). The CGS taps a previously unexamined aspect of gender measurement and thus is useful, but we are concerned about the variation in factor structure between data from parents and non-parents, and so we recommend that the scale be used cautiously until the factor structure is validated.

Sexual Socialization Scale. The Sexual Socialization Scale (SSS; Epstein & Ward, 2008) directly assesses the content of gender socialization by inquiring about participants' recollections of gendered messages they had received from parents, peers, and the media separately. An all-male sample of 286 undergraduates provided data to validate the 37-item measure. Exploratory factor analysis indicated a five-factor structure. Three of the factors pertain only to sexuality (e.g., abstinence) and are not discussed here. The other two factors assess Sexual Stereotypes about Men (e.g., "Men think about sex all the time") and Sexual Stereotypes about Women (e.g., "No matter what she does professionally, a woman isn't a success until she's found a man"). Internal consistency ranged from 0.76 to 0.90 across the three sources of socialization. No validation information was reported. The SSS is novel in its presentation of a comparative approach to the study of gender. However, until the factor structure is validated for both men and women, we recommend caution in the use of this scale.

Measures of Gender Role Conflict and Gender Role Stress

This class of measures examines the degree to which internalization and adherence to traditional gender roles is likely to cause stress in an individual's life. In essence, these measures posit that choosing to be masculine or feminine leads to gender-specific stress because the relevant norms preclude healthy behavior in other realms of functioning (e.g., O'Neil, 2008).

Gender Role Conflict Scale (GRCS). The GRCS (O'Neil, Helms, Gable, David, & Wrightsman, 1986) is based on the four areas of masculinity outlined by David and Brannon (1976) and on the gender role strain paradigm (Pleck, 1981, 1995). Gender role conflict is theorized to measure the dysfunctional aspect of gender role strain through restricting men's behavior to unhealthy patterns in four major areas: Success, Power, and Competition (SPC); Restrictive Emotionality (RE); Restrictive Affectionate Behavior between Men (RABBM); and Conflicts between Work and Family Roles (CBWFR). The 37-item GRCS was originally developed with male undergraduates ($n = 527$). Examples of items include "I do not like to show emotions to other people" and "I feel torn between my hectic work schedule and caring for my health." Analytically based item reduction and exploratory factor analysis were used to obtain the four-factor structure, which explained 36% of the total variance. Men were classified as androgynous, masculine, feminine, or undifferentiated based on their PAQ scores, and significant group differences were found for three (SPC, RE, RABBM) of the four subscales. O'Neil et al. (1986) reported 4-week test-retest reliabilities of 0.72–0.86.

More than 230 published and unpublished studies have used the GRCS with various U.S. ethnic groups, men from other countries, and non-undergraduate adult men (for review, see O'Neil, 2008), which makes it the most popular measure in the masculinity literature (Whorley & Addis, 2006). Blazina, Pisecco, and O'Neil (2005) created an adolescent version (GRCS-A) that retained the original four-factor structure but reduced the number of items to 30. O'Neil's (2008) review summarized 22 separate factor analyses on the GRCS and four published studies that have included confirmatory factor analysis; overall, results from both types of factor analyses have supported for the four-factor structure. This measure has shown robust psychometrics, and we recommend its use. However, we caution that only three of the subscales (RE, RABBM, CBWFR) directly measure restrictive gender roles that cause gender conflict, whereas the fourth one (SPC) assesses gender ideology directly and gender role conflict indirectly (O'Neil, 2008).

The *Masculine Gender Role Stress Scale (MGRS)*. The MGRS (Eisler & Skidmore, 1987) also measures the negative effects of reliance on restrictive masculine gender roles and a desire to live up to the masculine ideal. The 40-item scale is divided into five subscales that measure the degree of stress men experience as a result of Physical Inadequacy, Expressing Emotion, Subordination to Women, Intellectual Inferiority, and Performance Failure. Examples of items include "Feeling that you are not in good physical condition" and "Being outperformed at work by a woman." Eisler and Skidmore piloted the measure with a small sample of undergraduates (82 men, 91 women) and further refined the scale with a sample of 150 male undergraduates. The five-factor structure was examined using an exploratory factor analysis and item-total correlations. Divergent validity was supported by null relations between the MGRS, BSRI-M, and PAQ-M scores (Eisler & Skidmore, 1987; van Well, Kolk, & Arrindell, 2005).

However, the MGRS appears to be inconsistent in discriminating between men and women. Although several studies showed that men reported higher masculine gender role stress than women did (Eisler & Skidmore, 1987; McCreary et al., 1996), van Well et al. were not able to replicate this finding with a Dutch sample. Further, McCreary et al. (1996) found no gender difference in the relation between MGRS and mental health outcomes, and so questioned construct validity (e.g., whether the MGRS assessed masculine stress or general stress).

Examination of the factor structure of the MGRS has produced mixed results. McCreary et al. (1998) found that the five subscales loaded onto a single overarching construct, based on a sample of 287 Canadian men and women. Tang and Lau (1996) could not confirm the five-factor structure for a Chinese sample of 482 professionals and undergraduates with an adapted measure; exploratory factor analysis suggested a three-factor structure with 21 items. van Well et al. (2005) used the measure with a sample of 2239 Dutch undergraduates. Confirmatory factor analysis supported a multidimensional model (three or five factors) over a unidimensional structure. The five-factor model

performed slightly better than the three-factor model, but neither model met the CFI and RMSEA fit criteria established by Hu and Bentler (1999). Because of questions regarding the factor structure of the MGRS and its validity, we recommend caution when using this measure.

Feminine Gender Role Stress Scale (FGRS). The FGRS (Gillespie & Eisler, 1992), a counterpart to the MGRS, assesses five types of situations that would require women to act contrary to the traditional feminine gender role, which could cause stress and anxiety. The 39-item scale was based on open-ended responses from undergraduates and interviews with women. Based on exploratory factor analysis of data from 253 female undergraduates, five factors emerged: Fear of Unemotional Relationships, Fear of Physical Unattractiveness, Fear of Victimization, Fear of Behaving Assertively, and Fear of Not Being Nurturing (α s = 0.73–0.83). The scale includes items such as “Feeling less attractive than you once were” and “Trying to be a good parent *and* excel at work.” A 2-week test–retest reliability study showed stability, with total score $r = 0.82$. Based on a sample of 69 male and 83 female undergraduates, the authors showed that women scored significantly higher than men on the total FGRS. For women, convergent validity was demonstrated by significant correlations between the FGRS and the Hassles scale (Kanner, Coyne, Shaefer, & Lazarus, 1981), which measures gender-neutral stress. Discriminant validity was supported by low correlations between women’s FGRS and PAQ-F scores (Gillespie & Eisler, 1992).

Tang and Lau (1996) used a translated version of the FGRS with a sample of 482 Chinese professionals and undergraduates. They were not able to confirm a five-factor structure. Instead, a three-factor structure with 18 of 39 original items fit the data best. van Well et al. (2005) used a translated Dutch version of the FGRS to determine structural validity with a sample of data from over 2000 undergraduates. For both men and women, the five-factor model showed a significantly better fit than a three- or one-factor model, yet none of the models tested met the RMSEA and CFI fit criteria established by Hu and Bentler (1999). We recommend caution when using this measure until more rigorous examination of its factor structure is conducted.

Measures Related to the Relative Position of Men and Women in Society

Measures in this section focus on the different positions that men and women hold in contemporary U.S. society (Thompson et al., 1992), and the scales assess sexism and feminist identity. Defined in its broadest terms, sexism refers to differential treatment or expectations based on individual’s sex. It is typically understood to refer to a set of beliefs and practices that privilege men and includes measures of “sexism” and measures of “egalitarianism,” which are generally understood as polar opposites. Measures of feminist identity took their inspiration from Downing and Roush’s (1985) model, which argues that achieving a feminist identity is a journey for women who have experienced prejudice and discrimination, and thus differs from measures that assess perceptions of equality.

Attitudes toward Women Scale (AWS). The oldest and perhaps most popular measure of sexism is the AWS. Originally published as a 55-item scale (Spence & Helmreich, 1972), it was subsequently shortened to 25 (Spence, Helmreich & Stapp, 1973) and then to 15 items (Spence & Helmreich, 1978). Participants are asked to indicate the extent to which they agree with a series of items (e.g., “Swearing and obscenity are more repulsive in the speech of a woman than of a man”).

Scale development occurred with substantial attention to psychometric properties and replication. For each version of the scale, data were collected from several hundred undergraduates as well as several hundred of the students’ parents. Derivation of the 15-item form, for example, relied on the PAQ derivation sample ($n = 1013$ female and 756 male adolescents). Exploratory factor analysis revealed that the 55-item AWS had a reasonably robust two-factor structure for the female

subsamples (i.e., undergraduates, mothers), but this was not replicated among the male subsamples (i.e., undergraduates, fathers), where three and four factors were identified, respectively (Spence & Helmreich, 1972). Both the 25-item and 15-item forms have a single factor that is consistent across gender (Spence et al., 1973; Spence & Helmreich, 1978), and the 15-item scale continued to produce a single factor with data from undergraduates in 1992 (Spence & Hahn, 1997). The 55- and 25-item versions were highly correlated ($r_s \geq 0.95$; Spence et al., 1973; Smith & Bradley, 1980), as were the 55- and 15-item versions ($r = 0.91$; Spence & Helmreich, 1978). Spence and Helmreich (1978) reported $\alpha = 0.89$ for a subgroup of their sample. Spence and her colleagues have consistently used the 15 item scale since its development (Spence & Hahn, 1997). Divergent validity has been demonstrated through low and mostly nonsignificant correlations with PAQ scales (Spence & Helmreich, 1978; for a review, see Archer, 1989). A 22-item version with simplified language also exists, appears to be valid, and has produced results consistent with prior findings (Nelson, 1988). The AWS has robust psychometric properties, but because of its age, we are cautious about further use of the AWS. This topic is addressed in more detail in the future directions section.

A 12-item version, the Attitudes toward Women Scale for Adolescents (AWSA or ATWSA; Galambos, Petersen, Richards, & Gitelson, 1985) also exists and has been widely used. The AWSA was adapted by adjusting the language and deleting some items from the 25-item form (Spence et al., 1973). No factor analysis was conducted. Development of the AWSA with three samples of high school students ($n = 206$ girls, 123 boys) and two longitudinal samples of 6th through 8th graders ($n = 181$ girls, 154 boys) demonstrated acceptable reliability. The authors also reported 1- and 2-year test-retest correlations of $r \geq 0.57$ for boys and $r \geq 0.46$ for girls. Construct validity was demonstrated by evidence that androgynous boys were more egalitarian than other boys (in four of five subsamples) (Galambos et al., 1985). We also have age-related concerns about the ongoing use of the AWSA (see Future Directions for discussion).

Old-fashioned Sexism (OFS) and Modern Sexism (MS). The OFS and MS (Swim et al., 1995; Swim & Cohen, 1997) are based on theoretical work related to racism. The OFS was designed to assess more blatant forms of sexism, and the MS was designed to assess subtler aspects of sexism, including resentment toward women, resentment toward policies and practices designed to reduce structural inequalities, and belief that discrimination is a thing of the past (Swim et al., 1995). Development of the 5-item OFS and 8-item MS relied on two pairs of undergraduate samples (418 and 477 women; 265 and 311 men). Participants indicated the extent to which they agree or disagree with statements such as “Women are generally not as smart as men” (OFS) and “It is rare to see women treated in a sexist manner on television” (MS). In both studies, the OFS and MS loaded on distinct factors in confirmatory factor analyses. Internal consistency for OFS was 0.65–0.66, and for MS it was 0.82–0.84. The scales were significantly intercorrelated, but of relatively low magnitude ($\phi = 0.54, 0.47$), which suggests that they assess different aspects of the sexism construct. Construct validity was demonstrated through gender differences (men were more sexist), correlations with the analogous Old-fashioned and Modern Racism scales, and differential ratings of various target groups (e.g., “traditional men,” “chauvinists”). The OFS, but not the MS, demonstrated strong correlations to the AWS (Swim et al., 1995; Swim & Cohen, 1997). The OFS and MS are psychometrically robust and have been well received. We encourage their use.

Ambivalent Sexism Inventory. The ASI (Glick & Fiske, 1996) also drew on newer approaches to racism. It was designed to assess two different forms of sexism: hostile and benevolent. The authors argued that extant sexism scales fit Allport’s (1954) definition of prejudice as a manifestation of hostile intent; here women are positioned as men’s adversaries. Glick and Fiske further argued that there is a “benevolent” form of sexism in which men serve as women’s protectors because women hold lesser social roles related to helping and intimacy; in other realms, women may be functionally incompetent. They collected data from four undergraduate ($n = 1156$ women, 870 men) and

two adult ($n = 144$ women, 108 men) samples. Exploratory factor analysis with the first undergraduate sample was confirmed with subsequent samples using confirmatory factor analyses. Factor analyses were also consistent across gender. This produced a 22-item scale that included a distinct Hostile Sexism subscale (HS) and three Benevolent Sexism (BS) subscales (Protective Paternalism, Complementary Gender Differences, Heterosexual Intimacy). The ASI total, HS, and BS all demonstrated good internal consistency across all six samples ($\alpha \geq 0.83, 0.80,$ and $0.73,$ respectively). Further, men were more sexist than women and the discrepancy between the genders was larger for hostile than for benevolent sexism. HS was related to other sexism measures (AWS, OFS, MS) and to Modern Racism (Swim et al., 1995). BS was unrelated to all of these (except Modern Racism among undergraduate women), and among adult men it was related to women's possession of positive masculine attributes (Glick & Fiske, 1996, 1997). The ASI is psychometrically robust and has been well received. We encourage its use.

Schedule of Sexist Events. An alternate approach to measuring sexism is Klonoff and Landrine's (1995) Schedule of Sexist Events (SSE). Instead of focusing on the extent to which an individual holds sexist beliefs, this scale conceives of sexism as an ongoing stressor and quantifies a woman's experience of sexist events. The SSE assesses the frequency of each of 20 sexist events separately for the last year and over an individual's life through items such as "How many times have you been treated unfairly by neighbors because you are a woman. . . in your entire life/ [in the past year]?" Exploratory factor analysis revealed four factors that were almost identical for the last year and lifetime assessments and explained 54.4% and 58.8% of the variance in the last year and lifetime measures, respectively. The factors are Sexist Degradation and Its Consequences, Sexist Discrimination in Distant Relationships, Sexist Discrimination in the Workplace, and Sexism in Close Relationships, and all scales appear to be internally consistent (subscale α s $\geq 0.67,$ total score α s ≥ 0.90). The measure was developed with a sample of 294 undergraduate and 337 adult women. Two-week test-retest reliabilities among 50 sorority members produced $r = 0.63$ (last year) and 0.70 (lifetime). Ethnicity analyses suggested that Latinas' scores had a single factor that included sexist experiences in both close and distant relationships; few other differences based on demographic factors were found. Yoder and McDonald (1998) examined Sexist Discrimination in the Workplace among a group of 44 female firefighters. This SSE subscale demonstrated good reliability and was related to participants' reports of greater job persistence and less favorable collegueship, among other variables. The SSE appears to be psychometrically robust and adopts an approach to sexism that is not often addressed, although it is unclear if there are one or two relational sexism factors. We recommend caution when using this scale until its factor structure has been validated.

Feminist Identity Scale (FIS). The FIS was never formally published, but has been used regularly by researchers. Its development is described in Rickard (1989). The FIS provides subscale scores for each of the first four stages of Downing and Roush's (1985) model (Passive Acceptance, Revelation, Embeddedness-Emanation, Synthesis); the fifth stage, Active Commitment, is not assessed. Examples of items include "I am proud to be a competent woman" and "I feel like I've been duped into believing society's perceptions of me as a woman." Rickard (1989) reported high levels of internal consistency (α s > 0.84) and good 3-week test-retest reliabilities for each subscale ($r \geq 0.83$); she did not report any information about factor structure. Participants were classified as being in a particular stage of feminist identity development if only one (of four) subscale scores exceeded Rickard's original median scores. Discriminant validity was also demonstrated through comparisons of scores from members of selected groups (e.g., Right to Life, National Organization of Women) and correlations between stage scores and other gender measures (Rickard, 1989). Three-month test-retest correlations were good (Spearman-Brown correlation: 0.73 – 0.87 ; Gerstmann & Kramer, 1997). The psychometric properties of a revised version of the scale, including factor analyses, have

been examined by others; results indicate partial support for the original factor structure (Fischer et al., 2000; Gerstmann & Kramer, 1997). The FIS does not address the fifth stage of the model and concerns have been raised about its psychometric properties. We are concerned about further use of this scale.

Feminist Identity Development Scale (FIDS). The FIDS (Bargad & Hyde, 1991) also attempted to empiricize Downing and Roush's (1985) model. The 39-item scale was developed with two samples of female undergraduates ($n = 156$ and 328) and produced a score for each of the five stages. Items were piloted with the first sample and validated with the second. Sample items include "I want to work to improve women's status" and "I think that most women will feel most fulfilled by being a wife and a mother." Exploratory factor analysis of the second sample's data revealed five factors that explained 47.2% of the variance. For this sample, internal consistency was good ($\alpha \geq 0.75$) for all subscales except the fourth stage (Synthesis) ($\alpha = 0.65$). Construct validity was shown through changes in scale scores during the semester for participants enrolled in women's studies courses (lower for Passive Acceptance; higher for all other scales). FIDS subscale scores were unrelated to social desirability. Bargad and Hyde acknowledged that their subscales for Stages 4 and 5 were highly correlated, produced very similar results, and may not genuinely reflect distinct stages. Three-month test-retest correlations were good (Spearman-Brown correlations: 0.69–0.85; Gerstmann & Kramer, 1997). Others have only partially verified the factor structure (Fischer et al., 2000; Gerstmann & Kramer, 1997). The FIDS does not effectively discriminate between the fourth and fifth stages of the model, and concerns have been raised about its factor structure. We are concerned about further use of this scale.

Feminist Identity Composite (FIC). Fischer et al. (2000) attempted to explore and further refine assessment of feminist identity with data from 192 Introductory Psychology students. After partially validating the factor structure of the FIS and FIDS (separately), they computed an exploratory factor analysis of the combined FIS-FIDS. This revealed five factors that explained 36% of the variance, and the item overlap demonstrated that the FIS and FIDS were highly consistent; the 34 items with the strongest loadings became the FIC. They validated the FIC with data from a sample of 92 non-student adult and 203 undergraduate women. Confirmatory factor analysis validated the structure and internal consistencies were good ($\alpha \geq 0.75$) for all scales except Stage 4 ($\alpha = 0.68$). Convergent validity was demonstrated through correlations between Passive-Acceptance scores and having a "foreclosed" identity, Active Commitment scores and having an "achieved" identity, participation in relevant organizations (e.g., NOW), and perceptions of sexist discrimination (Kolonoff & Ladrine, 1995). Discriminant validity was demonstrated through nonsignificant correlations with social desirability scores (Fischer et al., 2000). The FIC appears to be the most psychometrically robust measure of feminist identity, although further examination of its psychometric properties is still needed. We recommend caution when using this scale until further validation.

Future Directions

In 1984, Miriam Lewin indicated that the measurement of gender was unclear, despite several decades of theory and research. Twenty-five years later, we are sad to report that this is still true. Although there are more measures than ever (and more are published every year), several important issues remain. Having reviewed several measures across various classes, we now identify issues that theorists and researchers must address. We first present some conceptual issues regarding the definitions and interrelations of masculinity and femininity, and then we outline methodological concerns and future directions for the field as a whole.

Definitions of Gender, Masculinity, and Femininity

In writing this chapter, we did not explicitly answer the question(s) “What behaviors/beliefs/traits are feminine/masculine?” Indeed, this is the subject of some debate. Across and within the classes of measures described earlier, there are some common elements and also substantial variation across scales. Across measures, the core elements of masculinity appear to include instrumentality or agency, restricted emotional expression, and rejection of all things feminine, and the core elements of femininity appear to include passivity, emotional expression, and a concern for others’ well-being. However, cross-national differences in definition and endorsement levels (Best & Williams, 1998; Gilmore, 1990; Herdt, 1994; Levant et al., 2003; Spence & Helmreich, 1978), as well as significant variation in endorsement levels of scale items across U.S. ethnic groups (e.g., Konrad & Harris, 2002; Hammond & Mattis, 2005; Ojeda, Rosaels, & Good, 2008), challenge the idea that there are universally agreed upon “core” elements. As such, we believe labeling or interpreting a scale as “masculine” or “feminine” creates inaccuracy and should be avoided.

We are also concerned that certain aspects of masculinity and femininity, as defined by some of the measures, include phenomena that have their own literatures. For example, body image (defined broadly) appears in a number of measures of femininity, including the AFIS (Tolman & Porche, 2000), CFNI (Mahalik et al., 2005), SRBS (Orlofsky et al., 1982), and FIS (Levant et al., 2007), yet it also has its own large literature (see reviews by Calogero & Thompson, Volume II, Chapter 8; Grabe & Hyde, 2006; Roberts, Cash, Feingold, & Johnson, 2006; Ward & Harrison, in press). It remains unclear whether body image should be included in the definition of femininity or should remain as a related but separate construct. Similarly, some masculinity ideology measures (e.g., Levant et al., 1992; Mahalik et al., 2003) appear to include sexist beliefs (see Smiler, 2006b), which has its own literature and which we have defined as a distinct class of measures.

Along with definitional questions regarding the content of femininity and masculinity, we might ask “What is the relation between femininity and masculinity?” Bem (1974) claimed that masculinity and femininity are separate constructs, and some (e.g., Chu et al., 2005; Levant, Richmond et al., 2007) have interpreted this to mean that they should not be correlated. Evidence consistently indicates a bipolar component of gender and negative correlations between the terms “masculinity” and “femininity” (Constantinople, 1973; Spence & Buckner, 2000; Spence & Helmreich, 1978). The bipolar position is also explicit in depictions of masculinity, in part, as “not feminine” (David & Brannon, 1976; Mahalik et al., 2003; O’Neil, 2008; O’Neil et al., 1986; Smiler, 2004) and in the (bipolar) behavioral measures described earlier (e.g., Egan & Perry, 2001; Lippa, 1991). Given the quantitative data and theoretical arguments, we must conclude that masculinity and femininity, as both terms and constructs, are partially related and partially distinct. There is substantial and urgent need for theoretical and empirical clarification to distinguish components that are specific to the unipolar gender construct (e.g., emotional stoicism vs. expressiveness) and those that are specific to masculinity and femininity as distinct components (e.g., violence for masculinity and a focus on relationships for femininity).

Psychometric and Methodological Concerns

In this chapter, we attempted to report scale characteristics as faithfully and neutrally as possible. However, we have also noticed a number of psychometric and methodological issues that require comment. In particular, we are concerned about scales (or subscales) that demonstrate notably low levels of internal consistency (<0.60) as well as reports that provide little information regarding discriminant and convergent validity or test–retest reliability. The absence of confirmatory factor

analyses (CFA) in many scale development articles is also a concern. Exploratory factor analysis (EFA) can be a helpful tool in searching the patterns of factor loadings (and cross-loadings) for individual items and may be helpful in determining the number of latent factors in the data (Wegener & Fabrigar, 2004). On the other hand, CFA requires an a priori justification of both the number of factors in the measure and individual item loadings and thus requires a more rigorous theoretical justification for the hypothesized factor structure and a more careful examination of the items. In addition, CFA can assess measurement invariance between groups within the same sample (e.g., men and women), measurement invariance across samples (e.g., change over time), and higher-order factor structures (Kline, 1998).

Scale Age

We are also concerned about scale longevity. The BSRI, PAQ, AWS, and Games Inventory, among others, are now at least 30 years old and seem out of date by current standards. The Games Inventory (Bates & Bentler, 1973), for example, positions all sport games as “masculine” even though many girls are involved in those sports today. BSRI and PAQ scores have increased from the 1970s through the 1990s (Twenge, 1997b), and Spence and Hahn (1997) suggested that the BSRI and PAQ may be experiencing ceiling effects. Indeed, some efforts to revalidate or re-norm the BSRI have replicated the original assignment of terms to the M and F scales (Holt & Ellis, 1998), but others have not (Hoffman & Borders, 2001; Konrad & Harris, 2002). In a similar vein, egalitarian scores on the AWS have also risen (Spence & Hahn, 1997; Twenge, 1997a), which has led some authors to argue that social changes require new and sometimes subtler measures (e.g., Swim et al., 1995; Swim & Cohen, 1997).

We believe that some of these scales can and should continue to be used, within certain bounds. First, the F and M scales of the BSRI and PAQ should be treated as measures of “expressiveness” and “instrumentality” (Spence & Helmreich, 1980), although we argue against using the BSRI at all because of its poor psychometrics. These scales should not be described as measures of a larger “gender” construct. Second, we believe that documentation of change over time is important, and the ongoing use of such scales allows this to be assessed. Gergen (1973) has argued that social psychology is a form of social history, and he suggested that one focus of study could be the analysis of why two constructs may be related at one time but not at another (or for one group but not another). Swim et al.’s (1995) development of the Modern Sexism (MS) and Old-Fashioned Sexism (OFS) scales speaks directly to these points. The OFS was positioned as a theoretical counterpart to the AWS, and findings for the AWS and OFS, which were correlated, were nearly identical. Findings for the MS and OFS differed. Following Gergen’s point, we might ask if older measures, such as the BSRI or AWS, still retain their original correlates, or if those correlates only persist for certain groups (and why those correlates or those groups). More rigorous calculation and reporting of psychometrics with existing measures will aid in this process.

Moving Forward

Accordingly, we encourage journal editors and reviewers to hold submitted manuscripts that present new measures to a particularly high standard for publication. More specifically, we suggest that new measures be required to demonstrate consistent psychometric properties across at least two samples, following the examples of Glick and Fiske (ASI) and Swim and her colleagues (OFS, MS).

In order to reduce concerns about variations in factor structure, we suggest that the use of theoretically driven confirmatory factor analysis be employed in determining the factor structure of new measures instead of the often-used exploratory factor analysis. We also encourage researchers to use more stringent criteria for inclusion than the typical item loading of 0.40. Although the use of a 0.50 or 0.60 criterion may make scale development more difficult and may make scales shorter, it would also be likely to reduce the possibility of *substantial* changes in factor structure across samples. We strongly encourage scale developers to validate their new measure through connections to constructs beyond other gender measures. For example, Spence and Helmreich (1978) validated the PAQ through connections to achievement motivation, Swim and her colleagues (1995) demonstrated connections between sexism and racism, and Fischer and her colleagues demonstrated connections between feminist identity and identity status (Marcia, 1966). We understand that the cost of scale development and validation may be prohibitive for some scale developers, but we are also concerned about the cost to researchers who use a newly published scale and then discover that its psychometric properties did not hold with their sample.

If our goal is to create/maintain the empirical study of gender, then we must develop and employ measures with good psychometric properties. Further, we must work to reach consensus regarding the relations between different gender constructs, such as femininity and body image, masculinity and sexism, and masculinity and femininity. We believe the field would be best served by minimizing the number of scales created and encouraging greater validation of extant scales with samples similar to the original development sample, as well as samples that differ as a function of age, ethnicity, and/or nationality.

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Chapter 8

Cross-Cultural Research Methods and the Study of Gender

Gordon B. Forbes

This chapter is intended to introduce researchers to the study of gender in a cross-cultural context. It describes the unique advantages of cross-cultural research and reviews the major theoretical and pragmatic issues associated with research in other cultures. The focus of the chapter is on the methodology and promise of cross-cultural research. It is not a review of the results of cross-cultural research on gender.

The term cross-cultural research probably produces mental images of distant locations and people whose language, dress, and worldview are much different than one's own. Exotic cultures have long fascinated adventurers, but historically adventurers' descriptions of exotic cultures were notoriously ethnocentric, judgmental, and racist (Hogan & Sussner, 2001).

Modern studies of culture began in the early part of the 20th century as both anthropology and psychology were struggling to establish the scientific basis of their disciplines. The study of gender united these fields in a manner that was to change both of them. In addition to being a major development in ethnographic research, Malinowski's pioneering 1915–1918 studies in the Trobriand Islands refuted the universality of the Oedipus complex, the single most important concept in psychoanalytic theory (Kilborn, 1982; Malinowski, 1985). However, the psychological importance of Malinowski's work went far beyond psychoanalysis. Among other things it (1) illuminated some of the hidden ethnocentric biases in psychological theory, (2) demonstrated that the universality of psychological theory cannot be assumed, and (3) illustrated some of the many insights that can only be obtained through studies of other cultures.

Without question the anthropologist with the greatest influence on psychology, particularly the study of gender, was Margaret Mead. Her *Coming of Age in Samoa* (1928) and *Sex and Temperament in Three Primitive Societies* (1935) captured the interest of the general public and challenged many of our assumptions about the nature of psychosocial development, sexuality, and gender roles. Although the accuracy of her work has been harshly criticized, most notably by Derek Freeman (1983), her *Sex and Temperament in Three Primitive Societies* produced a paradigmatic shift in how social scientists understood sex and gender. More than any other single individual Mead is responsible for the scholarly and popular recognition that definitions and expressions of masculinity and femininity are culture specific, a perspective that now informs almost all scholarly discussions of gender (Schlegel, 1989).

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Describing Social Groups

There are many constructs used to describe social groups. Some of the most important of these are culture, society, ethnicity, race, and nationality. Few of these are easily or precisely defined. Instead, different professions use these constructs in different ways and for different purposes. Usually the precise meaning of the constructs has to be determined by careful examination of how they are operationalized or, less reliably, by examination of the context in which the construct is applied. However, there is reasonably consistent agreement that there are certain core elements in each of the constructs.

Culture. Anthropologists have defined culture in over 150 ways (Kroeber & Kluckhohn, 1963), and it seems likely that psychologists and sociologists have been nearly as creative. Despite the many differences, the core elements in the concept of culture involve a group of people in a specific geographic region and historical period who share a common language, values, attitudes, religious practices, and beliefs about social roles (Chiu & Hong, 2006; Triandis, 1996).

Society. There are marked similarities between definitions of society and common definitions of culture (e.g., Ember, Ember, & Peregrine, 2002). The major distinction is that the term society, particularly as used by sociologists, includes a special emphasis on how social structures and institutions (e.g., social stratification, governmental structure, economic systems, religious organizations) influence values, interpersonal relationships, and other cultural features (Macionis, 2005).

Ethnicity and race. Like the other constructs, ethnicity is defined in many inconsistent ways. However, the common elements in the definition of ethnicity involve a sense of group identity associated with distinctive shared traditions and values that are maintained across generations (e.g., Benet-Martínez, 2007; Phinney, 1996).

Race usually refers to observable and distinctive physical characteristics of genetic origin. These include features such as hair texture, skin color, and facial morphology. Historically, these features were often assumed to reflect group differences in ability, interests, moral development, and personality characteristics. These beliefs have long been discredited, and social scientists generally agree that race is a social rather than a biological construct (e.g., Shanklin, 1994). Because of the many problems with the construct of race and the long history of using race as a justification for the unequal assignment of rights, privileges, and social roles, many social scientists avoid the term.

In place of the term race, most psychologists prefer the term ethnicity (e.g., Phinney, 1996). Although this avoids the numerous problems associated with the concept of race, ethnicity and race are not synonyms. As Phinney (1996) noted, this means that researchers' well-intended efforts to avoid the term race may obscure rather than clarify communication. For example, the ethnic term Hispanic is used to describe people living in the Americas with a shared heritage of Spanish colonialism, Spanish language, and the Catholic religion. However, this concept includes people with physical features associated with White, Black, and Indigenous American racial groupings (Benet-Martínez, 2007). Members of the White group are primarily the descendents of conquerors, members of the Indigenous American group are primarily descendents of the conquered, and members of the Black group are primarily the descendents of African slaves. Combining these groups under the label Hispanic obscures important historical, social, economical, and political differences among them. Although the concept of race may not be biologically meaningful, the social construct of race, like the social construct of gender, has enormous historical, social, economical, and personal significance. The nature and influence of these variables may be obscured when *race* is replaced with *ethnicity*.

Nationality. In contrast to the other terms, there is relatively little dispute that the term nationality refers to membership in a political entity. It may or may not include a common culture, common

language, or a single ethnicity. For a variety of reasons, primarily pragmatic ones, psychologists often implicitly or explicitly use nationality as a proxy for culture. In describing specific cross-cultural studies in this chapter, I use the term (i.e., nationality or culture) used by the author(s).

When done with care, particularly with relatively homogeneous nations or when the level of analysis is at the cultural rather than the individual level, using nationality as a proxy for culture may be useful and appropriate. However, in highly heterogeneous, multicultural/multiethnic nations it is usually desirable to collect data on the participants' cultural or ethnic identity. At a minimum, in these nations the self-selected ethnic identity of the participants should be reported and, when possible, separate analyses should be conducted for each ethnic group. (For a review and assessment of measures of ethnic identity, see Phinney and Ong, 2007.)

Describing Cultural Elements

Most social scientists agree that any specific culture has some elements in common with other cultures and some elements that are unique. Because it is important to distinguish between these elements, terms initially proposed by the linguist Kenneth Pike (1967), and based on the distinction between phonemics and phonetics in linguistics, have been widely adopted in the social sciences (Berry, 1980). Just as phonemics refer to sounds associated with a specific language, the term *emics* refers to elements found within a specific culture and, just as *phonetics* refer to elements found in all languages, *etics* refer to elements found in all (or most) cultures (Berry, 1980). That is, emics are identified from within a culture, whereas etics are identified by comparisons across cultures.

Psychological Universals

Since the days of Wundt psychologists have sought to discover universal psychological principles (laws) of behavior, much like the universal laws of the older sciences. (For discussions of the role of universals in psychology, see Brislin, 1983 and Norenzayan and Heine, 2005). The need to distinguish between universal and specific relationships is particularly true with phenomena related to gender, a concept that has been characterized as “. . . a social and cultural elaboration of a biological construct” (Schlegel, 1989, p. 267). Some gender-specific behaviors, such as lactation, are obviously consequences of biological universals. Others, such as the style of eyeglass frames, are clearly consequences of cultural influences. However, most gender-specific behaviors have multiple interlinking determinants. More often than not, efforts to separate sociocultural and biological influences have been inconclusive, controversial, or both. Many, arguably most, of these problems have occurred because separating cultural and biological influences is extremely difficult, and often impossible, if studies are confined to a single culture or a group of similar cultures (Cook & Campbell, 1979). In principle, comparisons across a wide range of cultures should allow researchers to identify features that vary and those that are invariant. The former are generally thought to reflect cultural variables and the latter to reflect human universals of evolutionary origin. Although this is often the case, it is important to remember that not all human universals are biological in their origin. For example, the use of fire is a human universal, yet few would argue that it is biologically determined. In practice, cross-cultural comparisons and their interpretation are usually complex and challenging. Much of this chapter is devoted to a description of the problems inherent in cross-cultural comparisons and methods of addressing them.

The problem of imposed etics. A major limitation of much psychological theory has been the tendency for researchers to assume that elements specific to their own culture are found in all cultures (Triandis, 1996). In psychology this tendency is most evident in the assumption that measures developed in Western societies (e.g., measures of gender role attitudes, personality characteristics, intelligence tests) are valid in other cultures. However, this ethnocentric bias is certainly not limited to Western researchers. In fact, it seems likely that members of all cultures tend to assume that the central elements in their cultures reflect immutable features of “human nature” (Ember et al., 2002). Stated in other words, researchers often assume that their emics are etics. Berry (1980) described these erroneously classified elements as *imposed etics*, a term that has been widely adopted by social scientists.

Although the pioneering research of Malinowski and Mead should have made it clear that the universality of psychological principles cannot be assumed, it frequently appears that this lesson has been forgotten. Social scientists have often been slow to recognize that many of the core relationships demonstrated in Western cultures, particularly those involving gender-specific behaviors and attitudes, do not reflect universals (etics) but are, instead, culturally specific (emics) and may not be present in other cultures (e.g., Triandis, 1999). Over the last 40 years the explosive growth of interest in cross-cultural psychology reflects, at least in part, a growing awareness of the limitations of many psychological theories. Although much progress has been made, the cross-cultural applicability of most psychological theories, including those associated with gender, has not been adequately tested.

Three Psychological Approaches to the Study of Culture

Recognition of the limitations of Western psychological theories and practices has produced three related, but conceptually different, approaches to the study of culture and the search for universal psychological laws. These three approaches are cross-cultural psychology, cultural psychology, and indigenous psychology. As with all psychological approaches, these emphasize the individual. However, unlike traditional psychological research, these approaches are concerned with the individual *in a specific cultural context* (Berry, 1980). This emphasis is important because in most traditional psychological research the role of culture is unrecognized. In addition, when it is recognized it may be seen as simply another confounding variable that must be controlled (Kim, 2000).

As is the case in most aspects of the study of the individual and culture, there are many conflicting definitions of each of these approaches. However, there is a reasonable consensus that certain features are more characteristic of one approach than of the others. Drawing on the perspectives of Triandis (1999, 2000; Triandis & Brislin, 1984), Greenfield (2000) and Kim (2000; Kim, Yang, & Hwang, 2006), the following discussion emphasizes those features generally recognized as differentiating one approach from the others.

Cross-cultural psychology. Cross-cultural psychology draws on established psychological theories and determines if they apply to other cultures. That is, an important goal of cross-cultural psychology is to determine which theories and relationships are culture bound and which are likely to be universals. Seen from this perspective, cross-cultural psychology is an important tool for strengthening psychological theory and broadening the scope of psychological knowledge. Cross-cultural psychology usually treats culture as an antecedent variable that lies outside of the individual. That is, culture and behavior are seen as separable. For a history and discussion of major issues in cross-cultural psychology, see Lonner (2005).

Cultural psychology. Cultural psychology, which is a broad area with poorly defined boundaries, has been characterized as the intersection of psychology, anthropology, and linguistics (Hatano,

1999; Kral, Burkhardt, & Kidd, 2002; Shweder & Sullivan, 1993). Although there are large differences in the interests and approaches of cultural psychologists, they all share the common perspective that culture and mind are within the individual and inseparable from the individual (Kim, 2000; Miller, 1999). In contrast to cross-cultural psychologists who are primarily interested in similarities and differences in psychological processes among cultures, cultural psychologists are primarily interested in how cultural processes shape psychological processes, particularly perception and cognition, within a culture. Both for philosophical reasons and because they often studied exotic cultures that were relatively uninfluenced by formal symbolic language, in the past cultural psychologists rarely used formal questionnaires, scales, or similar measures. (See Greenfield, 1997, for a valuable discussion of the important distinction between “schooled” populations, i.e., those dependent on formal symbolic language, and “unschooled” populations, i.e., those with little or no formal symbolic language.) In the last two decades, particularly as cognitive and developmental psychologists have become increasingly interested in cultural influences (e.g., Miller, 1999), many cultural psychologists now employ formal measurement tools and traditional laboratory techniques. Although cultural psychologists may make comparisons between cultures or among groups within a specific culture, generalization of their results is usually a secondary interest. For a history and discussion of major issues in cultural psychology, see Shweder and Sullivan (1993).

Indigenous psychology. Indigenous approaches to psychology originated in reactions to implicit or explicit claims of universality by Western psychologists. Indigenous psychologists are often non-Westerners who have been educated in the West. As such, they are in a unique position to recognize the biases and implicit assumptions of Western theories. In addition, with an intimate knowledge of their own culture, they are able to identify unique aspects of their culture that are not represented or are misrepresented in Western theories (e.g., Boesch, 1996; Laungani, 2002). Indigenous psychologists argue that it is impossible to study a culture from the outside and impossible to separate culture from behavior and personality. According to this view, efforts to separate culture and personality result in the inability to understand either.

Indigenous psychologists fall into two general groups (Kim, 2000). First, there are those who agree that the identification of universals is an important goal of science, but who believe that the search for universals is premature. They argue that it is impossible to find universals without first understanding each unique culture from within. It is only when this task is completed that universals can be identified. Second, there are those who argue that both universals and meaningful comparisons between cultures are impossible because all psychological knowledge is specific to its culture of origin, i.e., all psychology is indigenous (Kim, 2000). For a history and discussion of major issues in indigenous psychology, see Allwood and Berry (2006).

Although these three approaches to the study of culture have clear differences and, at least to some extent, are incompatible with each other, each makes a unique contribution to the understanding of cultural influences on human behavior. As Triandis (2000) and many others have indicated, each of the approaches has value, and each complements the contributions of the others.

Advantages of Cross-Cultural Research

Although cross-cultural research has many advantages, its most important contributions are in (1) the search for universals and the expansion of theory, (2) increasing the variance of processes and variables, and (3) allowing for the isolation of variables (Brislin, 1983; Triandis & Brislin, 1984).

Search for universals and the expansion of theory. One of the central goals of Western psychological science is the identification of universals, yet, ironically, most research has been done by Western psychologists studying samples of Western college students. The degree to which the results of these

studies can be generalized to other cultures is unknown, and it certainly cannot be assumed that such generalizations are warranted or will be successful (Lonner, 2005; Segall, Lonner, & Berry, 1998). Because it is impossible to identify psychological universals without making comparisons, it is only through the systematic use of cross-cultural research designs that psychological universals can be identified. If such research is successful, it allows for the direct expansion of theory. However, theory is also enhanced when research is not successful. This is because the identification of theoretical limitations often results in the refinement and expansion of theories.

Increases in variance of processes and variables. Research in a single culture or closely related cultures (e.g., cultures of western Europe or eastern Asia) usually tap only a narrow segment of the total range of human variability in the process or behavior in question. These studies may lead to the erroneous conclusion that a variable is either a universal or unrelated to the process in question, whereas studies of a wide range of cultures might lead to a very different conclusion. For example, a study of the belief that romantic love is a prerequisite for a successful marriage would yield a nearly universal endorsement of this belief if the study were restricted to Western cultures. However, a study including a broader range of cultures, including those where arranged marriages are normative, would lead to a different conclusion (Ember et al., 2002).

The isolation of variables. Unambiguous interpretation of a study from a single culture or a pair of cultures is impossible because the cultural variable of interest inevitably covaries with other potential variables (Segall et al., 1998). However, quasi-experimental designs that hold one variable constant and select cultures that vary on other potential variables are powerful techniques that make it possible to isolate the influence of the cultural variable of interest (e.g., Cook & Campbell, 1979).

The work of Hopcroft and Bradley (2007) provides a good example of how the combination of a well-developed theoretical structure, an existing data set that represents many cultures, and sophisticated statistical analysis can tease out the role of cultural differences. In their study of gender differences in contributors to depression, their data set contained representative samples of adults from 29 countries in the 1990 World Values Survey.¹ They used hierarchical logistic modeling to control for a variety of other variables known to be related to depression (e.g., age, health, marital status, employment, religion, number of children) to test a series of hypotheses concerning relationships between levels of gender equality and (1) the existence of depression and (2) the size of the gender difference in the incidence of depression. Consistent with their hypotheses, when confounding variables were statistically controlled, they found that depression was highest in cultures with low gender equality, but the gender gap in levels of depression (higher in women) was largest in high gender equality cultures.

Types of Cross-Cultural Research Designs

Cross-cultural research is a versatile strategy that is employed to address a wide variety of problems. Consequently, it includes a broad range of research designs. The most elementary design is a simple exploratory study to compare two cultures on a single measure of one variable. At the other extreme cross-cultural research may involve the testing of multiple hypotheses, which have been carefully derived from established psychological theory, by employing multiple measures of multiple dependent variables in a group of cultures that have been selected to represent different levels of one or more relevant variables.

¹Information on the World Values Survey and access to data files may be obtained at <http://www.worldvaluessurvey.org>.

In their taxonomy of cross-cultural research designs, van de Vijver and Leung (1997) identified two independent dimensions of research designs. These are based on the role of hypothesis testing (exploratory versus theory-based designs) and the presence or absence of considerations of contextual elements, such as demographic variables, attitudinal measures, and personality characteristics. These two dichotomies produce a fourfold taxonomy that is a useful way of thinking about the types of designs used in cross-cultural research and the types of conclusions that can be drawn for each design.

Simply exploratory studies. The most elementary cross-cultural studies are those that administer one or more measures of one or more psychological variables in two or more cultures. Van de Vijver and Leung (1997) called these *psychological differences studies*. This type of research is done simply to determine if differences exist. Many of the early studies in cross-cultural research were of this type, and they are still reasonably common. Of necessity, these studies are atheoretical because there is too little previous research or established theory to justify the construction of formal hypotheses. Because these studies represent the earliest stage of scientific research, there is little concern with contextual variables; and explanations of the results are post hoc. In studies of this type it is usually impossible to determine what variables are responsible for any differences that are observed. As Campbell and Stanley (1966) cautioned, this is always the case if only two cultures are compared and only one variable is measured.

A recent example of a simple exploratory study was an investigation of gender and culture on eating attitudes and body dissatisfaction in five different cultures (Kayano et al., 2008). The authors administered two widely used psychological measures associated with disordered eating, the EAT-26 (Garner & Garfinkel, 1979) and the Drive for Thinness subscale of the Eating Disorders Inventory-2 (Garner, 1991). Although the authors expected to find cultural differences, they made no specific hypotheses concerning the nature of the differences. In the discussion of their results, the authors offered several possible explanations for their results and identified important topics for future research.

Context sampling exploratory studies. These designs include one or more measures of one or more psychological dimensions in two or more countries, but they also include multiple demographic variables (e.g., age, education) and/or psychological variables (e.g., self-esteem, locus of control). Contextual variables for these studies are not selected on the basis of well-developed and established theories because these theories usually do not exist. Instead, these studies usually employ a fairly broad array of variables suggested by informal theory and limited prior research. These studies then explore the relationships between this array of contextual variables and cultural differences.

This research has two goals. The first is to demonstrate the existence of cultural differences on the variables of interest. The second is to determine the association, if any, between the observed differences and the measured contextual variables. Because this research is designed to determine which of an array of contextual variables is a predictor of specific cultural differences, regression or correlation techniques are usually employed. Like simple exploratory research, the results of these studies only demonstrate associations and are unable to determine causal relationships.

For example, Félix-Ortiz, Velázquez, Medina-Mora, and Newcomb (2001) studied cultural and gender differences on four measures of drug use among Mexican high school students in Norte Baja California and Mexican American students in Los Angeles. The study explored the influence of basic demographic variables (e.g., age, gender), six individual variables (e.g., sadness, history of sexual abuse), and five environmental variables (e.g., availability of drugs, social intolerance of drug use) through comparisons of frequencies or group means and a series of logistic multiple regression analyses. Their study identified important gender and cultural differences in the strength of predictor variables and identified variables of interest for future study. The authors also indicated how

their results suggested ways that prevention strategies could be optimized for each gender and each culture.

Western psychology, particularly social psychology, generally eschews atheoretical research. In fact, such studies are often dismissively characterized as “only” or “merely” exploratory, and Western psychology journals are reluctant to publish them. However, it is important that the limitations of exploratory research not be allowed to obscure the value of this approach. Scientific theories cannot be developed in the absence of empirical data. Exploratory research is a valuable way to get an overview of previously unstudied cultures or phenomena. These studies may identify variables that require further study and often serve as a rich source of hypotheses. Limiting research only to those things that we already know enough about to construct or test formal theories is shortsighted and ultimately impedes the growth of knowledge. There is a dazzling kaleidoscope of human cultures. Psychologists are just beginning to appreciate this enormous diversity and to consider how this diversity is related to psychological processes. Exploratory research has a valuable role to play in the identification and understanding of these relationships.

Generalizability studies. These very common studies test hypotheses about cross-cultural similarities. Until the last decade or so these studies almost always were designed to determine if results found in Western cultures were also found in non-Western cultures. With the growth of indigenous psychology these efforts have been sharply and appropriately criticized because of their implicit or explicit assumption that Western cultures are the standard by which other cultures are to be evaluated (e.g., Kim et al., 2006; Sinha, 1996). Although it is now possible to find examples of studies designed to determine if results found in non-Western cultures are also found in Western cultures (e.g., Cheung et al., 2001), these are still uncommon. Generalizability studies typically examine only the presence or absence of communalities between cultures. These studies have many similarities to simple exploratory studies. The major difference between them is that generalizability studies are driven by the explicit theoretical position that universals exist and can be found. Consequently, these studies are the initial stage in the establishment and understanding of psychological universals.

Many generalizability studies have focused on personality measures developed in Western countries (Church & Lonner, 1998). Typically these studies are designed to determine if there is a common factor structure across cultures. In the past these studies have often included only two cultures or countries, but large studies involving many cultures and co-investigators are now quite common. For example, McCrae and Terracciano (2005) reported data collected with 78 co-investigators representing 50 cultures. These large studies that make it possible to contrast results from many cultures are particularly useful in identifying universals. However, it should be noted that the strongest support for universals does not come from the studies with the most countries, but from studies with the most diverse cultures. That is, a demonstration of a similar factor structure in samples from 20 Western countries is a far less compelling argument for universality than a similar demonstration among a much smaller, but far more diverse collection of cultures such as those represented by a lowland tribe in Papua New Guinea, the Canadian Inuit, college students in Rome, and high-tech workers in Hong Kong.

Theory-driven studies. These are the most sophisticated cross-cultural studies. They test formal hypotheses concerning relationships between theoretically identified cultural variables and specified dependent variables. Although true cross-cultural experiments cannot be done (i.e., researchers obviously cannot assign participants to cultures), powerful quasi-experimental designs can be used. In their most sophisticated form, these designs include multiple variables, with multiple measures of each variable, and an array of cultures that have been specifically chosen to represent different levels of the variable(s) of interest. There is general agreement that at least three cultures should be selected (Benet-Martínez, 2007; Segall et al., 1998). For example, in a study of how gender and the individualism–collectivism dimensions influence expression of aggression my colleagues and I

(Forbes, Zhang, Doroszewicz, & Haas, 2008) used China as an example of a strongly collectivistic culture, the United States as an example of a strongly individualistic culture, and Poland as an example of a culture with a balance of collectivistic and individualistic values.

Sources of Cross-Cultural Data

Fieldwork. The traditional method of data collection is fieldwork of the type used in anthropology. This involves learning the local language and living in the culture as a participant observer for months or years. This kind of research, exemplified by the pioneering work of both Malinowski and Mead, is beyond the training and resources of most psychologists. Although few psychologists will ever do field research, psychologists can benefit from the efforts of anthropologists through the use of cataloged collections of ethnographic studies. These collections, such as the *Ethnographic Atlas* (Murdock, 1967), the *Atlas of World Cultures* (Murdock, 1981), the *Human Relations Area Files* (Ember & Ember, 1996)², and the *Standard Cross-Cultural Sample* (Murdock & White, 1969), catalog the accumulated efforts of several generations of anthropologists and describe well over 1000 different cultures. Ember and Levinson (1991) provided many examples of how these sources of secondary data can contribute to studies of gender. Researchers interested in using collections of ethnographic studies should consult Ember and Ember's (2001) *Cross-Cultural Research Methods* for a helpful guide to the use of these valuable anthropological resources.

Cataloged collections of ethnographic studies have played a particularly important role in the debate over the theoretical and social significance of gender differences in mating preferences. This debate has focused on the different perspectives and predictions of evolutionary theory (Buss, 1995, 1998; Buss & Schmitt, 1993) and social constructionist theory (Beall, 1993; Gergen, 2001).

In their important comparison of predictions concerning gender differences made by evolutionary theory, social constructionist theory, and their own biosocial theory, Wood and Eagly (2002) made extensive use of their own and others' analyses of data from cataloged collections of ethnographic studies. They used these analyses to support their argument that neither evolutionary theory nor social constructionist theories are sufficient to explain gender differences. Instead, they argued that gender differences originate in the interaction between the physical differences between the sexes, particularly those associated with female reproduction, and social structures.

Governmental and other statistics. Governmental and international groups publish an enormous amount of data on education, population trends, health, economics, and similar variables. Much of this material is directly relevant to the study of gender. Unfortunately, as van de Vijver and Leung (2000) noted, the very abundance of these data, paired with the limited amount of theory to guide the selection of variables, may complicate the selection of variables for context sampling exploratory studies. In addition, the statistics are typically aggregated by political units (e.g., nations, provinces) rather than by culture or ethnicity. However, the wealth of data available and the very low cost of acquiring it provide creative cross-cultural researchers with many opportunities.

Cross-cultural researchers on gender and related issues are often interested in measures of gender equality. Two of the most useful indexes of gender equality are provided by the United Nations Development Programme and are available in their *Human Development Reports* (e.g., United Nations Development Programme, 1995). The first index, the Gender Empowerment Measure (GEM), is a measure of the extent to which women and men are equal participants in the economic

²Information on the electronic version of the *Human Relations Area Files* (eHRFS) can be obtained at <http://www.yale.edu/hrf/collections.htm>.

and political life of their nation. Higher scores reflect greater equality in earned income, legislative representation, and the distribution of administrative, managerial, and professional jobs. The second important index, the Gender-Related Development Index (GDI), reflects gender differences in access to health care, education, economic resources, and general standard of living. Higher scores on this index reflect greater gender equality in the availability of physical and cultural resources.³

In cross-cultural research these indexes are particularly useful in helping to understand the role of gender inequality in cultural differences. For example, in a study of 52 countries, Archer (2006) reported significant correlations between both the GEM and GDI and the men's physical assaults on their female partners. The results indicated that increases in gender equality are associated with decreases in aggression against women. Similarly, in their study of gender differences in hostile and benevolent sexism in 19 countries, Glick and his colleagues (Glick et al., 2000) found that levels of hostile and benevolent sexism are associated with both the GEM and GDI measures of gender equality, even when the nation's level of general economic development was statistically controlled. Their results, which were subsequently replicated in a study of nine nations (Eastwick et al., 2006), indicated that, consistent with ambivalent sexism theory (Glick & Fiske, 2001), nations with high levels of sexism have low levels of gender equality.

The GEM and GDI measures of gender equality, frequently coupled with data from the previously noted collections of ethnographic studies, have played an important role in the ongoing debate over the theoretical significance of gender differences in mate preferences. According to Eagly and Wood (1999), both evolutionary theory and social structural theory predict the robust and frequently replicated finding that men emphasize physical attractiveness and youth in mate selection, whereas women emphasize earning potential and maturity. Evolutionary theory predicts that, because of its purported origin in evolutionary processes, this difference would show little variability across cultures. In contrast, social structural theory predicts that gender differences in mate preferences would parallel the large differences in social structure, specifically differences in gender equality. In their re-analysis of the 37-culture study of mate preferences reported by Buss (1989), Eagly and Wood (1999) tested these alternative hypotheses by correlating the size of gender differences in mate preferences with both the GEM and GDI measures of gender equality. They found that gender differences in mate preferences were largest in cultures that were lowest in gender equality and declined as gender equality increased. Furthermore, in the case of gender differences in the preferred age of the mate, the measures of gender equality accounted for as much as 50% of the variance. Eagly and Wood concluded that these results are consistent with the predictions of social structural theory and inconsistent with the predictions of evolutionary theory. A well-developed alternative view, which also made extensive use of the GEM and GDI measures of gender equality, was presented by Gangestad, Haselton, and Buss (2006). For a different approach and an extensive discussion of the conflict between social structural theory and evolutionary theory, see Schmitt's (2005) study of mating strategies in 48 nations.

Study-specific data collections. Much of the time the variables of greatest interest to psychologists are not represented in existing sources. This is particularly true for personality and attitudinal measures. In order to study cross-cultural differences in these variables, researchers must collect their own data. However, there are formidable obstacles to a single researcher collecting data in more than one culture. In addition to obvious logistical concerns and economic constraints, researchers often lack detailed knowledge of other cultures and languages.

³Annual Human Development Reports that contain the GEM, GDI, and other useful measures from the United Nations Development Programme are available from a commercial publisher or at no cost from the web site <http://www.undp.org>.

Problems with language limitations are obvious. Problems in lack of knowledge of the local culture may be less obvious, but they are also important. Some of the limitations produced by the lack of specific cultural knowledge can be addressed by taking advantage of the increasing number of training programs and materials designed for people working in other cultures. However, it is simply unrealistic to expect that most people who are not native to a culture can acquire adequate local knowledge in a reasonable amount of time. There is a growing consensus that there is no adequate substitute for local co-investigators who are bilingual and, ideally, bicultural (Greenfield, 1997; Triandis & Brislin, 1984; Williams & Best, 1990). After all, even in one's native language and culture there are many challenges in translating psychological theory into testable hypotheses and practical research designs. The special expertise that local co-investigators contribute to these tasks is invaluable. Unless the researcher is fluent in the local language and is studying a very small number of similar cultures (e.g., two or three western European or Central American cultures), local co-investigators should be considered essential. This approach to cross-cultural research is becoming very common and should soon become the standard practice, if that is not already the case.

Nature of Measurement Issues

Psychological research almost always involves sophisticated measurement. Even within a single culture there are challenging problems inherent in most psychological measurement. The cultural and language differences associated with cross-cultural research exacerbate these and add further difficulties that are specific to cross-cultural comparisons.

One of the many factors that influence the measurement problems confronted in cross-cultural research is the purpose of the research. Van de Vijver and Leung (2000) noted that there are two groups of scientists doing cross-cultural research. The first, whom they described as the *natives*, are researchers whose primary interest is in developing a theoretical understanding of the relationship between culture and psychological variables. In contrast, the second and largest group, whom they called the *sojourners*, consists of researchers who are using cross-culture research designs to expand their research in other areas. That is, culture is the primary topic of study for natives, whereas sojourners use culture as a tool to study other topics.

The research problems encountered by natives and sojourners have important similarities, but they differ in their complexity. Because this chapter is intended to introduce social scientists working with gender issues in traditional research designs (i.e., sojourners) to cross-cultural research, I focus on the needs of this group. Readers interested in a more detailed discussion of these issues, particularly from the perspective of native researchers, should consult the excellent book on cross-cultural research methods by van de Vijver and Leung (1997).

The vast majority of the research done by the sojourners involves the testing of theories and the employment of measures developed in Western cultures. These are the types of studies that van de Vijver and Leung (1997) described as generalizability and theory-driven studies. Although the researchers who conduct such studies run an obvious risk of assuming universals where they do not exist or of making the implicit assumption that Western culture is the standard for comparison, such errors are not inevitable. Indeed, one of the many advantages of the recommended strategy of local co-investigators is a greatly increased level of protection against these errors.

Assuming these and related errors are avoided, the most significant problems may arise, not with the variables that are included in the study, but with the variables that are not. That is, in a focused, theory-driven search for hypothesized similarities, important cultural differences may not be considered or even recognized. This is particularly problematic because it is almost impossible to recognize

the influences of variables if their existence is unknown (Williams & Best, 1990). When this occurs, the results, as far as they go, may be correct, but the absence of undetected cultural influences makes the total picture incomplete and potentially misleading. A good case in point is provided by some of the cross-cultural research on the five-factor personality theory. Initial studies with a translated version of the original Western personality inventory replicated the robust five-factor structure found in Western samples (Church & Lonner, 1998; McCrae & Costa, 1997). Subsequent research with an inventory developed within the Chinese culture replicated the five factors typically found in Western research, but also found an additional factor that may be specific to the Chinese culture (Cheung et al., 2001; Lin & Church, 2004). Local co-investigators should be very helpful in reducing the risk of these errors, but errors are always possible when theories and measures are employed outside of their culture of origin.

Issues with Translation

Translation, which lies at the core of most cross-cultural research, is rarely a simple matter. There are many useful discussions of how to design materials for ease of translation (e.g., Greenfield, 1997; van de Vijver & Hambleton, 1996; van de Vijver & Leung, 1997). Many of these draw heavily on the work of Brislin, particularly his often-cited guidelines for writing scale items (Brislin, 1986). Almost all advice on constructing scale items emphasizes the importance of clearly written, simple sentences. It is particularly important to avoid the use of colloquialisms and metaphors, double negatives, words or phrases whose meaning must be determined by context, and vague modifiers. Problems produced by departures from these guidelines become particularly serious when translating across language groups (Benet-Martínez, 2007). For example, it will be much more challenging to translate between English and Chinese than between Spanish and Italian.

Native researchers and sojourner researchers share many of the challenges associated with translation, but the problems faced by the two groups differ in one important way. Native researchers, because they are primarily interested in the study of culture, often develop their own measures. This allows them to design their measures to minimize problems with translation and to use techniques to maximize the cross-cultural applicability of their measures. In contrast, sojourners, who seek to extend concepts and theories developed in one culture to other cultures, almost always use measures that have been developed and validated in their culture of origin. This practice has the enormous advantage of tying the research to an established body of data and theory. Indeed, extending this established body of knowledge is what usually motivates the sojourner's interest in cross-cultural research.

Unfortunately, the measures of interest to sojourners were almost never designed with translation in mind and may present formidable translation problems. This is particularly true for measures of attitudinal and personality variables, some of the most common measures used in sojourner cross-cultural research. In these types of measures, intentional single or double negatives are commonly used to reduce response sets, colloquialisms may be intentionally introduced to produce less formal and more natural language, and Likert-type scales with vague anchor points (e.g., sometimes) are often employed. An additional complication may occur because scale items are often intentionally devoid of any contextual information. Context-free items often work well in individualistic Western cultures because these cultures tend to perceive the causes of behavior as residing within the individual, i.e., the causes of behavior are relatively independent of the context. However, context-free measures are often poor choices for use in collectivistic, particularly Confucian, cultures because these cultures emphasize the importance of the context in determining behavior, i.e., behavior is

strongly influenced by events outside of the individual (Nisbett, 2003). Because most psychological measures are developed in individualistic cultures, but most of the world's population lives in collectivistic cultures, this is an important issue (Benet-Martínez, 2007).

Back-translation. Brislin (1970, 1980, 1986) has had an enormous influence on translation practices in cross-cultural research. Although back-translations were used prior to 1950 (e.g., Stern & d'Epinary, 1947), Brislin (1970) introduced most psychologists to this extremely important technique. In its simplest form, back-translation has one person translate material from its original language to a different (target) language. A second person then blindly (i.e., without seeing the original) translates the material back into the original language. The two translators then discuss and resolve any discrepancies between the original and the back-translated version. There are several variations of this basic technique. For example, committees of experts may be substituted for individual translators at any or all stages in the process (Benet-Martínez, 2007; Brislin, 1970).

Back-translation, in one of its various forms, has become the de facto standard for cross-cultural research. There is no doubt that back-translation is an extremely important part of the cross-cultural researcher's tool kit. However, like any tool, it has its limitations. The native group of cross-cultural researchers is well aware of these limitations (e.g., Greenfield, 1997; van de Vijver & Leung, 1997), but the limitations may be less obvious to researchers from the sojourners group. As a consequence, researchers may conclude that a satisfactory back-translation insures that the two versions of the instrument are equivalent, but this is not necessarily the case (Peña, 2007).

Equivalence of translation. Equivalence of translation is a complex issue with many different levels and meanings. Herdman, Fox-Rushby, and Badia (1997) reported 19 different types of equivalence. Problems resulting from the multiple types and levels of equivalence are compounded by vague definitions and inconsistent terminology. Although they are not always easy to make, distinctions between types of equivalence are important because the different forms of equivalence are not necessarily related. That is, it cannot be assumed that the demonstration of one type of equivalence indicates that other types or levels of equivalence are present (Brislin, 1970, 1980).

The problem of equivalence is most evident, but certainly not limited to, the translation of idiomatic expressions. For example, the idiomatic English expression "once in a blue moon" is best translated as the idiomatic Spanish expression "every time a bishop dies" (Werner & Campbell, 1970, p. 399). With idiomatic expressions, a word for word, literal translation could result in a "perfect" back-translation, but the result of such a translation would have little or nothing to do with the original meaning of the material. Word for word equivalence, often described as *semantic* (e.g., Guillemín, Bombardier, & Beaton, 1993) or *linguistic* (Peña, 2007) equivalence, provides no information about the similarities, if any, in the meaning of the translated material. In addition, semantic equivalence does not provide any information on the difficulty of the vocabulary or the complexity of the sentence structure in the translations. In research involving children, additional complications may occur because the difficulty and age of learning of linguistic concepts and forms may vary between languages. Differences in all of these areas, which are often neither recognized nor measured, may seriously confound comparisons between groups (Peña, 2007; van de Vijver & Hambleton, 1996).

For most purposes the most obvious and important form of equivalence is *construct*, also known as *conceptual*, equivalence, i.e., the extent to which two or more translations convey the same meaning (Benet-Martínez, 2007; van de Vijver & Leung, 1997). A classic and extremely helpful discussion of equivalence and related issues is provided by Werner and Campbell (1970). In recent years there has been increasing recognition of the importance of concerns with *metric* or *statistical* equivalence. These concerns involve issues of reliability, differences in variance, shape of distributions, etc. As these problems have been recognized, sophisticated statistical techniques have been employed to address them. A valuable introduction to the use of these techniques is found in

Chapter 4 of van de Vijver and Leung (1997). Useful discussions are also provided by Byrne (1989; Byrne & Campbell, 1999), Caprara, Barbaranelli, Bermúdez, Maslach, and Ruch (2000), and Singh (1995).

Response styles. Response styles, also known as *response sets* or *response biases*, refer to a participant's tendency to respond in a specific way to scale items, independent of the item content (Fischer, 2004). These styles include tendencies to agree (acquiescence), disagree (disacquiescence), and avoid using extreme response categories. The Western personality and attitudinal measures commonly used in sojourners' research often have items that are answered on scales anchored with levels of agreement. In cultures that emphasize the value of social harmony and the avoidance of conflict, there may be tendencies to avoid endorsing statements of strong disagreement and/or to endorse statements of agreement. Either or both of these response styles are potentially serious sources of bias, particularly in studies that compare group means. This is because unrecognized cultural differences in response styles may obscure or be mistaken for cultural differences in the variables being studied (Harzing, 2006).

In recent years, the nature and importance of response styles have been extensively discussed in the cross-cultural research literature. For reviews of response styles, methods of measurement, and management techniques, see Fischer (2004), Smith (2004), and van de Vijver and Leung (1997). The general consensus seems to be that cultural differences in response styles can be reduced but not eliminated. To complicate matters, there is no single effective approach to their management. Instead, the most effective way to manage response styles varies with the culture and the nature of the measurement.

Decentering. Researchers who develop their own measures have two important advantages over researchers who use established measures. First, as previously noted, they can avoid many translation problems through the careful design of their measures. Second, they have far more flexibility in modifying their instruments through back-translation or other techniques that detect translation difficulties. In particular, they are able to use the important technique of decentering (Brislin, Lonner, & Thorndike, 1973; Werner & Campbell, 1970). This technique, which is closely related to back-translation, involves the use of a series of translators. Translator A translates from the source (original) language to the target language; Translator B then blindly translates it back to the source language; Translator C blindly translates it back to the target language; Translator D blindly translates it to the source language, etc. That is, the material is translated back and forth between source and target language by a series of independent translators who have no knowledge of the content of previous translations. This process is repeated as often as necessary to remove all cultural and language-specific influences from the measure. That is, at the end of this process the measure is no longer centered in its culture of origin but now contains only shared (etic) concepts that are equally applicable in both cultures (Brislin, 1980).

This process gives reasonable assurance that the resulting translation has conceptual equivalence across languages and cultures, but it may produce an instrument that is substantially different from the original. If a new measure is being developed, this may not be of concern. However, for researchers who are interested in closely linking their results to an existing body of knowledge, i.e., the typical sojourner researcher, every departure from the original makes it more difficult to compare the results with existing data. This presents researchers with a dilemma: Decentering their measures makes it much easier to compare their results across cultures, but much more difficult to determine the extent to which their results can be linked to established bodies of knowledge based on the original instrument.

Management of problems with translation. The closer the process of translation and the more the forms and levels of equivalence are examined, the more problems become evident and the more elusive their solutions may appear. As Brislin (1980, p. 426) observed, “. . .Richards (1953, p. 25)

has probably echoed the feelings of many researchers in asserting that translation is ‘probably the most complex type of event yet produced in the evolution of the cosmos.’” Although the recognition that all cross-cultural researchers face similar problems may provide some degree of solace, it does not solve the seemingly endless problems associated with translation. The most reasonable approach for sojourner researchers involves three steps. First, they should use the best techniques available. This certainly includes the use of some form of back-translation. Second, they should rely on bilingual and bicultural co-investigators from the culture(s) of interest. These co-investigators have the dual advantage of intimate cultural/language knowledge and intimate scholarly knowledge of the theories and measures of interest. Third, they should recognize that even the best translations are rarely perfect, and the greater the differences between cultures and languages the more and greater the imperfections (Peña, 2007; Werner & Campbell, 1970). Researchers can minimize the impact of these inevitable imperfections by employing multiple measures for all variables (Best, 2001; Greenfield, 1997; Triandis & Brislin, 1984). The use of multiple measures is particularly important when the dependent variable is complex and multifaceted (Campbell & Fiske, 1959). For example, in our study of body dissatisfaction and disordered eating, both complex and multifaceted constructs, among Chinese, Korean, and US college women, Jung and Forbes (2007) used seven families of measures with multiple measures in six of the seven families.

Conclusion

Sojourners contemplating their first efforts in cross-cultural research may feel overwhelmed by the technical problems of translation and the pragmatic problems of locating and working with co-investigators whom they may have never met and who represent about which countries and cultures they know little. However, informal discussion with sojourner researchers suggests that these problems are not as formidable as they appear. Attendance at international conferences, contacts through friends of friends, and especially requests for reprints provide researchers with opportunities to contact foreign researchers with whom they share common interests.⁴

Since the pioneering work of Malinowski and Mead at the beginning of the last century, cross-cultural research has greatly enriched the study of gender. Initially, most cross-cultural research was done by specialists whose primary interest was in cultural differences rather than in gender. However, in the last 30 years psychologists whose primary interest is gender have found it increasingly useful to add a cross-cultural context to their research and theory building. The readers of this chapter are encouraged to strengthen their own research on gender by adding a cross-cultural component to their work.

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⁴The contacts I have made through requests for reprints have greatly enriched my professional and personal life. I am particularly grateful to Krystyna Doroszewicz, Jaehee Jung, and Xiaoying Zhang who have taught me much about cross-cultural research, greatly expanded my knowledge of other cultures, and become my friends.

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Chapter 9

Gender Diverse Recruitment to Research Projects

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Participation of families, patients, and communities from diverse population groups in research in general is lower than participation of people from the dominant cultures in the United States (Halbert et al., 2008). The lower participation of minority groups is problematic from both a scientific and a social justice viewpoint. In health research, for example, from a scientific standpoint lack of participation of a specific subgroup, such as ethnic minorities, prevents the exploration of specific ethnic differences in patterns of disease (Burchard et al., 2003; Cooper, Kaufman, & Ward, 2003; Krieger, Chen, Waterman, Rehkopf, & Subramanian, 2005). In turn, the lack of study of the biological and social patterns of disease and risks among diverse ethnic and racial groups leads to the inability to identify differential risks among ethnic groups. Furthermore, although it is widely recognized that health disparities between ethnic groups are overwhelmingly environmental in nature (e.g., due to differences in socioeconomic status, education, culture, lifestyles) (Institute of Medicine, 2003; Sankar et al., 2004), the lack of studies of diverse groups of people prevents us from identifying the key causal elements of the disparities.

This knowledge is critical as we move forward to apply multidisciplinary approaches to prevent, treat, and control diseases and to promote physical and mental health. Indeed, the limited participation of a diverse population in studies of risk factors for psychological and social problems will lead to inadequate consideration of a broad base for solutions to problems of all sorts. For example, if we do not identify the social and behavioral diversity related to health patterns, we reduce the likelihood that changing and improving these patterns will be solved through social and behavioral means. One thing is clear: if we do not recruit diverse samples into our studies, we impede progress toward an accurate understanding of the psychological issues described in all of the chapters in this handbook and reduce the likelihood that we will be able to reduce disparities of all sorts.

Recruitment and sampling are the most critical phases of any study in which we want to compare two or more groups of people on our outcome variables. We have all heard jokes about psychological knowledge being based only upon evidence from rats and college sophomores. Although this largely has been true historically, psychologists now recognize that generalizability from research samples requires that those samples be more representative of the general population than most college student samples are likely to be. Given that the majority of psychology majors in the United States now are women, specific attention to the recruitment of male participants is needed if research is conducted on campus. Furthermore, from a social justice standpoint, it is important to create research settings that have equitable access to participation for all persons, independent of ethnic background

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and other social status and structural variables. There is some evidence that people who participate in research projects, specifically clinical trials, report better health outcomes than do people who do not participate in research (Kandzari et al., 2005). There are many hypotheses as to why this would be true, including (1) a self-selection bias in the groups recruited, such that recruited people are healthier than people not recruited, and (2) the high-quality prevention, treatment, surveillance, and follow-up provided to participants in clinical trials versus the more variable quality provided to the general public. It is therefore important to come up with methods to improve access to research participation for disadvantaged minorities for these reasons.

How to go about recruiting diverse populations into research studies is the key question. Part of the challenge is due to inconsistency in defining “diversity.” What is diverse enough? Another issue is the early decisions that investigators make about recruitment that lead to diversity or not. In this chapter we present the basic types of recruitment, an overview of the recruitment process, and research examples that specifically used strategies to identify diverse recruitment samples for research.

Types of Recruitment

There are multiple approaches to recruitment and each of these has a specific purpose and specific procedures. Selection of a specific method often implies a need within a study to produce a certain type of sample with specific characteristics. These decisions are often guided by the purpose and focus of the study and the resources that are available to support recruitment. For example, research on promoting health behaviors (e.g., diet, physical activity) among cancer survivors would necessitate recruiting a clinical population. However, one could decide to use an existing registry, or specific cancer clinics, and the samples within the existing registry or clinics would help to define the diversity of the study sample. Decisions about the source of participants must involve tradeoffs about generalizability, costs, and other resources that may be needed to support recruitment efforts. All of the recruitment methods and approaches have strengths and weaknesses, and sometimes studies use combinations of these methods to reach their recruitment goals. For an excellent introduction to the types of sampling, as well as other methodological issues, see <http://www.socialresearchmethods.net> or consult a standard text on clinical trials and survey methods (e.g., Aday & Corenlius, 2006).

Population-Based Recruitment

Population-based recruitment focuses on recruitment of a study sample that is likely to be the most representative of the population to which inferences are being made. This method will ask people at random, and without bias, to be a part of a study so that the sample can tell us something about the larger population from which it was recruited. Most studies of disease risk attempt to recruit a population-based sample (Aitken, Gallagher, & Madronio, 2003). This is because the investigators want to have the same distribution of health issues, behaviors, and ideas as are found in the general population. There are several different resources that are available to support population-based recruitment methods. These may include national registries or existing cohorts of people, disease registries at hospitals or clinics, patient populations within managed care settings, voter registration lists, and motor vehicle registration lists. The steps involved in using population-based recruitment methods include making a decision about what the population is (e.g., young people in transition, sexual minorities, adults living independently). One of the issues to consider about diverse

recruitment is that, if a broad range of people, such as ethnic minority or older people, are not recruited systematically into a study from a population where they are present, then the study sample cannot be a population-based sample. In other words, we will never understand how different kinds of people approach the topic if we do not recruit them into the study. Often we know this by calculating response rates and cooperation rates for recruitment efforts with an accepted method of calculation such as aapor.com.

Purposive Recruitment

Purposive recruitment is in some ways the opposite of random: In purposive recruitment investigators try to recruit a certain demographic or social category of person. If the study needs 30- to 50-year-old women, then recruiting just those types of people into the study is purposive recruitment. Of course, there may be other things that are missed in purposive sampling because it is not random. For example, recruiting the first 30 members of the target group to walk through a door of a hospital or library may yield only early risers, or people who are likely to visit a hospital or library. Therefore, bias is often an inherent part of purposive sampling. If purposive recruitment is indeed not random, then we have lost the ability to generalize with confidence to the larger population. This may be a positive attribute of a study, as we may only want to hear from people who have something in common with the first 30 people to walk through the door of a hospital or library in any given day. The real issue to guide recruitment efforts is “Who do I want to know about and why?” This underscores the need for constant checking to see that diversity is maintained in equal proportions to the general population during recruitment as one way to help insure a generalizable population or, alternatively, that the purposive nature of the sample (i.e., the focus) is maintained throughout.

Convenience Sampling

Convenience sampling is exactly what it sounds like: selecting participants because it is convenient to access and recruit them, with no attempt to represent the general population or to gather up a specific, purposive sample. College students in a Psychology Department Subject Pool; people who scan Craigslist; customers of hair salons, barber shops, laundromats, or LGBT book stores; members of clubs and professional or civic associations; and listserv subscribers are examples of convenience samples. Convenience samples are easier to recruit and often require less intensive work from a resources perspective, but they lack either the representativeness of population-based sampling or the focus of purposive sampling. The benefit of convenience recruitment is that it is usually quicker and easier than other methods of recruitment. The negative elements are that there is no ability to represent a population and no ability to describe a focused group of individuals. However, for some uses they can work well. Demographic diversity can be managed by combining several different types of convenience samples. However, one convenience sample is not usually a good method of insuring sample diversity, as it is never really “convenient” to recruit a diverse group of participants into a study.

How to Choose a Recruitment Strategy

The first difficulty is in how to choose a recruitment method that matches the important research questions of the study. This matching process occurs before the study begins and is based on

scientific and practical decisions. Often, population-based recruitment is expensive and labor intensive. Therefore, we might ask whether it is needed for a particular research project. Could we understand what we want to know by using a different method of recruitment? For example, if the purpose of the study is to develop a better understanding of the range of issues and concerns of individuals who live in a specific community, then convenience sampling may be adequate for recruitment into the study. If the purpose of the study is to understand the extent of a psychological problem in that community, then population-based recruitment would be more appropriate.

The second difficulty emerges after the initial decision has been made. That is, how do we implement and maintain that recruitment method throughout the study? We do it by selecting only people who fit into the recruitment method. This is accomplished through a combination of recruitment rules and eligibility criteria. The rules of recruitment could be something like this: "Only select every fourth person who comes through the door." This recruitment rule attempts to keep investigator preference out of the choice of persons to approach, in that the recruitment staff does not approach only people who seem friendly. Another rule might be "Ask three of the initial participants' close friends to participate." This rule leads to an in-depth understanding of a friendship circle, but perhaps it will not lead to results that can be generalized with confidence. Finding the answer to the question that the investigators have identified often relies on recruiting an appropriate sample through rules such as these.

Eligibility criteria are qualities about the person that are seen as desirable for study. But, eligibility criteria also serve to keep people out of the research sample. If only people who have experienced one episode of dating abuse are allowed in a study, then the study's findings are only relevant for people who have experienced at least one episode of dating abuse. This is often neither good nor bad, but simply descriptive of the study sample. Making conscious choices about who is eligible or invited into the study will help in the long run to improve the quality of research.

A Model of Recruitment

The process of recruitment, which is filled with large and small decisions about what procedures to use, is where we insure that we get the recruited sample that we need and want for our studies (Ruffin & Baron, 2000). A large amount of recruitment planning must be done before the proposal is written and before recruitment begins. This key period could be used to prepare scientists, staff, data systems, and the target population itself for the recruitment effort. Later parts of this diagram illustrate how much of a project's activities over time (in direct relationship to resources) are spent on recruitment. It is probably the single most resource-heavy and time-consuming activity of any project.

Regardless of the type of recruitment used for a study, one can divide recruitment into three broad stages, each with a set of activities and each with needed decisions that affect the diversity of the sample recruited. These are called preparatory stage, contact stage, and enrollment stage. Each is described below.

Preparatory Stage

The preparatory stage is the period before contact is ever made with a potential participant. Important variables at this stage are general issues, such as trust and mistrust of research, researchers, and the organizations involved (e.g., the medical care system, the university). Often researchers do not pay enough attention to this stage of recruitment, as it frequently entails building trust and visibility

over time by applying a social marketing or a community-based approach of engaging community members in discussions about a broad range of topics that have nothing to do with any specific research question. People's opinions and the reputation of research in general, as well as the research institution and researchers in particular, can enhance or reduce recruitment abilities. Engagement of the community or target population before beginning recruitment efforts is one way to know what prevailing perspectives exist in the target population and to begin to promote the idea of research as a positive step toward addressing specific problems (Hubbard, Kidd, & Donaghy, 2008). Other activities during this preparatory stage could include developing and evaluating recruitment materials and procedures and hiring staff to recruit participants.

Contact Stage

The contact stage is the period where the research team makes contact with potential participants via one or more of the several means of contact, such as in person, by telephone, in writing, or electronically. This first invitation is often to determine the participants' initial interest and eligibility (fit with the requirements of the study). The initial contact stage is often one way for outsiders to tell what type of recruitment method is being employed by the research team. If the contact is made at random from a list or a group of participants, then the recruitment method is likely to be population based.

Specific barriers to recruitment exist across all stages of recruitment (Ford et al., 2008) but often are present in the contact phase. Barriers can exist for participants, for recruiters, and for systems of research that exist and that support recruitment. For example, at the participant level, there may be cultural or linguistic barriers that prevent patients in a clinical setting from understanding the offer of a clinical treatment trial. At the recruiter level, there may not be enough time to approach all of the potential participants for a study with in-person methods; however, resorting to written methods might not work as well for older people, who respond better to in-person discussions of an opportunity. At the system level, differential health-care access for some ethnic minority groups means that recruiting through providers' offices reduces the likelihood that such groups will hear about interesting research opportunities. In order to recruit diverse samples of individuals, no matter what the type of recruitment, these barriers must be considered and addressed, or else recruitment will not yield diversity.

In general, the contact process must identify eligible participants and encourage them to continue with the recruitment process. Participation is not for everyone, and there will always be individuals who cannot, or do not want to, participate. The goal of the contact process is to describe the research in a way that outlines the participation process as a positive experience, or as a contribution to science or to the community, and encourages eligible individuals across demographic subgroups to take a closer look at possible participation. It is likely that many such efforts will be required to recruit a truly diverse sample. For example, the barriers to recruitment reported by adolescents are different than those reported by children or adults (Burke, Albritton, & Marina, 2007). This means that a full understanding of the range of barriers that exist for multiple subgroups may be necessary in order to contact and engage a fully diverse sample.

Enrollment Stage

The enrollment stage is when researchers make the final decisions about eligibility and participants decide whether or not to participate. The same barriers often exist in this stage as in the contact stage,

and these barriers can interfere with participation on the part of the participant, as well as the recruiter and the system. Enrollment often entails agreement by the participant to complete the requirements of the study and agreement by the researcher to follow through with promises of benefits to the participant and to ensure safety procedures to minimize risk to participants. As with the contact phase, misunderstandings, poor communication, and inadequate planning can derail participation at this stage and reduce the possibility of recruiting a diverse sample.

What Has Research Yielded for Diverse Recruitment?

How have we done in applying these principles to the recruitment of diverse samples of women and men to research? Put another way, what is the report card on diverse recruitment of samples in research? A brief review of the literature suggests that remedial efforts or “summer school” classes are needed. Many research projects do not meet their recruitment goals for diversity, and, therefore, many fall short of the ideal or proposed study sample (Ford et al., 2008; Gotay, 2001). In response to the somewhat dismal progress in this area, many investigations have been conducted in various ways to improve the diversity of those recruited into scientific research. For example, UyBico, Pavel, and Gross (2007) examined ways of enhancing sample diversity in cancer research. They noted that targeted social marketing processes, a campaign to promote the specific study to a target audience, seemed to be most effective in enhancing initial recruitment efforts with no loss to follow-up. These types of strategies hold promise for the design and evaluation of future recruitment efforts.

A model proposed by Paskett and colleagues (Paskett, Katz, DeGraffinreid, & Tatum, 2003) indicates how researchers might consider the design of interventions to improve recruitment of diverse samples. At each of the levels in their model, there are opportunities to improve diversity in research. For example, at the larger level, increasing awareness of the research during the preparatory phase is a positive activity that provides answers to questions of critical importance to the target population. Increasing communication skills between the participant and the recruiter would improve the likelihood of accurate information exchange between the two parties and might also help to reduce any mistrust between them. Many of the interventions described in this chapter target one or more of the levels in the model, which can be used as a guide in identifying opportunities to improve recruitment in future studies.

Research Examples

In this section we present different examples of attempts to enhance and insure diverse recruitment into research projects. In each of these examples, specific efforts were made to change procedures that could affect the proportion of ethnic minorities in the research sample.

Studies of Psychological Phenomena: The Psychology Department Subject Pool

The undergraduate psychology subject pool is a large and widely used source of participants for the basic psychological research that many academics conduct. Estimates are that between 50 and 75% of our basic science knowledge of how people think, feel, and behave come from studies of college undergraduates who are completing a requirement in their lower level psychology classes to

participate in research projects. The goals of this effort are twofold: to provide an educational opportunity for psychology students about psychological research methodology and to provide easy access to a reasonable sample of participants for psychology professors and students who are conducting research. The idea that most aspects of human behavior can be studied in undergraduates and applied to the rest of the world has not been directly tested, though it has been challenged often (e.g., Sears, 1986). Growing awareness of the importance of subgroup differences in people's responses to stimuli of all kinds indicates that we should exercise caution about overuse of this recruitment strategy. Demographic differences between college students and other populations of interest are one source of potential differences (e.g., in cognitive functioning or behavioral responses). Age, life stage, socioeconomic status, educational level, and other differences may play a role in influencing the responses of college students, as compared to other groups in the general population.

Diversity in a Large Clinical Trial: The Women's Health Initiative

The Women's Health Initiative (WHI), sponsored by the U.S. National Institutes of Health (NIH), was a 15-year population-based study that focused on three primary causes of illness and death among postmenopausal women: breast and colorectal cancer, cardiovascular disease, and osteoporosis (Women's Health Initiative Study Group, 1998). There were two main arms of the study: a clinical trial (CT) and an observational study (OS). The clinical trial randomized menopausal women, ages 50–79, into three different interventions. The first was to assess the impact of a low-fat diet on the incidence of breast or colon cancer. The second examined the association between hormone therapy and cardiovascular disease. The third was a study of vitamin D and calcium supplements on hip fractures. As mentioned earlier, minority populations are often difficult to recruit into clinical trials, as are people of older ages. An important aspect of this study was the deliberate and intensive recruitment of ethnic minority women, which was successful: 18.5% of the women enrolled in the trial were Asian/Pacific American, African American, Native American, or Latina (Hays et al., 2003). The number of minority enrollees is representative of the population, which is necessary to generalize study findings.

Several steps were taken to ensure adequate numbers of minority participants in both study arms. First, the study set goals for recruitment before beginning and then structured its funded centers to meet the goals. The study spanned 40 clinical centers across the United States, 10 of which were chosen because they had a concentration of potentially eligible minority women within their geographic service area (Hays et al., 2003; Rossouw & Hurd, 1999). Site-specific staff and culturally sensitive study resources were utilized for recruitment of potential enrollees. Another outreach measure was to use existing enrollees as peer advocates. Larkey and colleagues (Larkey et al., 2002) described the decision to enlist lay advocates, known as *Embajadoras*, to assist in the recruitment of Latinas in Phoenix, Arizona. Finally, women who were ineligible for the CT arm were repeatedly given opportunity to participate in the OS arm. This was an efficient way to capture the strength of minority enrollment among the 100,000 target OS participants. Women also were allowed to participate in more than one CT intervention. Each of these strategies helped the overall WHI meet the diversity recruitment goals, although centers varied in how much they contributed to that goal.

Specific Strategies for Enhancing Diversity in Recruitment

The Cancer Genetics Network (CGN) spans several centers and is a clearinghouse for genetic and environmental data thought to contribute to cancer outcomes. The CGN study teams across the

country determined in 2003 that the recruited sample of almost 10,000 families was not diverse enough to address important hypotheses. Therefore, they focused their efforts for 2 years on testing minority recruitment strategies. Together, six strategies were tested by this group of investigators, and all are presented in the special issue edited by James, Yu, Henrickson, Bowen, and Fullerton (2008), which discusses several strategies to increase minority participation in cancer studies in order to provide diverse representation of genetic susceptibility. Authors of the articles highlight researchers' responsibility, not only to enroll target numbers of minority participants but also to engage community members and other partners for the purpose of "goal concordance" (James et al., 2008). Identification of shared, mutual expectations between the research community and the underrepresented minority populations is critical for reducing long-standing barriers to recruitment.

Trust building was embedded in the CGN minority enrollment process, but there were impediments including historical human subject violations and skepticism that the research actually would benefit the participants' community (James et al., 2008). Community-based participatory research (CBPR) is a way to extend the role of the study participants from the somewhat passive "compliant" to engagement in study design and feedback (Minkler & Wallerstein, 2003). CGN studies utilize this empowering strategy to incorporate the voice and expertise of community members. For example, Patterson and colleagues (2008) found it helpful to hire an African American nurse for the intervention staff, which made a trusted community member highly visible to potential participants. From the peer-to-peer perspective, community members could provide insight regarding cultural norms that might be barriers or incentives to enrollment and retention. CGN studies also have had minority enrollment success among those who have directly or indirectly experienced a diagnosis of cancer and by increasing the flexibility of the research protocol. This approach to testing the usefulness of minority recruitment strategies provided clear directions for how to build a better network, as well as scientific contributions to the field.

Recruitment Strategies for Sexual Minority Women: Insuring Diversity

Sexual minority women (SMW) have been differently defined, in that some use this term for women who self-report a lesbian or bisexual identity, others prioritize behavior (e.g., partnering with women), and many include both sexual minority identity and behavior. About a decade ago, the Institute of Medicine Committee on Lesbian Health Research Priorities (1999) released its landmark publication that called for more research on lesbian health issues, including population-based studies to provide answers to some hypothesized disparities by sexual orientation. Many researchers answered the call and struggled with the question of how to recruit the "hidden population" of sexual minority women.

Traditionally, research on this population has relied on convenience or snowball recruitment methods, which means reaching SMW through organizations, events, and participant referrals (Fish, 1999). The biases of these approaches are widely known and acknowledged (Binson, Blair, Huebner, & Woods, 2006; Bowen, Bradford, & Powers, 2006; Bowen et al., 2004; Institute of Medicine Committee on Lesbian Health Research Priorities, 1999; Meyer & Colten, 1999). Results of research with community samples of lesbians have been criticized for over-representing predominantly White, highly educated, younger women (Ellis, Bradford, Honnold, & Barrett, 2001; Institute of Medicine Committee on Lesbian Health Research Priorities, 1999; Meyer, Rossano, Ellis, & Bradford, 2002). Recruitment from one community group, location, or event is insufficient because it only reflects a limited segment of the community. This has been demonstrated by studies focused on lesbians' smoking behavior. Smoking rates were higher when the sample was drawn from lesbian

bars than when the sample was drawn from a lesbian health conference (Hughes & Jacobson, 2003; Ryan, Wortley, Easton, Pederson, & Greenwood, 2001).

Some champion respondent-driven sampling as a solution. This approach eliminates or minimizes biases inherent in traditional chain-referral and convenience sampling methodologies and produces unbiased estimates of population size and composition (Heckathorn, 1997). The proponents of this methodology promise that information about the sample can be used to generate accurate estimates about the population despite the absence of a sampling frame (Heckathorn, 2002). It is noteworthy that, so far, respondent-driven sampling has been used to study sexual minority men and female sex workers (Abdul-Quader, Heckathorn, Sabin, & Saidel, 2006; Ramirez-Valles, Heckathorn, Vazquez, Diaz, & Campbell, 2005) in the context of HIV risk behaviors, yet as far as we know it has not been applied to SMW.

A particularly innovative example of estimating the lesbian population in one geographic location was the use of the capture–recapture method. This method is commonly used to determine the population of wildlife, which cannot be reasonably counted. This time it was applied to estimate the total lesbian population of one county (Aaron, Chang, Markovic, & LaPorte, 2003). Others have turned to the Internet to conduct surveys of SMW. This has its advantages, including that it allows for the recruitment of a geographically diverse population and for the inclusion of “closeted” individuals who are not reached through community recruitment methods (Riggle, Rostosky, & Reedy, 2005). Internet recruitment may result in online survey participation or may be limited to an online contact stage, followed later by enrollment and study participation off-line.

New and innovative recruitment strategies of SMW followed after the U.S. census counts of 1990 and 2000, which included information on same-sex partnered households. The U.S. census included detailed information on the relationship between different household members. This allowed same-sex members of a household to characterize their relationship as unmarried same-sex partners, similar to the way cross-sex household members had the choice to characterize their partnered relationship as either married or unmarried. The U.S. census does not ask about familiar dimensions of sexual orientation, such as a respondent’s identity (i.e., lesbian, gay, bisexual, heterosexual). Census data that identify same-sex partners have evolved as an important and reliable source from which one can infer information about the sexual identity of partnered household members (Black, Gates, Sanders, & Taylor, 2000; Ellis et al., 2001). The Census and the American Community Survey, which also included same-sex partnered household information, provided for a national estimate of SMW, the description of these households by various characteristics (e.g., age, race, presence of children; Gates, 2006; Ost & Gates, 2005). As the census made it possible to identify areas with a high concentration of SMW, it invigorated population-based recruitment for health studies. For example, one research team tested the feasibility of identifying SMW for studies via random digit telephone dialing in an area with a high concentration of SMW (Meyer et al., 2002). Another team conducted a household survey in a SMW-rich area to identify differences in significant health-related outcomes by sexual orientation (Bowen et al., 2004).

The focus on SMW-rich areas certainly made the use of probability methods easier as it increased the odds of finding SMW, yet it remains a resource-intensive, and therefore costly, choice. Another issue is that focusing on SMW-rich areas identified through the census may bias the recruitment toward White populations as African American and Latino/a lesbian, gay, bisexual, and transgender (LGBT) couples cluster in different areas than White LGBT couples do (Gates, Holning, & Sears, 2006). A study that compared a community sample of SMW to census data on SMW from the same geographic location to identify biases in recruitment concluded favorably about the representational quality of the community sample of SMW (Boehmer, Clark, Timm, & Ozonoff, 2008). These findings and concerns about probability recruitment methods for SMW studies call for a

thoughtful and restrained use of probability methods, such as limiting its use to research questions that absolutely warrant this approach. Also, when the research question requires rich descriptive data, continued use of purposive and convenience recruitment is warranted, especially when researchers use rigorous recruitment methods and involve and consult the LGBT community in the design and recruitment processes.

Conclusions

There are many steps to recruitment of a diverse sample, from planning and funding to final enrollment steps. Planful diverse recruitment must be integrated into the beginning of any study and carried through at all levels. As previously discussed, recruitment is often the biggest time challenge in a study and one that must be given both scientific- and community-based attention. Use of strategies that have been found to work in other settings and collaborations with community leaders and colleagues from the target populations are critical to overall recruitment success.

It is possible to be successful; lack of diversity in recruited samples is a solvable and addressable problem. Teams of people have been able to recruit diverse samples. It takes knowledge about the target population, collaboration with the communities targeted, use of research findings and tested strategies in the recruitment efforts, and, ultimately, the necessary resources. But, it can be done. The examples above are some of the successful efforts to be found in the literature, and these examples should be seen as guides for future recruitment efforts in all areas of psychological research. Where there is a will, there is a way.

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Chapter 10

Interpreting and Communicating the Results of Gender-Related Research

Peter Hegarty and Felicia Pratto

Warning! May Contain Spoilers

One of us (PH) recently saw Hitchcock's (1959) *North by Northwest* for the first time. In the early part of this film, American intelligence agents talk about a spy that they have employed to trail Roger Thornhill (Cary Grant). Thornhill does not know he is being watched, only that he is on the run for his life for reasons he does not understand. He is also rapidly falling for Hitchcock's obligatory blond beauty, Eve Kendal (Eva Marie Saint). Yet, strangely enough, Thornhill understood more of the reality constructed in this film than PH did; Thornhill at least knew that there were urgent life-threatening questions about reality to be answered. On the other hand, PH was looking for a [male] spy in the shadowy corners of train stations. Hence, his feeling that 'I should have known all along' when Hitchcock reveals that Kendal has been spying on Thornhill and falling in love with him at the same time.

Storytellers can add tension to their plots by working their audiences' implicit assumptions about gender. In Tolkien's *Lord of the Rings* the witch king is protected by an ancient prophecy from all 'mortal men' but is killed by a woman in boy's armor (Tolkien, 1954/2005). Macbeth is protected from all men born of woman, but is killed by a man born by Caesarian section (Shakespeare, 1603/Bevington, 2003). Neil Jordan's film (1992) *Crying Game* divided viewers who either did or did not share Fergus' sense of surprise, while making love to Dil, when he discovered Dil's penis. Some readers may have passed over our use of 'blond beauty' in the last paragraph without considering that we might think that blond beauties are usually men. Like many fictional narratives, our use of 'blond beauty' might prompt a gender-related assumption in many readers, an assumption that goes without saying until it is interrupted, and its status as an assumption comes into view.

In this chapter we argue that people (including psychologists) communicate about gender-relevant findings in active interpretive ways that are characterized by precisely these kinds of revisable implicit assumptions. Often these assumptions work to reify gender stereotypes and to communicate implicitly that men are more important kinds of people than women are. However, these assumptions can also be challenged in ways that lead to less obvious, less sexist, and more thoughtful, considered, and open-minded ways of thinking about difference. Psychologists have often offered each other advice about how we *ought* to communicate about gender-related findings. In this chapter, we focus on *implicit* meanings of gender-related research to argue that we often communicate much more than we intend when we communicate about gender-related findings.

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Psychologists do not easily reach consensus about how gender-related findings ought to be communicated. This is not necessarily a bad thing. The issues are complex, and debate and communication might serve us better than dogma and cant. Important axes of the debate were neatly summarized by Kitzinger (1994), who observed that *empirical* feminist psychologists who study gender and sex differences hold largely optimistic ideas about the capacity of science to bring about the social good. In contrast, social constructionists who feared the study of gender and sex differences as an imposition of sexist ideologies view science as an oppressive rather than a liberating endeavor. We have adopted a position that is difficult to locate within Kitzinger's axes by conducting experiments that explore social constructionist arguments about the ways that culture and politics influence gender-related research (see, e.g., Hegarty, 2001; Pratto, 2002). We have gambled our research time on the idea that empiricism and social constructionism are not inherently antagonistic, even if they are often described as oppositional theories.

What Are 'Gender-Related' Findings?

What, then, are 'gender-related' findings? There are at least three distinct paradigms in psychology that provide possible answers to this question. The first and oldest assumes that traits, behaviors, preferences, and other attributes can be mapped along a single personality dimension anchored by extremes of 'masculinity' and 'femininity' (or M and F, see Lippa, 2005; Terman & Miles, 1936). Within this paradigm, differences between men and women are the basis of M–F and, as such, are 'gender-related.' Constantinople (1973) effectively critiqued work in this tradition by showing that 'masculinity' and 'femininity' are not coherent psychometric concepts, that they are not logical opposites of each other, and that robust associations between MF scales and behavior had never been demonstrated (see also Hegarty & Coyle, 2005). Feminist measures of gendered personalities that emerged at the same time as Constantinople's critique assume that 'masculinity' and 'femininity' are *orthogonal* personality traits that can be combined in 'androgynous' people (e.g., Bem, 1974; Spence, Helmreich, & Stapp, 1974). Within this paradigm, 'gender-related findings' pertain to behaviors that make women and men appear to be consistent or inconsistent with culturally prescribed gender roles. Like the earlier MF literature, the androgyny paradigm produced measures of gender that are based on cultural assumptions about universal gender differences that are far from universal (Pedhazur & Tetenbaum, 1979) and that did not allow for individual and cultural variation in the interpretation of scale items (Landrine, Klonoff, & Brown-Collins, 1992). The androgyny paradigm also subtly favored masculinity over femininity (Morawski, 1990) and was no less pejorative about traditional genders than the MF paradigm had been about gender fluidity (Hegarty, 2003). The scientists who developed androgyny measures largely have abandoned the idea that these scales measured 'masculinity' and 'femininity' in the sense that people applied these terms to themselves and others (e.g., Bem, 1993; Spence, 1985).

Our understanding of 'gender-related' is closest to the third wave of theorizing (e.g., Egan & Perry, 2001; Spence, 1985), which allows that people vary in the degree to which behaviors, traits, bodily differences, and other attributes are relevant to summary representations of their own and others' genders in various situations (see also Kessler & McKenna, 1978). These multidimensional models differ from both the MF and androgyny personality theories because they allow for individual and group variation in the degree to which attributes are considered gender-relevant and gender-consistent. This flexibility seems to be necessary in a world where the category 'spy' can be gender-relevant or not and where psychologists' assumptions about what the relevant aspects of 'gender roles' are can quickly become too rigid, out of date, and ideologically conservative (Wetherell,

1997). In other words, the gender-relatedness of research findings is, somewhat, in the eye of the psychologist who beholds them; different eyes see different things, and different empirical visions project different images of psychological reality. Again, these are not necessarily bad things.

Should We Describe ‘Gender-Related’ Findings?

Like cultural theorist Eve Sedgwick (1991), we take it to be axiomatic that ‘people are different from each other,’ but that our ways of theorizing difference require improvement. However, the normative question of when psychologists *should* explicitly describe findings as ‘gender-related’ is a difficult one to answer concisely. Maccoby and Jacklin (1974) used the empirical record in psychology to trouble gender-related assumptions in a wide range of theories. However, psychologists who used their work largely focused on the few gender differences that they emphasized, and the many gender similarities that they described ceased to be understood as ‘gender-related’ (Hyde, 2005). This use of evidence exemplifies a pattern of conflating gender-relatedness only with empirical *differences* between girls/women and boys/men. But the assumption that gender similarities are not gender-related can also be problematic. Even as Maccoby and Jacklin were formulating their review of ‘sex differences’ research, other feminist psychologists pointed to the error of generalizing from all-male samples to everyone (Schwabacher, 1972). Indeed, this practice structured US Federal Drug Administration drug trials until the 1980s (Epstein, 2007). When gender groups are under- and over-represented in research, but research findings inform policy that impacts everyone, then disparities between personal and expert ‘truths’ get distributed unevenly. Such research can be validly construed as ‘gender-related’ even if the researchers who conduct it do not perceive it as such.

These two different ways that gender can be construed as relevant to research practice created intense debates among psychologists about how to report gender differences in the late 1980s and early 1990s. Some psychologists (e.g., Baumeister, 1988; Cole & Stewart, 2001; McHugh, Koeske, & Frieze, 1986) argued that psychologists’ reliance on significance tests privileged the publication of gender differences, such that research in effect reified gender stereotypes and justified inequalities. Others (e.g., Mednick, 1989) argued that pro-feminist work on difference might provide an ideological prop for sexist ideologies. Indeed, women and men are quicker to endorse research about gender differences if the conclusions are biased in favor of their gender (Morton, Haslam, Postmes, & Ryan, 2006). Still others (e.g., Hyde & Plant, 1995) proposed meta-analysis as a more accurate way to estimate the size, variability, and causes of gender differences. Yet others (e.g., Scarr, 1988) argued that findings ought to be reported without regard for these issues, trusting that a ‘free marketplace’ of ideas would bring about a realistic, fair understanding of gender-related issues. Social constructionists (e.g., Hare-Mustin & Marecek, 1990) used the language of their hypothesis-testing colleagues to describe the problem of exaggerating differences as ‘alpha bias’ and the problems that result from ignoring difference altogether as ‘beta bias.’ Attempts to establish consensus on these matters remain vexed even now (see, e.g., Archer, 2006; Davies & Shackelford, 2006; Hyde, 2005, 2006; Lippa, 2006; Zuriff, 2006).

‘Sex’ or ‘Gender’?

Attributions about *causes* of gender-related research have incited still more controversy about interpretation and communication. Second-wave feminism invested heavily in the notion that differences between women and men resulted from socialized *gender* rather than biologically determined *sex*, a

linguistic shift linked to assumptions that ‘culture’ and ‘nurture’ were easier to change than ‘nature’ (see particularly Unger, 1979). However, like all binaries, ‘sex’ and ‘gender’ have multiple meanings that overlap imperfectly (Haraway, 1991). *Gender* was introduced to the English language by John Money in his development of treatment protocols for intersexed children (Money 1955a, 1995b; Money, Hampson, & Hampson, 1955). Money argued that intersexed children could be raised effectively as *either* gender regardless of their biology, and this argument was widely cited by feminists invested in ‘gender’ (Kitzinger, 2005). Money’s paradigm was the dominant force in shaping the clinical management of intersex conditions in the second half of the 20th century (Kessler, 1998). However, gender activists and psychologists often differ in their ontologies of gender (Parlee, 1996). In the 1990s, Money’s paradigm came under increasing attack from a few feminist psychologists and biologists (e.g., Fausto-Sterling, 1993, 2000; Kessler, 1990, 1998), a few biological psychologists who argued that children’s genders are affected by more than socialization experiences (Diamond, 1999; Diamond & Sigmundson, 1997), and many more intersex people who were harmed by Money’s treatments (e.g., Chase, 1998; Dreger, 1999; Holmes, 1998). The most recent consensus statement on treatment calls for more distributed decision-making about infants with ‘disorders of sexual development’ (Lee, Houk, Ahmed, & Hughes, 2006). We cannot predict what effects this statement will produce (but see Morland, in press).

The history of Money’s paradigm highlights the fact that we live in technologically changing cultures where *gender* is a concept that requires ethical and epistemological care and pioneering in its handling. The carving of this world into (fixed, biological, evolved) ‘sex’ and (flexible, cultural, socialized) ‘gender’ is not always a sufficient guide for moral scientific action in these contexts (see also Butler, 1993; Latour, 1993). Yet psychologists’ questions about the interpretation of differences between women and men have often become polarized around such nature–nurture axes. Several authors (e.g., Hyde, 1994; Jacklin, 1981; McHugh et al., 1986) have advised against premature biological attributions for observed gender-related findings. This recommendation has particular merit in individualist cultures where biases toward dispositional attributions are common (Jones & Harris, 1967; Miller, 1984), can bolster stereotypes (Brescoll & LaFrance, 2004; Hoffman & Hurst, 1990), and can even create self-fulfilling prophecies about gender differences (Dar-Nimrod & Heine, 2006). Within these individualist cultures (e.g., Buss, 1995), some psychologists argue that dispositional attributions about gender differences can be validly supported by evolutionary theory even in the absence of direct biological observations. We return to this question again below.

Living in a political climate where difference is systematically attributed to ‘nature’ or ‘nurture’ can lead people to be overly optimistic about what it might feel like to live in a climate organized more by the other ontology. For example, psychologists often interpret biological theories of sexual orientation as the basis of a positively valued social tolerance of lesbians and gay men (e.g., Altemeyer, 2002; Crocker, Major, & Steele, 1998; Savin-Williams, 2008). In contrast to their construction in British newspapers and the US lesbian/gay press, biological explanations about sexual orientation were reported as unambiguous pro-gay arguments in the mainstream US press in the 1990s (Conrad & Markins, 2001). Although belief in the biology of sexual orientation and tolerant attitudes toward lesbians and gay men are positively correlated among American heterosexuals (Haslam & Levy, 2006; Hegarty & Pratto, 2001a; Jayaratne et al., 2006; Whitley, 1990), mounting experimental evidence shows that inculcating biological beliefs does not *create* tolerance among heterosexuals (Boysen & Vogel, 2007; Falomar-Pichastor & Mugny, in press; Hegarty & Golden, 2008; Oldham & Kasser, 1999; Piskur & Degelman, 1992; Pratarelli & Donaldson, 1997). Rather, people in the United States can readily construct both pro-gay and anti-gay implications of research on the genetics of sexual orientation (Sheldon, Pfeffer, Jayaratne, Feldbaum, & Petty, 2007). Contrary to the hopes of biologists and others, biological determinants do not make heterosexual people gay friendly.

Just as biological theories do not necessarily produce imagined or desired pro-social effects, theories about the social determination of differences do not translate directly into the political realities that their authors might prefer. In the United States, biological attributions of gender differences are more often found in more conservative newspapers (Brescoll & LaFrance, 2004). However, in Britain, evolutionary explanations of gender-related findings get the most coverage in left-leaning, more intellectual, 'broadsheet' newspapers (Cassidy, 2007). Nor are 'biological' and 'chosen' simple opposites of each other. Rather, as Sedgwick (1991, pp. 25–26) put it: '[i]ncreasingly, it is the conjecture that a particular trait is genetically or biologically based, *not* that it is "only cultural" that seems to trigger an oestrus of manipulative fantasy in the technological institutions of the culture.'

How Important Is Language to Thinking?

The shift from 'sex' to 'gender' was but one of several ways that feminist psychologists deployed *language* as a way to intervene in the interpretation and communication of gender-related findings (see Cameron, 1990). During the 1970s, feminists also led a successful counterreaction against mid-19th century changes to systems of English grammar. An Act of British Parliament in 1850 had proscribed the use of 'they' as a singular pronoun and had described 'he' as the only legitimate, 'gender-neutral,' third-person singular pronoun (Bodine, 1975). Then, as now, 'they' remained a commonly used singular pronoun in 21st century American and British English discourse (Baranowski, 2002). Some 19th century male authors interpreted the legitimacy of 'he' as particularly apt because men legally represented women, whereas women did not legally represent men (Bodine, 1975). Late 20th century feminists used the 20th century discipline of psychology to counterargue that such 'masculine generics' as 'he' and 'man' created androcentric imagery that did not represent everyone equally (e.g., Martyna, 1980; Spender, 1980) and conducted experiments to evidence the case (e.g., Hamilton, 1988, 1991; Hyde, 1984; Ng, 1990). Since the American Psychological Association prohibited the use of 'masculine generics' for making research reports gender-relevant in sexist ways (APA Publication Manual Task Force, 1977), psychologists have largely stopped using them (Gannon, Luchetta, Rhodes, Pardie, & Segrist, 1992; Hegarty & Buechel, 2006).

The history of this debate suggests two things. First, the kinds of language that we use in our science affect our own and others' thinking about our findings. Second, it is possible collectively to reform our language to change our collective thinking. However, shifting away from androcentric pronouns (such as 'he') does not end sexist thinking in a more general sense (Prentice, 1994). Rather, as *North by Northwest* makes clear, a noun such as 'spy' can induce androcentric imagery just as a pronoun such as 'he' can. Indeed, both women and men are more likely to think specifically about men than women when they rate stereotypes of foreign nationals (Eagly & Kite, 1987), generate examples of famous people (Moyer, 1997), communicate attitudes toward sexual minorities (Black & Stevenson, 1984; Haddock, Zanna, & Esses, 1993), think about the Western God concept (Foster & Keating, 1992), or interact with gender-neutral children's toys (Lambdin, Greer, Jibotian, Wood, & Hamilton, 2003). Of course, images of women come to mind for some categories of famous people (see e.g., Pratto, Korchmaros, & Hegarty, 2007) and occupational categories (Miller, Taylor, & Buck, 1991). But the few psychologists who have studied such 'feminine generic' categories conclude that these are both lower in status and much fewer in number than widespread masculine generics (Pratto, Korchmaros et al., 2007). To figure out how to communicate gender-related research in nonandrocentric ways, psychologists need a much more general theory of how ordinary names for seemingly generic categories, such as 'voters,' prompt androcentric imagery. We turn to our own experimental research on category norms next with this goal clearly in mind.

Category Norms, Explanation, and Generalization

Let us get back to Hitchcock. How can PH *both* have been deceived by the plot of *North by Northwest* and sense that he ‘should have known all along’ when he learned what Eve Kendal was doing? The Roschian revolution in categorization research taught psychologists that not all *logical* members of a given category are equally good *psychological* members of that category (Rosch & Mervis, 1975). Hitchcock’s plot relies on his viewers’ implicit perceptions that male spies are more ‘spy-ish’ than female spies are. In our view, Kahneman and Miller’s (1986) norm theory is the most sustained attempt to describe how prototypicality, implicitness, and surprise often go together like this. These authors described *category norms* as implicit, fleeting, exemplar-based, mental representations, which are prompted by the mention of ‘category labels’ (e.g., *spies*). Such labels act as memory ‘probes’ that recruit exemplars of the category from long-term memory. The exemplars that get recruited are usually—but not always—more prototypical members of the category (e.g., male spies in raincoats hiding in doorways; see also Srull, Lichtenstein, & Rothbart, 1985). The attributes of recruited exemplars are then averaged to form a summary representation of the relevant category. This mental representation becomes an implicit set of default expectations or *norms* about the category.

Norm theory differs from several other theories of category representation in two important ways. First, it specifies that the exemplars that make up norms are usually prototypical, *and* it allows for different category exemplars to be recruited in different contexts. At the start of *North by Northwest*, PH’s category norm for ‘spies’ included only men. By the end of the film, it did not. Second, the attributes of *primed* categories color later explicit judgments by assimilating them in the direction of the categories that have been primed (Higgins, Bargh, & Lombardi, 1985; Higgins, Rholes, & Jones, 1977). In contrast, the attributes of accessible exemplars that make up category norms form *implicit* expectations for the category. PH’s initial norm for ‘spy’ was androcentric, and this meant that he was not consciously thinking about maleness at all. Rather, once a norm is formed, it is the attributes of individuals and sub-groups in the category that *differ* from the implicit norm that become surprising (such as the beauty and blondness of some spies or the masculine gender of some blond beauties).

Miller et al. (1991) showed that category norms influence the interpretation of gender differences. These authors asked some American participants to call to mind a typical voter, and asked others to explain gender differences in voting behavior. The first group called men to mind, and the second group focused their explanations on how female voters differed from male voters. Jointly, the two findings are consistent with norm theory; norms for ‘American voter’ are male, such that attributes of female voters (but not male voters) spring to mind as the grounds for explaining gender differences. Two further findings also supported norm theory. Within a category for which women were the prototype (i.e., elementary school teachers), explanations focused more on men than was the case for male-typical categories. Also, people judged that members of the nonnormative gender group would be more likely to change their behavior to conform to the standard set by the normative group; the norm was more stable than the exception.

Kahneman and Miller’s (1986) predictions about explanation content have held up better than their predictions about the perceived stability of the behavior of normative groups. As norm theory might predict, within the United States—where heterosexuality and Whiteness are often assumed identities (Devos & Banaji, 2005; Hill, 1998; Morrison, 1993; Phelan, 2001; Warner, 1993)—explanations of sexual orientation and ethnic differences focus on sexual and ethnic minorities and rarely attend to particular characteristics of Whites or straight people (Hegarty & Pratto, 2001b, 2004; Pratto, Hegarty, & Korchmaros, 2007). However, judgments about mutability are uncorrelated with explanation content and are not always consistent with norm theory predictions (see Hegarty,

2006; Hegarty & Pratto, 2001b, 2004; Pratto et al., 2007). It is important to note that *psychologists'* explanations of gender differences are asymmetric too. Hegarty and Buechel (2006) examined descriptions and explanations of empirical gender differences in articles drawn from four APA journals over the period 1965–2004. Among articles that reported empirical gender differences, those that also mentioned gender in their titles and abstracts made significantly fewer references to particular attributes of boys and men than to attributes of girls and women. This asymmetry was equally strong among older and more recent articles, among articles written by women and by men, and within articles published in *Psychology of Women Quarterly* and articles published in nonfeminist APA journals.

Thus, category norms might implicitly and unintentionally affect the way that gender-related findings are habitually explained by focusing on one gender rather than another. As such they are also relevant to long-standing feminist arguments that male authors overgeneralize from male-only samples to everyone (Schwabacher, 1972), and the later observation that feminism might increase rates of overgeneralization from female-only samples to everyone (Reardon & Prescott, 1977). Gannon et al. (1992) found a reduction in such inappropriate generalization from single-sex samples between the 1970s and 1980s. However, even in the 1990s, fewer psychology authors voiced caveats about generalizing across gender lines from all-male than from all-female samples (Ader & Johnson, 1994). Norm theory provides a single coherent cognitive account of why explanations and generalizations are asymmetric and of why the seemingly opposing 'alpha bias' and 'beta bias' might result from the same thinking style (Hare-Mustin & Marecek, 1990). Debates about *which* bias is more damaging miss the basic point that both have a common origin in *androcentric* thinking that takes men as the norm and women as the exception (Bem, 1993; deBeauvoir, 1949).

Should We Undo the Effects of Category Norms?

We have argued that category norms affect the communication and interpretation of gender-related findings. We now argue that psychologists *should* strive to undo their effects for three specific reasons. First, unintended asymmetric explanations and overgeneralizations do not constitute good scientific thinking. Even scientists (including ourselves) who explicitly endorse the goal of explaining all groups equally fall into the habit of focusing explanations on less prototypical sexual and ethnic identity groups at least some of the time (Hegarty & Pratto, 2001b). In the aggregate, asymmetries in research communications constitute larger *discourses* with absurd characteristics. For example, Hegarty and Buechel (2006) found many more abstracts archived on *PsycInfo* that compared women to men than men to women, compared females to males than males to females, and compared girls to boys than boys to girls. They also found that most of these comparisons used the phrase 'more than' rather than the phrases 'less than' or 'fewer than' to describe these differences (see also Clark, 1969). Thus psychological discourse on gender not only treats women and girls as 'other' but also suggests that they do *more* gender-related behavior than men and boys do. How could this possibly be true?

Our second reason to undo the effects of norms concerns stereotypes. Stereotypes are beliefs about the attributes of social groups (Hilton & Von Hippel, 1996), but gender stereotypes become relevant frames for interpreting women's and men's behavior only some of the time (Deaux & Major, 1987). Asymmetric explanations relate individual women's behavior, but not individual men's, directly to gender stereotypes. Indeed, the category 'man' is less 'entitative' than the category 'woman' (Haslam, Rothschild & Ernst, 2000), which suggests that men are less likely than women to be reified by gender categories. Asymmetric explanations might essentialize women more

than men particularly when stereotype-relevant differences are explained. In our studies (Hegarty & Pratto, 2001b, 2004), when participants explained stereotype-relevant sexual orientation differences, their explanations relied on different gender-stereotypic repertoires to attribute stereotype-consistent and stereotype-inconsistent results to lesbians and gay men. Gender stereotypes became the contents of explanations for lesbians' and gay men's accounts of themselves, no matter what they reported. However, explanations of these differences rarely referenced straight women and men explicitly or invoked stereotypes about them. Similarly, explaining differences between groups' adherence to gender roles intensifies gender stereotyping (see, e.g., Hoffman & Hurst, 1990). When people explain data, their explanations inhibit valid alternative explanations (Sanbonmatsu, Akimoto, & Biggs, 1993) that persist even after the data to be explained have been debunked (Anderson & Sechler, 1986). Thus, interpretations and communications about gender-related findings might both reveal, and strengthen, psychologists' own gender stereotypes.

For this reason, we think that undoing effects of category norms during scientific thinking may be a more useful way to curtail the power of gender stereotypes than to valorize behaviors that are coded as 'feminine' by dominant representations. In other words, we agree with those feminists who have argued that pro-feminist essentialist theories of women's 'ways of knowing' (Belenky, Clinchy, Goldberger, & Tarule, 1986) and moral reasoning (Gilligan, 1982) can act as 'bandwagon constructs' that leave men's genders unexamined and justify uneven distributions of labor (Crawford & Marecek, 1989; Mednick, 1989). Indeed, positively valenced stereotypes that 'women are wonderful' are common (Eagly, Mladanic, & Otto, 1991). But such seemingly benevolent beliefs about women can act as proscriptive norms that women *should* be wonderful and that women who are not wonderful deserve contempt (Glick & Fiske, 1996; Prentice & Carranza, 2002). In other words, they contest some norms for personhood and set up others.

Our third rationale for undoing norms relates to women's and men's participation in psychology. Feminists have long critiqued psychology textbooks that exemplify general theories with male exemplars as creating a 'double bind' for female students (e.g., Woolsey, 1977). Androcentric imagery is obviously communicated when anatomy textbooks instantiate the human body only with male exemplars (Giacomini, Rozee-Koker, & Pepitone-Arreola-Rockwell, 1986) or when men's theories are given more attention than women's (Peterson & Kroner, 1992). Norm theory can also explain why women in privileged groups get positioned as 'the norm' in psychologists' overgeneralized accounts of 'women's experience,' such as psychology of women curricula and textbooks. For example, a psychology of women curriculum in the United States that focuses on the experience of college-attending women, who will earn far less than their husbands, but who strive to achieve in male-dominated fields nonetheless, has clearly assumed that 'women' are normatively White, heterosexual, and middle class (Santos de Barona & Reid, 1992; see also Burman, 1994, and Wilkinson, 1997). Within a country like the USA, where Whiteness is an assumed norm (e.g., Devos & Banaji, 2005), equivalent confluences of Native, Asian American, Latina, or African American women with *all* women in the United States are less likely than the conflation of women and Whiteness. Ethnic minority women are not always treated more negatively than ethnic minority men by all institutions in the United States (Sidanius & Pratto, 1999). However, as members of several overlapping nonnormative categories, they suffer 'intersectional invisibility' (Purdie-Vaughns & Eibach, in press), and they rarely represent either the human norm or the norm for any nonnormative category. Yet, women who suffer intersectional invisibility are also most likely to have their actions explained by others (Sekaquaptewa & Espinoza, 2004).

As norm theory predicts, Barker (2007) recently found that psychology textbooks also take heterosexual development as a standard against which gay and lesbian development is an effect to be explained (bisexual development is virtually ignored altogether). Category norms are like other

norms and standards; they are most effectively communicated when left unstated (Miller & Prentice, 1997). Psychology textbooks may unintentionally communicate that their authors think that psychology is, and should be, about dominant groups when their psychology is used to exemplify general theories and subordinate groups are used primarily to communicate 'special topics' as in 'token lesbian chapters' (Kitzinger, 1996). Psychologists should avoid constructing gender-relatedness in ways that unintentionally suggest that some women and men deserve only token representation as special topics, whereas other women and men are paradigmatic of their gender.

Research on induction suggests that positioning one group as the standard against which others are judged can lead to the disruption of typical methods of forming category norms. Hegarty and Chryssochoou (2005) have recently shown why Kahneman and Miller (1986) were right to specify that different norms can be assembled for the same category under different circumstances. Those authors asked British participants to estimate whether the findings of an experiment would generalize from one European country to another. Measures of inductive strength, perceived similarity, and explanation content all suggested that people included the country *in which* data have been gathered in their category norm, but excluded those countries *to which* findings might be generalized (see also Sloman, 1993). Thus explanations of empirical differences focused explicitly on the group *to which* rather than *from which* they generalized (see Robinson & Hegarty, 2005; Medin & Waxman, 2007, for related findings on age and species categories, respectively). These findings have important implications for interrupting androcentric interpretations. For example, British students' norms for 'voter' are androcentric, like those of students in the United States. However, when presented with data about women's voting behavior and asked to estimate men's, British students focus their explanations of gender differences on men (Hegarty, 2006). Thus androcentric norms are not automatically challenged simply by reporting gender differences (Hegarty & Buechel, 2006; Miller et al., 1991) or single-sex studies conducted on women (Ader & Johnson, 1994). Psychologists who want to undo androcentric imagery ought to communicate their findings in ways that position women as more normative kinds of human 'subjects' than men are.

Scientific Metaphors and Analogies

Our research on explanations of group differences presents us with a quandary. Men are no longer overrepresented as either study authors or study participants in modern psychology (Gannon et al., 1992), but explanation and generalization patterns surprisingly still take men as the norm (Ader & Johnson, 1994; Hegarty & Buechel, 2006). People not only explain groups excluded from category norms, they also spontaneously explain unexpected events (Kanazawa, 1992; Pomerantz, 1984). For example, we (Pratto, Korchmaros et al., 2007) manipulated participants' beliefs about the proportion of Americans who gave money to charity, and then asked participants to explain race differences in charitable giving. The (mostly White) participants' explanations focused on African Americans overall, but this pattern was exacerbated when African Americans donated money at an unexpectedly high or low rate, and attenuated when European Americans donated money at an unexpectedly high or low rate.

In this section we suggest that *scientific metaphors* might create expectancies that make some people more paradigmatic and others more peripheral to the category 'humans' that psychology constructs. Psychological metaphors and analogies for human life can be easily skewed toward the particulars of men's experiences more than the particulars of women's experiences. Psychoanalysis is a paradigmatic case. Freud disattended to girls' sexual development for much of his career only to produce later an odd model that assumed that girls began life believing that they had penises (Freud,

1925/1961). First-wave feminist intelligence researchers argued against the ‘invariance hypothesis,’ which specified that variability among men was the engine of evolution for the species as a whole (Shields, 1982). Second-wave feminist biological anthropologists similarly critiqued later models of evolution that specified that the harsh demands of hunting and warfare drove men to evolve, whereas the evolution of women was carried along on men’s coattails (e.g., Fedigan, 1986). Metaphors in social and cognitive psychology make male-dominated professions such as politics (Greenwald, 1980; Tetlock, 1991), science (Heider, 1958; Kelley, 1973; Ross & Nisbett, 1991), and law (e.g., Weiner, 1985) into normative standards against which the biases of ordinary people are cast into relief. Although cognitive metaphors of mind may seem gender-irrelevant, Oyama (2000) noted that they necessarily connote the existence of a computer programmer, an occupation that is prototypically held by men.

Psychologists might disagree about the question of whether empirical findings that are interpreted through the lens of these androcentric metaphors are gender-related or not. Since its origins in the 17th century, scientific writing has presented itself as avoiding ‘meddling with Divinity, metaphysics, morals, Politics, grammar, Rhetorick, or Logicks’ (Hooke, 1663, cited in Bernal, 1971, p. 455). If this *realist* account of scientific writing were correct, then scientific metaphors would be ephemera that make the communication and interpretation of general theories in psychology only trivially gender-relevant. However, it is worth remembering that the rhetoric through which early modern scientists justified the new empiricist epistemology was laden with gender-relevant metaphors. These men described God as male, nature as female, scientific interpretation as a mirror of God’s (male) rationality, and the relationship between science and nature as one of heterosexual dominance (Keller, 1985). There are less obviously gender-relevant reasons why psychologists might disagree with this early modern version of realism; it presumes a science of the mind to be a logical impossibility (MacKenzie & MacKenzie, 1974). Indeed, the later development of Western psychology as a science of the mind depended heavily on metaphorical thinking (Leary, 1990)

A commitment to empirical psychology requires that we push past the account of scientific realism offered by the fathers of the scientific revolution three and half centuries ago. Twenty-first century psychologists’ models of scientific communication should be informed by psychologists’ own empirical findings about how metaphors and analogies communicate and interpret. Like norm theory, cognitive analyses of metaphorical thinking show how people actively and spontaneously construct new categories when they parse a metaphor such as ‘boys will be boys’ (Glucksberg & Keysar, 1990) or ‘Cambodia was Vietnam’s Vietnam’ (Glucksberg, 2003). People can, quite obviously, quickly construct different meanings of a term such as ‘boys’ or ‘Vietnam’ and do not need first to construct a *literal* meaning of such terms on their way to extracting a novel metaphorical one (Glucksberg, 2003; Glucksberg & Haught, 2006). However, people can also fail to keep track of the sources of information when they think with metaphors and analogies. For example, when texts draw historical analogies between the prohibition of alcohol consumption and marijuana consumption in American history (Blanchette & Dunbar, 2002) and the stigmatization experienced by left-handed people and lesbian/gay people (Perrott, Gentner, & Bodenhuasen, 2005) readers often misremember analogical references between these events as truthful descriptions. These studies suggest that, when people interpret social psychological findings about ordinary people with reference to metaphors about politicians, scientists, lawyers, and computer scientists, they might activate representations that draw on knowledge about these male-dominated professions. However, people might keep track of the distinction between metaphorical representation and literal truth very variably. Thus, there are empirically grounded reasons to question whether research is ‘gender-related’ when it uses androcentric metaphors, irrespective of whether the research reports empirical gender differences or not, or its author(s) understand the research as gender-related or not.

This empirically grounded view of scientific metaphor requires a re-thinking of the boundary between ‘sex’ and ‘gender.’ Gender-related metaphors can be implicated to different degrees in the ways that the physical entities are understood to be the noncultural material of physical ‘sex.’ The understandings of ‘sex’ that are available to people are often quite obviously inflected by gender-related metaphors. For example, it is not surprising that everyday metaphors about genitals (Braun & Kitzinger, 2001a) and sexual intercourse (Weatherall & Walton, 1999) associate men with sexual agency and identification with their bodies, whereas they associate women with passivity and otherness. But the kinds of expert accounts of ‘sex’ that are often taken to be beyond debate are similarly affected by cultural assumptions. For example, dictionary entries on male genitalia contain more words than those on female genitalia. The former definitions are focused more often on what the male genitals do, and the latter are focused more often on where the female genitals are: ‘the muscular tube leading from the external genitals to the cervix of the uterus’ (Braun & Kitzinger, 2001b, p. 222). Heterosexual romance has also been a commonly used metaphor in biology textbooks’ accounts of conception. Such accounts similarly conflate maleness with agency:

The egg is seen as large and passive. It does not *move* or *journey*, but passively “is transported,” “is swept,” or even “drifts” along the fallopian tube. In utter contrast, sperm are small, “streamlined,” and invariably active. They “deliver” their genes to the egg, “activate the developmental program of the egg,” and have a “velocity” that is often remarked upon (Martin, 1991, p. 489).

Many metaphorical associations between masculinity and sperm continue to circulate in our culture (Moore, 2002). Bangerter (2000) used Bartlett’s (1950) method of serial reproduction to demonstrate experimentally how agency is spontaneously attributed to sperm when undergraduates re-tell egg-and-sperm stories to each other. Thus, biological ‘sex’ is not the ‘bedrock’ or ‘basis’ of gender. Rather, our lay and scientific understandings of ‘sex’—including our understandings of where ‘sex’ ends and ‘gender’ begins—are affected by cultural understandings of ‘gender’ and ‘sex’ (Butler, 1993).

This perspective provides a new way to think about the argument that some psychologists have made about the validity of evolutionary explanations as means of making attributions to biology in the absence of empirical biological studies. For example, the status of differences in the preferences of heterosexual women and men might be interpreted as a matter of evolved biological ‘sex’ (Buss, 1989) or of culturally structured ‘gender’ (Eagly & Wood, 1999). As empiricists, we have previously described how the predictions of evolutionary theory work well for heterosexual women and men who score high in social dominance orientation and poorly for those who do not (Pratto & Hegarty, 2000). Here, we make a different intervention by emphasizing how attention to scientific metaphors might reframe the way we think about the *validity* of evolutionary psychology.

Some descriptions of the relationship between feminist and evolutionary psychology privilege evolutionary psychology as a more realist, more scientific, and less political endeavor than feminist psychology:

Evolutionary psychology is a *scientific discipline* and hence is primarily concerned with describing and explaining *what exists*. Feminism shares with evolutionary psychology a concern with describing and explaining what exists, but it also carries a social and political agenda (Buss & Malamuth, 1996, p. 3, emphasis in original).

This kind of view assumes a one-to-one correspondence between authors’ publicly stated intentions about the political effects of their work and the actual effects of that work. This correspondence is rarely as simple as this quote implies. When a psychologist uses a term with complex, debated meanings in human society (such as ‘rape’, ‘harem’, ‘inheritance,’ or ‘investment’) and applies it to animals, particular understandings of human societies serve as the metaphorical ground for understanding unfamiliar animal behaviors. When the resulting descriptions of animals ground our understandings of the nature of social dynamics among humans, metaphor becomes confused with

mechanistic explanation (Keller, 1992). Such traffic in implicit meanings occurs most profoundly when the source and subject of a metaphor can be exchanged—as when the immune system and military systems of defense analogize each other (Haraway, 1991; Martin, 1991), social affiliation and Newtonian gravity analogize each other (Leary, 1990), or when capitalist economies and human evolution analogize each other (Haraway, 1991; Maurer, 1995).

As McCaughy (2008) noted, evolutionary psychologists need not explicitly proscribe particular actions on the basis of evolutionary psychology for their theory to feel prescriptive. Rather, metaphorical traffic across the human–animal boundary inevitably reifies particular frames of understanding biological life. However, in a human culture where people already feel obliged to express their natural selves (see also Foucault, 1976; Rose, 1996), prescription can follow directly from scientific description of what nature *really* is. Thus even when evolutionary psychologists explicitly contest the ‘naturalistic fallacy’ that natural phenomena ought to be morally privileged phenomena, their work can strongly imply that behaving contrary to the ‘nature’ that evolutionary psychology describes may not seem to be a wise or moral thing to do. Thus, analogizing eggs and sperms as courting couples, or human evolution as an economic system based on Western notions of ‘inheritance’ (see Pratto, 1999), is not a pre-cultural or apolitical activity. Indeed, whether rightly or wrongly, an increasing number of feminists see evolutionary theory as a form of political action precisely because it intervenes in public debates by changing stories about our sexual natures (Cassidy, 2007).

Indeed, the kinds of metaphors that pepper evolutionary analyses of gender-related findings also trouble Buss and Malamuth’s (1996) claim that evolutionary psychology is more scientific than feminist psychology because it is only concerned with description and explanation. Empirical studies suggest that natural scientists use metaphors for a range of purposes. When testing hypotheses, scientists strive for metaphors in which the source and the subject differ on only a few properties (Dunbar & Blanchette, 2003). Evolutionary explanations of ‘rape’ and ‘genetic inheritance’ among nonhuman animals are *looser* metaphors, and scientists typically draw on these when generating new theory. Such loose metaphorical thinking also characterizes persuasive political discourse (Dunbar & Blanchette, 2003). Ironically, the metaphorical resonances of evolutionary psychology with everyday life, which give the theory such broad appeal in popular media (Cassidy, 2007; McConaghy, 2008), are also the features of evolutionary thinking that trouble its characterization as nothing more than scientific description and explanation. Rather those metaphors make evolutionary psychology resemble simple scientific description less, and theory generation and political rhetoric more.

We do not mean to single out evolutionary thinking here or make the extremist argument that scientists should never use metaphors. Rather, we are using the metaphor-rich domain of evolutionary psychology to make a more general point that the representation of empirical gender-related findings is a more metaphorical endeavor than empiricist language typically suggests. This argument is a very general one. Consider how cognitive psychologists understand graphs to be *visual metaphors* (Pinker, 1990; Shah, Freedman, & Verini, 2005; Tversky, 2005), yet graphs are a medium of communication that suggests that ‘natural facts’ have been presented without human interpretation (Latour, 1990). Within psychology, those journals that devote more of their pages to graphs are viewed by professional psychologists to be reporting more ‘hard’ science than others journals do. This impression is not an artifact of greater quantification; journals that devote more space to tables are judged by psychologists to be reporting ‘softer’ science (Smith, Best, Stubbs, Archibald, & Roberson-Nay, 2002).

Yet, there are systematic asymmetries in the ways that psychologists and other people use graphs to represent gender-related findings. For example, about 75% of graphs and tables that depict gender differences in APA journals depict men ahead of women (Hegarty & Buechel, 2006). Both female and male undergraduates similarly prefer to graph men first (Hegarty, Buechel, & Ungar, 2006), and

this preference is most likely due to a general tendency to graph more socially powerful people ahead of others (Hegarty, Lemieux, & McQueen, 2008). We began this section with the question of how psychologists' interpretations and communications about gender continually re-instate androcentric norms. We conclude with the suggestion that verbal and visuospatial metaphors play an underacknowledged part in keeping implicit beliefs about gender alive in scientific communication, but 'off the record' of what research results mean.

Future Directions

In this chapter we have assumed that 'gender-relatedness' does not reside in particular attributes, behaviors, preferences, or body parts. The degree to which a pattern of behavior becomes 'gender-related' at a particular moment in psychology's history is not simply determined by the degree to which girls' and boys', and women's and men's, behavior are differently patterned. Rather, things are also *made* to be gender-related and gender-unrelated by researchers, research participants, and other people who act in interaction with each other; often in relationships characterized by uneven power distributions.

Psychologists have argued both for turning the volume up (e.g., Bem, 1995) and turning it down (e.g., Bem, 1993) on the gender-relatedness of psychological attributes as means of undoing sexist effects of gender-related research. Both strategies have obvious merit and obvious shortcomings from our vantage point. But the problem is less that too much or too little psychology is made explicitly gender-relevant, but that gender-relatedness radiates outward from invisible norms of masculinity when gender differences are described. Differences *among* women or men similarly dole out gender-relatedness unevenly; some people seem to be paradigmatic of their genders, whereas others do not. Those norms affect the way that we reason scientifically about difference. Arguments that psychology, as a science, is a realist endeavor that is beyond interpretation obscure these processes still further. It also situates psychologists outside the biases that we identify in other people's thinking.

Neither attributions to 'nature' or 'culture' (or even their interaction) escape the inevitable obligation to communicate reflexively when writing science about others' psychologies. *All* attributions to 'culture' and 'nature' involve metaphors that direct and anchor understanding, and all have the capacity to make some kinds of gendered realities prototypic and others peripheral. As we noted above, evolutionary predictions about mate preferences work best for women and men in the United States who are highest in social dominance orientation (Pratto & Hegarty, 2000). Thus, to take these evolutionary predictions as normative, or definitive of 'human nature,' is to construct norms around people who are high in SDO and to consign the less gender-differentiated relationship patterns of low-SDO heterosexuals to the periphery of human species being (Pratto & Hegarty, 2000). 'Nature' has long been critiqued by feminists, Marxists, and others as an ideological prop of the status quo for operating in this way. But it is worth recalling that 'culture' has often played a similar role in psychology (see e.g., Burman, 2007; Gjerde, 2004; Pols, 2007). When researchers use cross-cultural data to test competing 'natural' and 'cultural' explanations of gender-related findings, we urge three forms of caution. First, 'nature' should not be conflated with gender-related patterns of behavior in the industrialized West. So doing means that some people seem to have 'culture' (and ritual, superstition, kinship, and magical beliefs), whereas others have 'nature' (to which the experts have privileged access through science). Second, we often forget that cross-cultural psychology is often cross-*national* psychology in practice (e.g., Eagly & Wood, 1999) and that 'nation states' are Western forms of social organization. Third, cross-cultural psychology is increasingly following the

logic of indigenous North American psychology (Danziger, 2006) by drawing on college students for participants (Moghaddam & Lee, 2007). Such studies do not pit ‘nature’ against ‘culture’ as much as they pit shared variance due to participation in the shared transnational cultures that elite young people share in the 21st century against distinct variance due to national ‘cultures.’

Finally, we are not advocating ‘empiricism,’ ‘social constructionism,’ or an end to the tension between the two. We started this chapter by arguing that disagreement was a good thing, and we come to its end by describing the disagreements we would like to explore still further with colleagues identified with positions in the debates that we would like to supercede. We ask empiricist feminists for clarification of whether the asymmetries in explanation, induction, and metaphor use described here square with their model of scientific communication as a ‘free marketplace of ideas’ (Scarr, 1988). To social constructionists who claim sophistication on the basis of superceding quantification and attentiveness to psychology’s cultural and historical situatedness, we would ask how they think about the dazzlingly subversive empirical contributions of people such as Leta Stetter Hollingworth, Georgene Seward, Evelyn Hooker, Alfred Kinsey, Anne Constantinople, and many others. Neither perspective, on its own or in concert with the other, will do justice to psychologist’s task of representing gender at once by using the language of science of behavior while writing a description of diversity that resonates phenomenologically with different people.

One domain where the tension between these two perspectives might be fruitfully explored concerns the degree to which *numbers*, in addition to graphs, carry implicit meanings about gender. For example, empiricist feminists and social constructionists each have something to say in response to the question of what the authors of MF scales (e.g., Terman & Miles, 1936) or more recent authors of meta-analytic studies (Chapter 15) imply when they conventionally quantify boys’ and men’s behavior with positive numbers and girls’ and women’s behavior with negative numbers. We know of no relevant research that links the implicit meanings of numbers to gender, but have often been asked such questions when presenting our research on explanations, induction, and graphs to colleagues. Initially, it does not seem reasonable to assume that numbers never evoke implicit meanings simply because they have clearly defined meanings in mathematical systems (Galton, 1883; Simner et al., 2006). Ironically, the research reviewed here strongly suggests that the conventional way of quantifying boys’ and men’s behavior as positive effects may disrupt the effects of androcentric norms on explanations; we have often observed that people tend to explain groups who do ‘more than’ rather than ‘less than’ a particular amount of a given behavior (Hegarty, 2006; Hegarty & Buechel, 2006; Hegarty & Pratto, 2001b). Contrasting points of view on this matter are needed. Heated dialogue and empirical research would be a good thing.

Finally, lest we give the impression that our recommendations are absolute, we have left the final word – on how norms feel – to a poet:

Somewhere on the edge of consciousness, there is what I call a *mythical norm*, which each of us within our hearts knows “that is not me.” In America, this norm is usually defined as white, thin, male, young, heterosexual, Christian, and financially secure. It is with this mythical norm that the trappings of power reside within society. Those of us who stand outside that power often identify one way in which we are different, and we assume that to be the primary cause of all oppression, forgetting other distortions around difference, some of which we ourselves may be practicing (Lorde, 1984, p. 115).

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Part III
Brain and Behavior

Chapter 11

The Physiology of Sex Differences

Deborah Saucier and Crystal Ehresman

We suspect that many people approach the topic of sex differences in nonreproductive behaviors with great skepticism. People commonly believe that all nonreproductive behavioral differences between the sexes are learned (and some people even believe that some reproductive behaviors, such as sexual orientation, are choices). Although it is true that learned differences between the sexes do emerge, this chapter demonstrates that some innate differences begin prenatally and are not merely a result of environmental influence. We note that even overgeneralized stereotypes of gendered behavior (such as the famous quote from Voltaire: ‘I hate women because they always know where things are’) may have their roots in observations of innate sex differences. In this chapter we discuss the physiology of sex differences, beginning with steroid hormones and moving through to how these affect nonreproductive behaviors in children and adults. As this chapter focuses on the biological components of these behaviors, we use the term ‘sex’ rather than ‘gender,’ although we recognize that this is a departure from other chapters in this handbook. With the rise of epigenetic research, it is becoming increasingly difficult to differentiate environmental effects from biological ones, as the research shows that they are superbly entwined and exert significant influence on each other.

Classification and Synthesis of Steroid Hormones

Gonadal function and the production of steroid hormones are critical to sexual differentiation; thus, we begin with a brief description of steroid hormones. Effects that steroid hormones have on the developing organism during the prenatal and perinatal period are considered *organizational effects*, whereas effects that steroid hormones have on postpubertal adults are considered *activational effects*. Steroid hormones contribute to both the sexual and nonsexual development of human and nonhuman animals (McEwen, 2001).

Steroid hormones are a class of hormones that are derived from cholesterol and produced primarily by the adrenal glands and/or the gonads. The adrenal glands produce three major classes of steroid hormones: *glucocorticoids*, which regulate glucose metabolism; *mineralocorticoids*, which regulate the body’s mineral levels, such as sodium and potassium; and *androgens*. The prototypical glucocorticoid in humans is cortisol, and the prototypical mineralocorticoid is aldosterone. Comparable to the adrenal glands, the gonads also produce three major classes of steroid hormones: *estrogens*, *progestins*, and *androgens*. The prototypical estrogen is estradiol (E), the prototypical progestin is

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progesterone (P), and the prototypical androgen is testosterone (T). Although it is commonly presumed that T is the male sex hormone and that E and P are the female sex hormones, in reality both sexes produce all of these hormones (Kimura, 1992).

All steroid hormones are derived from each other, sometimes in a reversible fashion. In short, cholesterol is converted first to pregnenolone, which is then converted to P, cortisol, aldosterone, T, or E via different pathways and in a number of different steps (see Fig. 11.1). Although T is the prototypical androgen, dihydrotestosterone (DHT) is in fact far more biologically active (Wilson & Davies, 2007). Of particular importance to this chapter is the reciprocal loop between T and E (see Fig. 11.1).

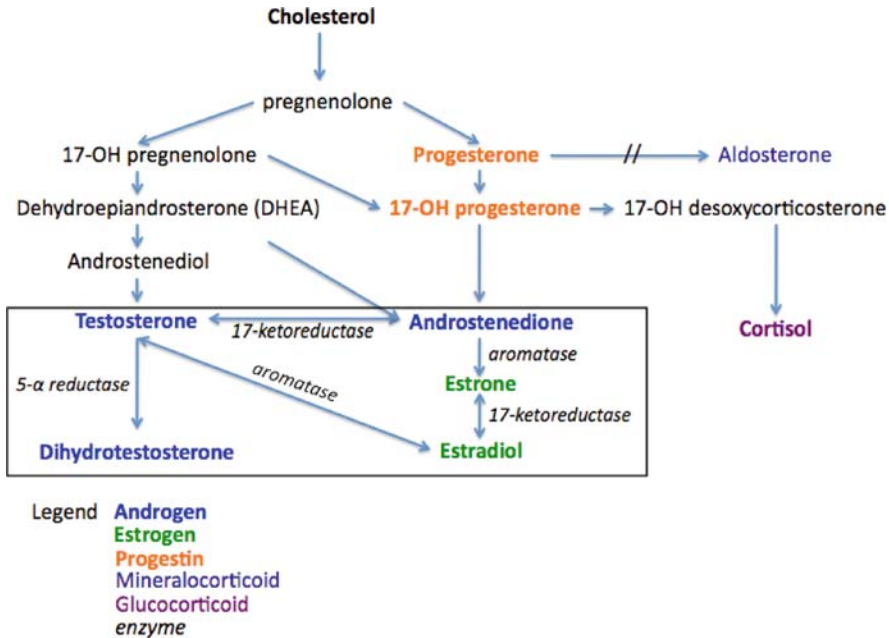


Fig. 11.1 Pathways for the synthesis of major steroid hormones. Double-ended arrows indicate that the transformation is commonly reversible

Development of Sex: The Fetus

Development of reproductive organs. Male (46 XY) and female (46 XX) humans are defined by the presence or absence of a 'Y' chromosome. The development of male reproductive organs depends on the Y chromosome, which has only 33 genes; the *SRY* gene, in particular, appears to be critically involved with genital and testicular development (for a review, see Wilson & Davies, 2007). Both the Mullerian tract (which develops into the female internal reproductive organs) and the Wolffian tract (which develops into the male internal reproductive organs) are present in the embryo. However, at about 6 weeks of embryonic development, Sertoli cells in the male gonads secrete anti-Mullerian hormone, which induces the regression of the Mullerian tract, a process that is complete by weeks 8–9 of pregnancy. The Sertoli cells also stimulate the Leydig cells to release T during the 12–17 weeks of pregnancy, and this facilitates the development of the Wolffian tract. The T released from the Leydig cells is also converted via the enzyme 5- α reductase into DHT, which is responsible for the development of the prostate, penis, and scrotum.

In the absence of androgens and anti-Mullerian hormone, the Wolffian tract regresses, and the Mullerian tract develops into the uterus, cervix, and upper vagina (Wilson & Davies, 2007). Possibly due to the misconception that the development of the female reproductive organs occurs as a default, there has been much less research into the development of the female reproductive organs. Although there is no known female equivalent of the *SRY* gene, there are proteins, such as FOXL 2 and FIG X, present in the ovary that repress male development and transcription factors that actively contribute to ovarian development. As well, the gene *WNT 4* suppresses Leydig cell differentiation and, thus, the production of T. Thus, the development of the female reproductive organs is not simply the 'default.' It is a much more active process than was previously believed.

Development of brain. The reproductive organs are not the only place in the body that exhibits sex differences. On average, with corrections for body size, adult men have larger brains ($M = 1,260$ cc) than adult women do ($M = 1,130$ cc) (e.g., Allen, Damasio, & Grabowski, 2002; Filipek, Richelme, Kennedy, & Caviness, 1994; Gur et al., 1991), and men have about 16% more neocortical neurons than women do (Pakkenberg & Gundersen, 1997). Although not a perfect measure, this difference may occur early in development, as male fetuses have slightly but significantly larger head circumferences (and, we presume by extension, brains) than female fetuses do, again with body size controlled (Joffe et al., 2005). It is difficult to attribute the size difference to any one particular area of the brain, as there are a number of areas of the brain (e.g., frontal lobes, cerebellum) that are larger in men than in women (Allen et al., 2002). When brain volume is controlled, women have more grey matter (i.e., brain areas dense with the cell bodies of neurons and glia) than men do, and men have a larger percentage of white matter (i.e., brain areas dense in myelinated axons) and cerebrospinal fluid than women do (Gur et al., 1991; but see also Courchesne et al., 2000). Compared to men, women have a smaller third interstitial nucleus of the anterior hypothalamus (INAH3; Byne et al., 2001; LeVay & Nonas, 1997). This is a very specific sexual dimorphism, as the surrounding cell groups, INAH1, INAH2, and INAH4, have not consistently shown sex differences in volume. The hypothalamus is associated with sexual behavior, and, thus, researchers have hypothesized that the dimorphism of the structure may relate to homosexual behavior (LeVay, 1991). However, all of this begs the question of how these anatomical differences occur.

Organizing effects on brain and behavior occur as a result of exposure to steroid hormones in the pre- and perinatal period. In the rat, areas of the brain associated with endocrine function and sexual behavior, such as the hypothalamus and preoptic areas, are sexually dimorphic. These areas only exhibit volumes typical of males when rats are exposed to androgens during critical periods (Leranth, MacLusky, & Hajszan, 2008). In rats, the critical period for the masculinizing effects of T on brain and behavior occurs from embryonic day 18 to approximately 10 days after birth, depending on the measure (Arnold & Gorski, 1984). The critical period(s) for humans is not known, although typical exposure to T comes initially from fetal production of T by the fetal testes during prenatal weeks 8–24, followed by a second surge of T that occurs approximately 2 weeks after birth and continues until about 4 months of age in boys (Wilson & Davies, 2007). The male-typed volumes have behavioral consequences, as rodents that are exposed to T in the critical period exhibit male-typical sexual behavior in adulthood, regardless of their genetic sex (Dorner et al., 1987).

Steroid hormones also produce dimorphisms in parts of the brain that are involved in higher cognitive functions, such as the hippocampus and amygdala (Leranth et al., 2008; Zuloaga, Puts, Jordon, & Breedlove, 2008). Indeed, the masculinizing and defeminizing effects on the brain are not limited to reproductive behaviors, as rodents that are exposed to T also exhibit male-typed play behaviors and male-typed aggressive behaviors (e.g., Breedlove, 1997; Meaney, 1989). Neonatal castration of male rodents (and, thus, the removal of T) results in the feminization of brain and behavior in adulthood (Jost, Vigier, Prepin, & Perchellet, 1973). Thus, in rodents, there is evidence that exposure to steroid hormones in critical periods affects both reproductive and nonreproductive behaviors.

Although exposure to T is required for the masculinization of the developing brain, it has typically been assumed that it is the metabolites of T (i.e., E and DHT) and their activity at estrogen receptors that produce the observed effects (see Fig. 11.1; Naftolin, Ryan, Davies, Petro, & Kuhn, 1975). The so-called aromatization hypothesis (so-called because T is converted to E and DHT by the enzyme aromatase) is supported by the masculinizing effects that E has on behavior when E is given perinatally to rodents (Gorski, 1971). In rodents, the masculinizing effects of E are suppressed by α -fetoprotein, which binds E in the bloodstream and prevents its crossing of the blood–brain barrier, thus stopping its effects on the brain (for a review, see Zuloaga et al., 2008). As fetal ovaries are not producing T and E is bound by α -fetoprotein, female fetuses do not typically experience masculine organization. Accordingly, only fetuses that are exposed to androgens have brains that are masculinized.

Although the aromatization hypothesis holds up for the masculinization of some parts of the brain and some behaviors in rodents, recent evidence suggests that this is not the entire story, as T itself has a direct effect on the brain via androgen receptors (ARs), particularly in primates (Zuloaga et al., 2008). Acting via ARs, T is responsible for the masculinization of parts of the amygdala, parts of the hypothalamus, and the preoptic areas. Behaviorally, activity at ARs is associated with masculinization of reproductive and nonreproductive behaviors, including those reliant on the hippocampus (Zuloaga et al., 2008). Further, Swaab (2004) suggested that prenatal exposure to T is critical for the masculinization of the brain in humans, at least with respect to gender identity and sexual orientation.

Abnormalities in development. Much of what we know about the organizational effects of T on the brain and behaviors of humans comes from studies of individuals with endocrine disorders that result in atypical exposure to steroid hormones. These individuals are often born with ambiguous genitalia, and they are commonly referred to as intersexed individuals. We discuss three disorders of sex development (DSDs): androgen-insensitivity syndrome (AIS), an XY DSD; Turner's syndrome, a 45 XO DSD; and congenital adrenal hyperplasia (CAH), an autosomal DSD that can affect individuals of both sexes.

Androgen-insensitivity syndrome (AIS) is an X-linked mutation of the androgen receptor that results in incomplete masculinization of 46 XY individuals; it occurs with an incidence of 1: 99,000 births (Boehmer et al., 2001). Phenotypically, individuals with AIS can present as women lacking pubic hair (complete AIS) who self-identify as female; as undervirilized men (partial AIS); or as intersexed individuals (individuals with ambiguous genitalia). Typically, individuals with AIS have normal male serum levels of T and DHT, yet do not exhibit normal masculinization of the genitalia and secondary sex characteristics, as they lack functional androgen receptors that are necessary for masculinization to occur. Cognitively, individuals with complete AIS perform more poorly on tasks of spatial cognition than do either their unaffected male relatives or their unaffected female relatives (Imperato-McGinley, Pichado, Gautier, Voyer, & Bryden, 1991). As women produce androgens in their adrenal glands, the observation that nonaffected women are better at these tasks than those with complete AIS suggests that androgens are responsible for some of the observed behavioral effects. At present, we know of no information that discusses neural effects of AIS in humans; although in rodents, there is an association between the activation of ARs and the masculine development of the brain (e.g., Bodo & Rissman, 2008).

Turner's syndrome (TS), or 45 XO, is an X-linked DSD that occurs with an incidence of 1:2,500 live female births (Ross, Roeltgen, & Zinn, 2006). Individuals with TS either completely lack a second sex chromosome (50% of individuals) or, if the second sex chromosome is present, it is either severely malformed (25% of individuals) or expressed inconsistently throughout the body (25% of individuals). Individuals with TS present as female, although their gonads are largely undifferentiated and appear as very small streaks of cells that do not produce appreciable concentrations of E (Eckel et al., 2008). Individuals with TS are not grossly cognitively impaired, although they do

exhibit deficits in nonverbal learning, including spatial ability, compared to their nonaffected siblings. Individuals with TS have reductions in right hemisphere volume, although volume reductions have been observed bilaterally (Ross et al., 2006). At the very least, some of the observed neural and behavioral effects must be considered in light of the absence of early exposure to E in individuals with TS, although there are likely to be complex interactions between genetic factors and hormones in the development of the brain.

Congenital adrenal hyperplasia (CAH) is an autosomal DSD that results in a deficiency in 21-hydroxylase, which is involved in the conversion of P to cortisol. This deficit results in an overproduction of androgens and an underproduction of cortisol in the adrenal glands. CAH occurs with an incidence of 1:15,000 births, and one-half of the affected children are female. Androgen overproduction begins at about 3 months of gestational age and continues until it is treated. In girls, the genitalia are ambiguous and thus, diagnosis is made early. In boys, diagnosis is made if the affected child has a severe form of the disease that results in imbalances in salt metabolism or when puberty occurs precociously. For the purposes of this chapter, it is the exposure of girls with CAH who were exposed during fetal life who are of interest as they provide insights into the organizational effects of T on the brain and thus behavior. Behaviorally, girls with CAH exhibit advantages on a number of tasks of spatial ability compared to their unaffected siblings (Mueller et al., 2008; Nass & Baker, 1991; but see Malouf, Migeon, Carson, Petrucci, & Wisniewski, 2006). As well, girls with CAH exhibit play behaviors that are more consistent with those of boys than of their unaffected sisters (e.g., Berenbaum, 1999), and they self-report more physical aggression (Berenbaum & Resnick, 1997). Girls with CAH exhibit neural activity in the parietal lobes, fusiform gyrus, and amygdala that is similar to that of nonaffected male control participants (Ernst et al., 2007).

Taken as a whole, we can see that, in humans, the evidence suggests that appropriate levels (for one's sex) of androgens and estrogens are required for normal neurological development. Further, alterations in exposure to androgens and estrogens result in lasting behavioral change in nonreproductive behaviors, such as play and aggression. However, one limitation associated with studying individuals with DSD is that these individuals do have other anatomical changes (e.g., genital ambiguity) that may result in different socialization and/or behavioral experiences, which, in turn, could potentially affect brain structure and function. The potentially circular nature of the relation makes straightforward interpretation of these results difficult.

Sex Differences in Behavior in Childhood

Another way in which the organizing effects of hormones can be observed is by studying the behavior of children. Once infancy is past, very little gonadal activity is present in children until puberty; thus, direct effects of endogenous steroid hormones are negligible. As such, it is reasonable to presume that sex-related differences in behaviors that occur during childhood reflect, at least in part, organizational changes in the nervous system that occurred during the pre- and perinatal period, especially when these behaviors relate to concentrations of hormones in the pre- and perinatal periods.

Play. One of the most obvious ways in which children differ is in their play behaviors. Cross-cultural studies have demonstrated that girls are more interested in playing with dolls, doll accessories, kitchen toys, and arts and crafts than are boys (e.g., Ruble, Martin, & Berenbaum, 2006; Berenbaum, Martin, Hanish, Briggs, & Fabes, 2008). Boys are more interested in playing with transportation toys, electronics, sports equipment, and building toys than are girls (Ruble et al., 2006). Fantasy play for girls involves relationships and household roles, whereas fantasy play for boys involves superheroes and aggression (Berenbaum et al., 2008). In addition, these differences

are large, with effect sizes that range from -1.3 to 1.5 (Berenbaum et al., 2008). These preferences emerge early and are long lasting, as they are first observed in preschool and continue on through adolescence. But what is the cause of these preferences?

Many people point to cultural pressures on children to conform to gender roles. Certainly, parents and peers reinforce notions of 'correct' toys and 'appropriate' play that are consistent with their own notions of gender roles. Children are also active forces in their own socialization; they form gender schemas that, in turn, affect how attention is directed and how information is interpreted and, thereby, guide behavior to be consistent with these schemas (Berenbaum et al., 2008).

However, rhesus monkeys exhibit similar sex-typed toy preferences (Hassett, Siebert, & Wallen, 2008), and male rodents engage in more aggressive play than do female rodents (for a review see Pellis, Field, Smith, & Pellis, 1997). Thus, something about these toys and/or play patterns is beyond human cultural expectations of boys and girls and their respective roles. In rodents, perinatal androgen activity is necessary for male-patterned play to occur (Pellis et al., 1997), and this has been replicated in other mammalian species (Berenbaum et al., 2008). Studies of girls with CAH (recall that they are exposed to atypically high concentrations of androgens prenatally and perinatally until they are treated) suggest that they play with boys' toys more and that they engage in more boy-typical activities than their unaffected sisters do (Berenbaum et al., 2008). Further, fetal T levels (measured via assays of amniotic fluid) have been positively related to play interests in 4-year-old boys (Knickmeyer & Baron-Cohen, 2006). This does not negate the role of culture; rather, behavioral predispositions are likely to interact with social experiences to produce play preferences and patterns.

Cognitive and motor skills. Prepubertal children also exhibit differences on some tasks of cognitive and motor skill (Kimura, 1999). Girls may perform better on some linguistic tasks (Johnson & Meade, 1987) and on some tasks that involve praxis (Ingram, 1975). Boys may perform better on some tasks that involve spatial skills, both in the ability to hit targets with projectiles (Kimura, 1999) and on tasks that involve rotation (Kerns & Berenbaum, 1991; Rosser, Horan, Mattson, & Mazzeo, 1984). However, some researchers have not observed these differences (for a review, see Spelke, 2005), which suggests that some aspect of the test characteristics may influence the outcome.

One area that has received considerable attention is the relation between prenatal androgen exposure and spatial ability in children. Grimshaw, Sirarenios, and Finegan (1995) demonstrated that levels of T in the second trimester (as assessed by amniocentesis) were positively related to spatial ability in girls and weakly but negatively related in boys. Similarly, girls with CAH also perform better on some tests of spatial ability than do their nonaffected siblings (e.g., Hampson, Rovet, & Altmann, 1998). However, girls with CAH also exhibit male-typed play behaviors in childhood and masculine-typed hobby preference in adolescences. Grimshaw and colleagues did not assess these types of behaviors. Thus, it is possible that preference for masculine-typed activities may positively influence spatial ability, although Saucier, McCreary, and Saxberg (2002) found no evidence of a relation between gender-typed behavior and spatial ability in adulthood.

Sex Differences After Puberty: Adulthood

Much of the research on sex differences is performed in adults, in part, because it is relatively easy to recruit participants and, in part, because adults can perform tasks with greater complexity than children can. Although we discuss a number of behavioral differences, note that, on average, the similarities between women and men outweigh the differences; thus it is important to remember that this is a discussion of average differences between these two groups (Kimura, 2002). Moreover,

there is no difference in general intelligence between men and women; rather these differences tend to be observed only for some specific cognitive abilities and problem-solving strategies.

The most consistently found and robust sex-related differences occur on tasks that require spatial ability (Voyer, Voyer, & Bryden, 1995), especially tasks that involve mental rotations (i.e., accurately imagining the rotation of a figure). Research has demonstrated that men are better at covertly visualizing changes in the orientation of an object, which is typically studied with the mental rotations task (MRT; Shepard & Metzler, 1971, later adapted by Vandenberg & Kuse, 1978; Collins & Kimura, 1997). Men are also better at covertly visualizing how an object will appear after some sort of manipulation, such as being folded, cut, and unfolded again (Kimura, 1999).

Males, both humans and rodents, also tend to be better at navigational tasks (Astur, Ortiz, & Sutherland, 1998; Williams, Barnett, & Meck, 1990); they perform them more quickly and with fewer errors than females do. Performance on mental rotations is related to navigational ability (Galea & Kimura, 1993; Saucier, Green et al., 2002) and the capacity for global orientation while navigating (Silverman et al., 2000). Although it is tempting to hypothesize that these tasks rely on similar neural structures, functional imaging suggests that navigation and MRT may rely on different structures. For instance, performance of the MRT results in differential activation of frontal regions (greater in women than in men) and inferior parietal areas of the brain (greater in men than in women) (e.g., Schoning et al., 2007), whereas navigation tasks rely on activation of hippocampal areas (e.g., Iaria, Lanyon, Fox, Giaschi, & Barton, 2008). Indeed, for tasks of navigation, hippocampal activation is not necessarily different between women and men, although diffusion tensor imaging suggests that individuals who are skilled at navigation may have different hippocampal microstructures than those who are not as skilled (Iaria et al., 2008). Thus, it may be that the observed relation may reflect sex-differentiated strategies, such that better performance reflects a more efficient strategy given a specific environment or testing condition (e.g., Saucier, Green et al., 2002).

Females and males do differ in their navigational strategy (Saucier, Green et al., 2002; Snihur, Hampson, & Cain, 2008; Williams et al., 1990; Williams & Meck, 1991). In humans, women are better at recalling landmarks and following landmark-based directions, whereas men navigate better when given Euclidean-based directions (Saucier, Green et al., 2002). In rodents, males and masculinized females are more affected by disruption of geometrical cues during a navigational task, which suggests a reliance on these cues for successful navigation (Williams et al., 1990). Thus, it appears that both male humans and rodents utilize similar factors to ensure successful navigation. The rodent literature is less clear about what female rats rely on, as female rats take longer to learn the task, engage in more behaviors that are inconsistent with solving the task, and are not as affected as males are by cue manipulation (Snihur et al., 2008; Williams et al., 1990; Williams & Meck, 1991). The neural correlates for these sexually dimorphic abilities are not currently known, although, as noted above, the role of the hippocampus in navigation has been well documented.

Not all tasks of spatial ability exhibit better performances by men; women have better scores on tasks of object location memory (Eals & Silverman, 1994; Silverman & Eals, 1992; Tottenham, Saucier, Elias, & Gutwin, 2003). This difference is also observed in rodents, wherein female rats also exhibit better object location memory (Saucier, Shultz, Keller, Cook, & Binsted, 2008). The neural bases for these tasks are currently under investigation in our lab.

The observed differences for these spatial behaviors cannot easily be attributed to obvious differences in experience or gendered behavior between the sexes. The strongest line of evidence comes from comparative studies, in which similar sex-related differences are observed for navigational tasks and object location memory in rodents and humans (e.g., Saucier, Green et al., 2002; Saucier et al., 2008). Comparative studies are based on the underlying assumptions that (1) all behaviors in all animals are generated by the nervous system; (2) brains evolve and, therefore, behaviors evolve; (3) and similarities in behavior among species can provide important insights into the neurological bases

of behavior (Gazzaniga, Ivry, & Mangun, 2002). Nonhuman animal studies are particularly valuable components of sex difference research, as researchers are able to study the effects of sex without the influence of culture. In other words, because rodents are not reared in a cultural setting, we can infer that sex differences observed in rodents are due to underlying physiology or evolutionary pressures and are not a result of gender-biased experience or gendered expectations of behavior. With respect to gender, we note that the degree to which an individual engages in gendered behaviors in adulthood was not a significant predictor of one form of spatial ability, covert rotation (Saucier, McCreary et al., 2002). In other words, gender stereotypic behaviors such as sports, vocational interests, and social interactions were not significantly predictive of spatial ability (Saucier, McCreary et al., 2002). Further, a number of these spatial behaviors exhibit sex-related differences in a number of different cultures (e.g., Mann, Sasanuma, Sakuma, & Masaki, 1990; Mayes, Jahoda, Neilson, & Berenbaum, 1988; Silverman, Choi, & Peters, 2007). This supports the idea that the cognitive sex-related differences in these tasks reflect some underlying difference that is not easily attributable solely to cultural biases and gendered behaviors.

Although spatial tasks have received considerable attention, sex differences are observed in other areas. Specifically, women are faster at rapidly selecting and identifying items (perceptual speed; Kimura, 1999). Women also excel at speeded naming tasks, such as color naming and shape naming (Saucier, Elias, & Nysten, 2002). These skills are not due to articulatory ability, visual scanning, or color discrimination; thus, performance on these tasks may represent women's superior ability to access verbal labels (Saucier, Elias et al., 2002). Although women do not exhibit an advantage on overall verbal ability (Kimura & Clarke, 2002), they score significantly higher on tasks of verbal memory (such as remembering a word list; Chipman & Kimura, 1998) and verbal fluency (such as rapidly naming red items; Kimura, 1999).

Men and women also differ on some aspects of motor skill. Men tend to be better at accurately hitting targets with projectiles (Watson & Kimura, 1989), whereas women are better at fine motor tasks, such as inserting small pins into holes. Although, intuitively, it may appear that these differences may reflect size differences, factors such as height, experience (sports experience), or hand size do not account for the large portion of sex-related differences (Kimura, 1992).

Activational effects. Once individuals reach puberty, the gonads produce steroid hormones, and changes in behavior and activational effects are observed. Activational effects are, presumably, due to the effects that E and T had on neural structures during the organizational period (Halbreich et al., 1995; McEwen, 2001; Silverman & Phillips, 1993). In adulthood, endogenous concentrations of steroids fluctuate, which reflects natural variation in concentrations of E and T due to naturally occurring cycles (Hausmann, Slabbekoorn, van Goozen, Cohen-Kettenis, & Gunturkun, 2000). Studies of activational effects of steroid hormones are often performed by examining brain and/or behavior following the administration of hormones for treatment purposes or during natural fluctuations of hormone levels that occur in women and men (Halari et al., 2005).

In men, T levels naturally fluctuate on a seasonal schedule; T levels are higher in fall than in spring (Kimura, 1999). Furthermore, T levels also vary throughout the day; they peak in the early morning and continue to decline as the day proceeds (Moffat & Hampson, 1996; Newman, Sellers, & Josephs, 2005). In men, T levels have been found to relate to spatial ability, both throughout the season and throughout the day. That is, men who fall in the low-normal range of T outperform men who fall in the high-normal range of T levels on spatial tasks (Gouchie & Kimura, 1991; Kimura & Hampson, 1994; Moffat & Hampson, 1996).

Androgen levels also change with age; they peak in young adulthood and decrease thereafter (Janowsky, 2006). Men in their 70s typically have approximately 40% of the levels of T that men in their 20s do (Janowsky, 2006). If androgen levels reach low enough levels, the condition is referred to as andropause; although note that, unlike menopause, andropause is far from ubiquitous or even

well defined (Morales, 2004). Symptoms of andropause include sexual dysfunction (i.e., loss of interest, erections, ejaculation) and a loss of bone mass; these symptoms respond to treatment with T. Although a variety of cognitive abilities, such as memory and reasoning ability, can decline with age, it has been theorized that age-related decline in visuospatial ability is due to decreased T levels (Martin, Wittert, & Burns, 2007). Indeed, treatment with T is associated with improved performance on some tasks of spatial ability (Cherrier et al., 2005; Janowsky, Oviatt, & Orwoll, 1994). This effect appears to depend on T, as pre-treatment with aromatase inhibitors (which inhibit conversion to E) does not affect the observed improvements in spatial memory (Cherrier et al., 2005).

Women also have measurable quantities of endogenous T. Although low-normal concentrations of T are associated with enhanced performance on some tasks of spatial ability for men, the converse appears to be true for women. That is, women in the high-normal range of T levels outperform women in the low-normal range on some tasks of spatial ability (e.g., Bergemann et al., 2008; Moffat & Hampson, 1994), including navigation (Burkitt, Widman, & Saucier, 2007). Further, although the research is scanty, it appears that exogenous application of T in women has resulted in temporary improvements in performance of object location memory (Postma et al., 2000) and MRT (Aleman, Bronk, Kessels, Koppeschaar, & van Honk, 2004; Postma et al., 2000). These effects may reflect an optimal level of T, wherein women with high 'normal' concentrations of T approach an optimal level for spatial behavior in the brain.

The steroid hormones P and E fluctuate in women of reproductive age throughout the menstrual cycle. The menstrual cycle can be divided into the menstrual phase (beginning with the first day of menstruation), the follicular phase, and the luteal phase; the cycle typically averages 28 days (Farage, Osborn, & MacLean, 2008). The follicular phase continues until ovulation (which is characterized by a preovulatory peak in E, with low levels of P), which characterizes the onset of the luteal phase. During menstruation, levels of both E and P are low; the mid-luteal phase has high levels of both E and P (Kimura, 1999). These natural fluctuations in hormone levels relate to performance on cognitive tasks. During the mid-luteal phase (when E and P levels are high) women perform better on tasks that women typically do well (e.g., fine motor skill) and more poorly on tests that men typically do well (e.g., MRT, targeting; Kimura & Hampson, 1994; Saucier & Kimura, 1998). During the late menstrual phase (when E and P levels are low), the opposite pattern has been observed. During high levels of E and P, improvements have also been observed in memory (Maki, Rich, & Rosenbaum, 2002) and speeded manual coordination (Hampson, 1990). These behavioral differences across the menstrual cycle may relate to differential activation of cortical structures that occurs across the menstrual cycle (Schoning et al., 2007). For example, estrogen receptors are dense in structures such as the hypothalamus, hippocampus, and amygdala, all of which are highly involved in neurocognitive processes (Farage et al., 2008). Thus, it may be that fluctuations in hormone concentrations may affect these areas differentially; indeed there is one report of a relative increase in hippocampal volume in the late menstrual phase (10–12 days after the onset of menses) compared to the late luteal phase (1–5 days before the onset of menses) that was associated with changes in cognitive function (Protopopescu et al., 2008). However, scientists are just at the beginning of this research, and we should note that phase of cycle was only assessed relative to the onset of menses, and no data regarding hormonal concentrations were available. Thus, much more research is needed before firm conclusions about the relations between brain volume, cognitive function, and hormonal concentrations can be reached.

As with T, E and P levels also decrease with age. Unlike andropause, the gradual cessation of the menstrual cycle (i.e., menopause) ubiquitously occurs in women, typically beginning in the early 40s and reaching conclusion by the late 50s (LeVay & Valente, 2002). Menopause is associated with large decreases in E, P, and androgens (Halbreich et al., 1995), and it is associated with bone density loss and other physical symptoms such as hot flashes. In recent decades treatment for

these symptoms has involved exogenous supplementation of E and P, often to levels approximating pre-menopausal levels. Some researchers have suggested that supplementation with E improved aspects of learning and memory (Duka, Tasker, & McGowan, 2000), although this effect has not been observed by others (Almeida et al., 2006).

Why is there discrepancy regarding the effects of E and P on cognitive function across menstrual phase and menopause? The accuracy (or lack thereof) of determining menstrual phase is probably an important source of inconsistent results in young women (Maki et al., 2002). For instance, many researchers have relied on day counts (e.g., counting backward from the onset of menses to determine ovulation) rather than direct determination of hormone concentrations via hormonal assays (Epting & Overman, 1998). Further, in the hormone treatment studies, there are large differences between the participants and the type of hormone treatment used in these studies. Thus, more research is needed before any long-term benefits of exogenous supplementation of hormones on cognition in women can be confirmed. Finally, although the effect sizes that are observed across the menstrual cycle and in hormone treatment are statistically significant, they are small in magnitude (Hampson, 1990) and, thus, may require sensitive behavioral observation and large samples. The importance of these findings lies in their theoretical implications and to further our understanding of behavioral changes that may occur during sex reassignment in transgendered individuals.

Transgendered individuals. Transgendered individuals perceive that they are members of the other sex, despite their chromosomes. Some transgendered individuals receive sex reassignment, a combination of surgery and treatment with steroid hormones to obtain a body that is consistent with their perceived gender (LeVay & Valente, 2002). Specifically, female-to-male (FtM) reassignment includes androgen treatment, whereas male-to-female (MtF) reassignment includes E and progestin treatments combined with anti-androgens (Slabbekoorn, van Goozen, Megens, Gooren, & Cohen-Kettenis, 1999). As most transgendered individuals are young and healthy when they begin sex reassignment (Gooren & Giltay, 2008), these individuals provide researchers an ideal situation to study the activation effects of steroid hormones on brain and behavior, both before and after sex reassignment.

There are reasons to believe that the sexual differentiation of the brain of transgendered individuals is not consistent with the other physical attributes of their genetic sex (Gooren & Giltay, 2008). Zhou, Hofman, Gooren, and Swaab (1995) studied histological sections and reported that MtF transgendered individuals exhibited a female-like size of a nucleus in the hypothalamus, which typically is larger in men than in women. The female-like nucleus in the hypothalamus was probably not due to the hormone supplementation that the MtF individuals received, as histological examination of these same areas of the brain in menopausal women, who were not receiving hormone treatment, showed that they had female-typical nuclei. Kruijver, Baesar, Espila, Unmehop, and Swaab (2002) reported that the E receptors in nuclei in the hypothalamus in an MtF transgendered individual were more similar to those of genetic women than genetic men. These effects are not observed for all areas of the brain that exhibit sexual dimorphism, such as the corpus callosum (Emory, Williams, Cole, Amparo, & Meyer, 1991).

Prior to undergoing reassignment, FtM transgendered individuals had poorer verbal memory than female controls did, whereas MtF transgendered individuals had better verbal memory than men did, which suggests an intermediate pattern of cognition for verbal memory (Cohen-Kettenis, van Goozen, Doorn, & Gooren, 1998). Note, however, that transgendered individuals exhibited rotational skills consistent with their genetic sex (Cohen-Kettenis et al., 1998; Miles, Green, Sanders, & Hines, 1998), which suggests that not all aspects of cognitive function are different in transgendered individuals prior to sex reassignment treatments.

However, once hormone treatment has begun, significant effects are noted. For instance, administration of T improved visuospatial ability and impaired verbal fluency in FtM transgendered

individuals. Conversely, following hormone treatment, MtF transgendered individuals performed more poorly on the rotation task and better on the verbal fluency tests (van Goozen, Cohen-Kettenis, Gooren, Frijda, & van de Poll, 1995) and memory tasks (Miles et al., 1998) than they did before treatment. However, these effects are not always observed; Slabbekoorn et al. (1999) did not observe an effect of hormone treatment on verbal fluency or spatial ability in MtF transgendered individuals, although the administration of T in the FtM transgendered individuals did improve performance on spatial tasks. Taken together, these studies support the activational role of T as a contributor to spatial ability, but leave the role of E open to question (Slabbekoorn et al., 1999).

Homosexual individuals. Given the previous section on sex-related differences in transgendered individuals, one might ask whether there are brain differences in homosexual and heterosexual individuals. Indeed, in the early 1990s there was a flurry of investigations on the ways in which the brains of homosexual individuals differed from heterosexual individuals. Much, if not all, of the work focused on the brains of gay men. Some researchers observed that some nuclei in the hypothalamus (an area of the brain associated with reproductive behaviors) of gay men resemble those of heterosexual women (for a review, see Mustanski, Chivers, & Bailey, 2002). However, there is a great deal of variability in these results, as some have not reported these differences (e.g., Byne et al., 2001) and others have reported that other nuclei in the hypothalamus are larger in gay men than in heterosexual men (e.g., Swaab & Hoffman, 1990).

Examinations have been conducted of other areas of the brain that are not obviously associated with reproductive behavior, such as the commissural systems that are involved in transmitting information between the right and the left hemispheres of the brain. As was the case for the hypothalamus, equivocal results have been reported for the commissural systems; some have reported that the area of the anterior commissure is larger in gay men than heterosexual men (Allen & Gorski, 1992), and others have not observed differences in the area of the anterior commissure (Lasco, Jordan, Edgar, Petito, & Byne, 2002). Similar to the work of Allen and Gorski (1992), Witelson and colleagues (Witelson et al., 2008) reported that another part of the commissural system, a subsection of the corpus callosum, was larger in gay men than in heterosexual men. Thus, differences in the area of specific portions of the brain are not always observed nor are they always in one direction (e.g., larger or smaller).

Until recently no studies of neuroanatomical correlates of sexual orientation involved lesbians. However, recently two research teams have investigated the brains of lesbians using MRI and PET techniques (Ponseti et al., 2007; Savic & Lindstrom, 2008). It appears that lesbians and heterosexual men have more asymmetric brains than gay men and heterosexual women do (Savic & Lindstrom). Although Savic and Lindstrom (2008) concluded that the asymmetry was due to larger right hemisphere volumes, it is interesting to note that Ponseti and colleagues (2007) observed that there were relative reductions in the grey matter of the left perirhinal cortex in lesbians (and heterosexual men) compared to heterosexual women. Future researchers should attempt to replicate these observations and should examine the functional significance of these neuroanatomical differences. Further, none of these studies controlled for phase of the menstrual cycle, despite the observation that phase has been demonstrated to affect the volume of certain brain structures (Protopopescu et al., 2008).

Behaviorally, studies of lesbians and gay men have tended to focus on responses to sexually relevant stimuli rather than on nonobviously, reproductively relevant behaviors, such as spatial or verbal ability. Of those who did examine nonreproductive behaviors, some reported that lesbians performed better than heterosexual women on tasks of spatial ability on which men typically do well, such as rotation tasks or tasks that involve orientation judgment (Collaer, Reimers & Manning, 2007; Peters, Manning & Reimers, 2007), but performed less well on tasks of linguistic or spatial ability that women typically do well, such as verbal fluency or location memory (e.g., Maylor et al., 2007; Rahman, Abrahams, & Wilson, 2003). Gay men have performed less well than heterosexual men on

tasks that involve spatial ability (Rahman & Wilson, 2003; Wegesin, 1998) and better than heterosexual men on tasks that involve linguistic skill (e.g., Sanders & Wright, 1997), which has led some to suggest similarities with the performance of heterosexual women. However, as is the case with the neuroanatomical data, the direction of these differences is neither universal nor ubiquitous (Gladue & Bailey, 1995; Neave, Menaged, & Weightman, 1999; Rahman & Wilson, 2003). Thus, simplistic explanations that equate the behavior of gay men or lesbians with that of cross-sex heterosexual individuals are just that: simplistic. Failure to study the behavior of lesbians routinely makes it all the more challenging to interpret these differences in a meaningful way.

Unlike studies of transgendered individuals in which hormone levels are exogenously and deliberately manipulated, comparisons of the hormonal profiles of gay men with heterosexual individuals reveal trivial, nonsignificant differences (for a review, see Meyer-Bahlberg, 1984). The research with lesbians is less consistent, as some have reported elevated levels of testosterone (e.g., Gartrell, Loriaux & Chase, 1977; Singh, Vidaurri, Zambarano, & Dabbs, 1999) and others have not observed these differences (e.g., Downey, Erhardt, Schiffman, Dyrenfurth, & Becker, 1987). It appears that, for lesbians, concentrations of testosterone may relate to erotic role, such that 'butch' lesbians exhibit higher concentrations of testosterone than 'femme' lesbians do (Singh et al., 1999; but see Pearcey, Docherty, & Dabbs, 1996).

This potential difference in hormone concentrations between 'butch' and 'femme' lesbians highlights the need for complex studies of lesbian and gay individuals that explore the myriad of ways that sexuality is manifest (for a review, see James, 2005). Most studies only classify individuals as either homosexual or heterosexual (although some studies do involve individuals who self-identify as bisexual), which ignores the degree to which an individual may express traits or variations that are exhibited within a group. Also, future researchers should focus on more ethologically valid measures of sexuality with less dichotomization between heterosexual and homosexual individuals. Further, as phase of the menstrual cycle can affect brain and behavior, future studies of lesbians also need to take care to ensure that potential effects are not simply attributable to menstrual cycle effects. With greater attention to these factors, some of the conflicting results could be better understood, which would result in greater understanding of if/how sexual orientation is reflected in the brain and in nonreproductive behavior.

Role of Nonreproductive Hormones: Glucocorticoids

Recall from the beginning of the chapter that glucocorticoids are also part of the steroid hormone group. Glucocorticoids are part of the stress response that occurs via the activation of the hypothalamic-pituitary-adrenal (HPA) axis. Glucocorticoid receptors exist in many brain areas, including the amygdala, hippocampus, and frontal lobes. In addition, adrenalectomy can induce degeneration in these areas and result in deficits in spatial learning and memory in rats (Spanswick, Epp, Keith, & Sutherland, 2007).

As males and females (rats and humans) differ in their levels of circulating glucocorticoids and in the degree of release of glucocorticoids following stress, it may be that glucocorticoids also contribute to sex-related differences in cognitive behavior (Handa, Burgess, Kerr, & O'Keefe, 1994; Mashoodh, Wright, Hebert, & Perrot-Sinal, 2008; McEwen, 2001). Indeed, exogenous application of E increases corticosterone secretion in both sexes, whereas T has the opposite effect (Handa et al., 1994). When female rats are performing navigational tasks, they exhibit greater corticosterone responses and impaired performance; however, when adrenalectomized male and female rats are given high doses of corticosterone, both sexes exhibit impaired performance (Snihur et al., 2008). Thus, it appears that glucocorticoids can have an effect on spatial ability in rats.

The picture is less clear in humans. For instance, many researchers have not observed relations between glucocorticoid concentrations and cognitive performance, especially spatial ability (Driscoll, Hamilton, Yeo, Brooks, & Sutherland, 2005; McCormick & Teillon, 2001; Moffat & Hampson, 1994), whereas others have observed a negative relation between cortisol and memory (Fonda, Bertrand, O'Donnell, Longcope, & McKinlay, 2005; Seeman, McEwen, Singer, Albert, & Rowe, 1997). Conversely, others have observed that conditions that result in abnormally high levels of glucocorticoids (e.g., Cushing's disease) are associated with impaired cognition (e.g., Starkman, Giordani, Berent, Schork, & Schteingart, 2001) and that successful treatment is associated with improvements in cognitive function, especially related to verbal memory (e.g., Hook et al., 2007). Thus, it may be that, in humans, normal concentrations of glucocorticoids are not obviously related to spatial ability, although high concentrations are associated with poorer verbal memory.

Conclusions and Future Directions

It is clear that sex differences occur in the central nervous system and are not limited to reproductive behaviors. Although some observed differences are small, a number of behaviors (especially spatial behavior) exhibit large sex-related differences. It is clear that there is a complex relation between steroid hormones and behaviors that exhibit sex-related differences. It is also apparent that any discussion of sex differences is a discussion of group differences and that there are many instances of individuals who do not follow the trend for their sex. As such, the study of sex differences provides a promising means to examine how steroid hormones affect brain and behavior.

Equally exciting is the realization that we are just beginning to understand the complex relation between steroid hormones, brain structures, and sexually dimorphic behavior. Advances in neuroimaging technology are just beginning to provide insights into how male and female brains solve complex tasks, and results suggest that simplistic explanations of sex differences cannot begin to approach the reality of the situation. As researchers, we are just beginning to understand and investigate how factors such as culture, experience, and cognitive bias affect performance on a variety of these tasks and how these factors interact with the brain to affect steroid hormones that produce individual differences in nonreproductive behaviors. The continuing challenge for researchers in this area is to identify how these factors interact, to determine how and why these differences occur, and to understand the functional significance (if any) of these differences. As we have highlighted at various points throughout our chapter, there is much work yet to be done, and there are a number of important directions for future research in this general area.

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Chapter 12

Sex and Gender in Sensation and Perception

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Philosophers and scientists have been attempting to understand how humans sense, perceive, and respond to their environment for thousands of years. Psychophysicists have relied upon self-report, threshold measurements, perceptual accuracy, and epidemiological comparisons to define the limits and norms of our sensory abilities. A significant portion of these investigations have included comparisons of the differences between the sexes, and theories and explanations about why these differences occur have been proposed. Often these explanations have been sprinkled with anecdotal evidence or consensus stereotypes about differences between men and women. Our capacity to assess sensory ability and cognitive functioning has gradually improved over the last 100 years and has brought with it foundational theories that explain physiological functioning and how the eye, ear, and the other modalities sense the environment. It is fair to say that the improvement in our ability to unlock the secrets of the senses has increased exponentially in the last 20 years with the dawn of the digital age. It is also fair to speculate that in the next 20 years scientists will make significant progress in our understanding of how the brain interprets or perceives sensory information. These advances will bring with them a refinement of the tools needed to clarify the influences and outcomes of perceptual processes that do and do not differentiate the sexes.

The intent of this chapter is to provide the reader first with a brief overview of the anatomy and physiology of the individual sensory systems. This is followed by several specific examples of what is known about the gender-related differences in sensory sensitivity and their neurobiological explanations. The focus is on human studies from the fields of cognitive psychology, psychophysics, and neuroscience. Sex differences in sensation and perception have been the subject of many previous reviews. Instead of focusing on an extensive history of the older literature, a brief overview of consensus findings on sensory sex differences will be presented, followed by the findings of recent investigations that have employed state-of-the-art neurophysiological and brain imaging techniques. This approach should provide the reader with an appreciation of the potential that newer methods can provide in our collective depth of understanding about what is to be a woman or a man.

Vision

Light entering the eye strikes the retina, which is composed of two types of photoreceptor cells. Rod cells are active in low-light conditions and are responsible for motion and contrast detection, whereas

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cone cells are active in higher light conditions and are responsible for high acuity color vision. Cone cells are concentrated in foveal (i.e., central) regions of the retina, and the peripheral regions are dominated by rod cells. Photoreceptor cells relay basic visual information about the light stimulus through a network of bipolar, amacrine, and retinal ganglion cells (RGCs). The axons of RGCs exit the eye and comprise the optic nerve, which innervates the lateral geniculate nucleus of the thalamus. Visual information is relayed from the thalamus to a variety of cortical and subcortical structures; the primary target is the visual cortex in the occipital pole (see Kandel, Schwartz, & Jessell, 2000, for more details).

Despite an early study that reported that women have slightly larger peripheral visual fields than men do (Burg, 1966), modern studies indicate that there are no differences in the foveal versus peripheral density of the photoreceptor mosaic between men and women (Kimble & Williams, 2000). However, dynamic visual acuity is reportedly better in men younger than age 40, and age-related myopia occurs earlier in women than in men (Halpern, 2000).

With the advent of new technology, such as optical coherence tomography, consistent evidence is accumulating that appears to indicate a sex difference in the thickness of the retina. Recent reports have indicated that the retina is thicker in men (Asrani, Zou, d'Anna, Vitale, & Zeinier, 1999; Wakitani et al., 2003; Wong, Chan, & Hui, 2005) and boys (Huynh, Wang, Rochtchina, & Mitchell, 2006) than in women and girls. What makes this difference interesting is how it has been used to explain several differences in men's and women's visual perception and preferences. One explanation for the observation that men's retinas are thicker is that, during development, hormonal influences favor the development of larger RGCs over smaller ones (Alexander, 2003; Sax, 2006). The axons of retinal ganglion cells, which vary widely in size, project to several areas of the thalamus. Parvocellular retinal ganglion cells (P cells) respond strongly to changes in color, but weakly to visual contrast, and are thought to be essential to the analysis of form, color (red/green), and texture. Magnocellular RGCs (M cells) are larger and do not respond strongly to color but are sensitive to low-contrast visual information and participate in motion analysis (Kaplan & Benardete, 2001). It is widely recognized that M cells and P cells are the origins of the information that the brain utilizes in the cortical processing "where" and "what" pathways, respectively. The "where" pathway, located in the parietal cortex, processes information used to identify the spatial location and movement of objects, and the "what" pathway of the temporal cortex is responsible for object recognition and identification of visual patterns (Ungerleider & Mishkin, 1982). Studies conducted with young children have demonstrated that boys prefer to look at objects in motion and prefer action toys, such as balls and trucks (Sutton-Smith, Rosenberg, & Morgan, 1963), whereas girls prefer to look at faces and, when asked to draw a picture, tend to draw human figures and to use more colors (Sax, 2006), specifically warmer hues (Iijima, Arisaka, Minamoto, & Arai, 2001), than boys do. Evidence that some of these preferences are present before the influence of social norms indicates that they may be a function of retinal development (Alexander, 2003). Thus, the retinas of boys, which are dominated by M cells, give rise to a visual processing system that is more sensitive to action and movement and may in part explain some gender-specific visual preferences.

For decades, vision scientists have been attempting to answer the question of which sex is better at color discrimination. Some early empirical evidence suggests that women may be more sensitive to color, particularly in the red/green end of the visual spectrum (McGuinness & Lewis, 1976). Trichromatic theory originally proposed by Thomas Young in 1802 and expanded upon by Hermann Von Helmholtz in 1850 suggests that there are three types of photoreceptors in the human eye that enable color vision. Three different types of photopigments, each expressed by a different type of cone cell in the retina, are responsive to short (blue), medium (green), and long (red) wavelength ranges of the visible light spectrum. The genes for green and red opsin photopigments are located

on the X chromosome, which has been used to explain why 5–8% of men, but only 1% of women, are red–green colorblind (Sharpe, Stockman, Jägle, & Nathans, 1999).

The advent of sophisticated genetic analysis techniques has led to the discovery of polymorphic variants of the photopigment genes. This means that it is possible for a person to possess a fourth photopigment that has a slightly different spectral range sensitivity than the three normal photopigments (Deeb & Motulsky, 1996). It has been estimated that as much as 50% of the female population may be four-pigment heterozygotes capable of enhanced color discrimination (Neitz, Neitz, & Jacobs, 1993). Jameson and colleagues (Jameson, Highnote, & Wasserman, 2001) used PCR genetic analysis to identify four-pigment heterozygote women and then compared their color discrimination ability to trichromat women and men (i.e., individuals who express the usual three photopigments). The experimenters used a refined color discrimination task that required participants to identify and delineate bands of colored light in a projected spectrum and demonstrated that four-photopigment women perceived significantly more bands in the visual spectrum than other participants did. In addition, the enhanced color discrimination of individuals who express four photopigments occurred in the red–green portion of the spectrum. In support of these findings, two additional studies showed that non-genotyped women with normal color vision were more sensitive than usual to red/green, but not blue/yellow, color discriminations (Bimler & Kirkland, 2002; Rodríguez-Carmona, Sharpe, Harlow, & Barbur, 2008).

As stated above, retinal ganglion P cells relay specific information about the form and texture of visual stimuli. In addition, these cells appear to be more sensitive to red/green color information, whereas M cells appear to be color insensitive (Solomon, Lee, White, Rüttiger, & Martin, 2005). This could mean that, not only are a large percentage of women more sensitive to the red/green portion of the visual spectrum because of their cone cell sensitivity, but their thinner, P cell-dominated retinas might also be more sensitive to the red end of the spectrum. The intriguing aspect of this theory is that it has been used as a potential biological explanation of the well-known social norm that girls prefer pink (Alexander, 2003; Sax, 2006). Is it then logical to hypothesize that biological evidence for men's preference or sensitivity to blue is also available? In a study that measured the activation of the visual cortex in response to blue versus red light, researchers found that male participants were three times more sensitive to blue light than female participants were (Cowan et al., 2000). The researchers in this study were able to measure cortical activation patterns using a technique called blood oxygen level dependent functional magnetic resonance imaging (BOLD fMRI). The technique is based on two main premises: The measurable magnetic properties of oxygenated and deoxygenated blood are different and “activated” brain areas are metabolically more active and thus receive more oxygenated blood than brain areas that are not activated. Thus researchers can place participants in a very strong magnetic field and visualize which areas of the brain are activated when the participant performs a specific task or in response to sensory stimuli. BOLD fMRI is noninvasive, passive, and harmless, and, with advances in technology, the spatial and temporal resolution of the method is improving rapidly. The potential of this technique to answer questions about sex differences in cortical perceptual processing is increasing exponentially.

Given the evidence for structural and physiological differences in the retina and visual cortex as a function of sex, one might postulate whether these differences relate to long-standing assumptions about gender differences in vision-associated perceptual processes. Two of these processes, the Stroop effect and mental rotation, have been used to examine perception-related cognitive differences between men and women. What is the history of empirical studies that have examined these processes, and how are modern cognitive neuroscience techniques being used to expand and refine what is known of these differences?

The Stroop effect was first described by J. Ridley Stroop in 1935 and later named for him. In the classic Stroop test, participants are asked to name the color of printed words in a list as quickly

as possible. The words are normally the words for colors that are presented first in congruent and then in noncongruent colors. Stroop interference occurs when identification of colors presented as incongruent color words is delayed relative to simple color naming. The effect is one of the most reliable psychological phenomena, and it has been the subject of hundreds of cognitive studies. MacLeod (1991) reviewed the vast literature published on the Stroop effect, including studies that examined sex differences. Stroop (1935) himself reported that girls can name colors faster than boys can. But, despite several similar reports that girls are faster at color recognition (Dash & Dash, 1982) and a twin study in which elderly women outperformed their male twins (Bettner, Jarvik, & Blum, 1971), MacLeod concluded that the majority of published studies report that women and men do not display differential interference (MacLeod, 1991).

In light of the proposed differences in color sensitivity discussed previously, the evidence that girls and women are faster to name colors is interesting. The vast majority of the published literature on the Stroop effect relied on reaction times and identification error as dependent measures, therefore, one might question whether recently developed advanced measures of brain functioning support the conclusions drawn from older studies. Electroencephalograms (EEGs) are a measure of the electrical activity of the cortex. The technique has poor spatial resolution but excellent temporal (millisecond) resolution. Event-related potentials (ERPs) are a derivative of EEG electrophysiological data that reflect a stereotyped response that is time locked to a specific stimulus or internal process. Due to the exceptional time resolution, researchers infer that the appearance of an ERP recorded from a general area of the cortex is a direct result of a thought or perception that involves that brain region. Electroencephalography and ERPs are not new concepts, but the spatial resolution of the technique has increased dramatically with the development of digital technology (for a review, see Gevins, Leong, Smith, Le, & Du, 1995).

Technological advances that allow researchers to measure the speed of cognitive processes instead of reaction times have not answered the question of whether or not there is a gender difference in Stroop interference. One recent study indicated that the P300 component of the ERP during a Stroop interference task was delayed and reduced in men compared to women (Shen, 2005). The P300 is a consistent peak in the ERP response that occurs 300 ms after the presentation of a stimulus and before a typical reaction time measure. The P300 is thought to reflect a higher cognitive response to unexpected and/or cognitively salient stimuli, and it is essentially a measure of the allocation of attentional resources employed during a particular task (Israel, Chesney, Wickens, & Dochin, 1980). Shen (2005) interpreted the smaller, delayed P300 response of men in a Stroop interference task to mean that the cognitive processing approach of men is more cautious and less attentive. Evidence of a gender difference on this dimension of the Stroop test may be significant and worthy of further investigation. The paucity of published studies that employed EEG, fMRI, and other modern techniques on a gender difference, or lack thereof, in Stroop interference could be an example of the file drawer effect, in which editors and/or researchers are reluctant to publish data that lack a casual consequence. This in itself may be significant, as it could indicate that, when it comes to the cognitive processing involved in the Stroop interference task, women and men do not differ.

The Mental Rotation Task (MRT), originally developed by Shepard and Metzler (1971), is a measure of the ability to generate, retain, and mentally rotate a mental image of an object while maintaining an appreciation of its unchanged identity. The task requires participants to indicate as quickly as possible whether two 3D objects (one rotated 0°, 60°, 120°, or 180°) are the same image or mirror images of each other. Shepard and Metzler (1971) found that the time it took for participants to make a decision about a pair of objects was linearly proportional to the difference in their angle of rotation. There have been many variations of Shepard and Metzler's original test, and a robust gender difference has been demonstrated in numerous studies that suggest that men consistently perform better than women on measures of spatial ability (Halpern, 2000; see also Chapters 13 and 16). The

theories that have been put forth to explain these differences can be classified into experiential or innate influences. Spatial ability has been correlated with spatial experience (Cerone & McKeever, 1998; Newcombe, Bandura, & Taylor, 1983), but it is unlikely that the gender difference in spatial ability can be explained by nurture alone. Alternative explanations focused on the nature side of the debate center on the hypothesis that prenatal testosterone exposure results in greater right hemisphere specialization for spatial processing (Corballis, 1997; Geschwind & Galaburda, 1985; Hampson & Kimura, 1988).

In a quantitative MRI analysis of the cytoarchitecture of the human primary visual cortex, Amunts and colleagues (2007) found that men have significantly more volume and surface area in specific regions of the right visual cortex than women do, which suggests that men have more right hemisphere cortical space for processing visual information. Functional brain imaging studies have been consistent in confirming previous evidence of a gender difference in mental rotation performance, and they suggest that a differentiation in brain laterality may account for the effect. Thomsen et al. (2000) used BOLD fMRI to analyze sex and hemisphere differences in participants engaged in a mental rotation task. The researchers found that the right parietal lobe is significantly more active in men, whereas the frontal lobe is more active in women, during the task. Parietal lobe activity may reflect activation of the “where” pathway, which, as mentioned previously, may develop differentially in girls and boys as a result of visual system development. Similar brain laterality effects were obtained by Christova, Lewis, Tagaris, Ugurbil, and Georgopoulos (2008), who used a motor mental rotation task in which a significantly greater right hemisphere engagement was observed in men despite equal reaction time performance by men and women. The researchers concluded that women and men demonstrate distinctly different patterns of cortical activation, and the BOLD data indicate that the more balanced hemisphere activation observed in women is a more efficient use of energy. Electroencephalographic ERP evidence supports the fMRI data in indicating a clear difference in mental rotation brain activity patterns between the sexes. Men demonstrate faster response latencies and earlier ERP events, which indicate that, during cognitive processing, the actual mental rotation occurs sooner in men than in women (Gootjes, Bruggeling, Magnée, & Van Strien, 2008). The researchers concluded that the EEG activation pattern observed in men suggests that men use a more object-holistic strategy during mental rotation. This hypothesis is supported by Heil and Jansen-Osmann (2008), who concluded that the slower mental rotation speed observed in women suggests that women divide the image into individually rotated units in an analytic, multiregional, “piecemeal” cognitive process, whereas men rotate the object in a unitary process using primarily the right hemisphere.

Hemisphere laterality appears to be an important factor in the gender difference in spatial ability. It also appears to play a role in the gender difference in the visual response to faces; however, unlike spatial cognitive processing, laterality appears to result in greater sensitivity to face perception in women than in men. Infant girls tend to look longer and more frequently at faces than boys do (Sax, 2006). In adults, women are better at recognizing the gender of faces (Cellerino, Borghetti, & Sartucci, 2004), and they perform better when asked to classify facial emotional expressions, whereas men are more likely to have some difficulty in distinguishing one emotional expression from another (Thayer & Johnsen, 2000). Women are also more susceptible to emotional contagion. That is, they are more likely than men are to become influenced by others’ emotional states and to express the same emotion when they see it displayed by another individual (Hatfield, Cacioppo, & Rapson, 1994; Wild, Erb, & Bartels, 2001). Brain imaging studies support the findings of laterality and sex-related differences in human face perception. In addition to finding a strong right hemispheric dominance in measured evoked ERPs in men when they are decoding faces, Proverbio, Brignone, Matarazzo, Del Zotto, and Zani (2006) found that women show more bilateral functioning when processing the identity, structure, familiarity, or affective content of faces. Women also appear to be more sensitive

to the valence of emotional expressions, specifically activation of emotional brain areas in response to negative emotions (Klein et al., 2003; Wrase et al., 2003). However, in one study the response of emotional brain areas (cingulate cortex and amygdala) in men to the viewing of negative (fear and anger) emotions expressed by other men was significantly greater than women's brain response (Fischer, Fransson, Wright, & Bäckman, 2004). The authors adopted an evolutionary interpretation of this effect, that is, it might be reflective of men's enhanced vigilance in potentially dangerous territorial encounters with other men. The advent of new brain imaging techniques has provided several avenues for the further investigation of gender differences in visual processing. Scientists anticipate that these methods may provide evidence to validate or disprove many of the long-standing assumptions regarding visual ability that may not be possible with older techniques.

Somatosensation

Somatosensation refers collectively to the sensations of touch, temperature, proprioception, and pain. Specialized sensory receptors in the skin, skeletal muscles, bones, and viscera activate afferent neurons that relay the information through the spinal cord, thalamus, and the somatosensory cortex on the postcentral gyrus in the parietal lobe. In the skin, a collection of mechanoreceptors detect different types of pressure and vibration. Temperature is detected by distinct receptors for heat and cold. Proprioception, or the sense of the position of body parts relative to each other, is detected in part by receptors in the muscles and ligaments that are responsive to stretch and contraction. Pain is mediated by nociceptors responsive to damaging mechanical, chemical, or thermal stimuli throughout the skin, muscles, and viscera. (See Mountcastle, 2005, for a review.)

Compared to the other senses, little information is available on sex differences in the tactile sensitivity of the skin. A review of the data that have been published for tactile and haptic sensitivity indicates that there is no difference between the sexes or that girls are only slightly more sensitive (Maccoby & Jacklin, 1974). Haptic perception refers to the recognition of objects through a combination of touch and proprioceptive information. Men appear to score better than women on a variety of haptic tasks (Kaas & Mier, 2006; Robert, Pelletier, St-Onge, & Berthiaume, 1994; Zuidhoek, Kappers, & Postma, 2007). Haptic recognition often requires formation of mental images related to mental rotation, which, given the gender differences discussed previously for visual-spatial tasks, may help to explain these results. As for thermoreception, women show a greater sensitivity than men do to small temperature changes and to heat pain and cold pain (Meh & Denislic, 1994).

A wealth of data have been published on gender differences in pain sensation. Pain, defined as a subjective and emotional experience associated with actual or potential tissue damage or expressed in terms of such damage, is an extremely important adaptive mechanism. Researchers and physicians have long recognized that gender is an important factor in pain sensitivity and perception, but research on the gender differences pertaining to pain is a relatively new area of investigation. In general, women report greater sensitivity, intensity, and individual occurrences of pain than men do (Unruh, 1996). Historically, gender differences in patient-reported pain have been attributed to bias; sociocultural factors such as age, ethnicity, family history, or gender roles or psychological factors such as anxiety or depression (Benedetti, 1997; Rollman, Abdel-Shaheed, Gillespie, & Jones, 2004). However, accumulating evidence from both animal and human studies suggests that biological mechanisms are an important mediating factor.

Gender-related differences in pain sensitivity have been investigated in controlled laboratory settings with a variety of stimuli. Women have a lower threshold for, and are better able to discriminate the intensity of, noxious heat stimuli (Feine, Bushnell, Miron, & Duncan, 1991), and they have lower

pain thresholds for electrocutaneous stimulation than men do (Lautenbacher & Rollman, 1993). Ellermeier and Westphal (1995) demonstrated that women's greater sensitivity to pressure-induced pain correlates with autonomic indicators but not with voluntary control. However, in another study, enhanced sensitivity to cold-pressure pain was associated with anxiety levels in women but not in men (Keogh & Birkby, 1999). These results can be interpreted to mean that the increased sensitivity to pain observed experimentally in women can be due to both biological mechanisms and psychological or psychosocial factors.

It is a more difficult task to assess gender differences in chronic pain outside of controlled laboratory conditions than it is to test acute response to pain in the lab. Epidemiological data indicate that women report more multiple or recurrent pains than men do (Ektor-Andersen, Janzon, & Sjölund, 1993), and a number of chronic pain states (e.g., rheumatoid disease, migraine, irritable bowel syndrome, and temporomandibular disorder) are more common in women than in men (Von Korff, Dworkin, Le Resche, & Kruger, 1988). Fillingim and Maixner (1995) have suggested that one reason why data indicate that women experience and report more pain over their lifetime may be due to their greater awareness of pain because of biological events such as menstruation and childbirth. Chronic pain is often visceral in nature, which can be difficult to assess under controlled conditions. Visceral pain disorders are two to four times more prevalent in women than in men (Chang & Heitkemper, 2002); the most common such diagnosis is irritable bowel syndrome. In one fMRI study of irritable bowel patients, the activation of cortical pain regions was significantly greater in women than in men (Kern et al., 2001), which indicates that the perception of this type of pain differs by gender and may account for lower pain thresholds in women. Emerging data on the causes of the gender differences in pain sensitivity emphasize the potential need for differential diagnostic criteria and therapeutic strategies in treating pain in men and women.

Changes in sex hormone levels on a monthly basis, during puberty, during and after pregnancy, and around menopause make their potential effects on pain arguably more influential in women than in men. Numerous studies have been conducted to examine menstrual cycle effects on pain perception. Women with chronic pain report increased pain sensitivity during the menstrual and premenstrual phases of the cycle when estrogen levels are lowest (Hellstrom & Anderberg, 2003). However, other evidence indicates no change across the cycle or enhanced perceptual responses to pain during the premenstrual phase, at the time of ovulation, and following the menses (Fillingim & Ness, 2000). A meta-analysis of the effects of menstrual cycle phase on most forms of pain in healthy women revealed that higher pain thresholds and tolerance are observed during the follicular phase than during the periovulatory and luteal phases; however, the effect sizes are small to moderate (Riley, Robinson, Wise, & Price, 1999). The incidence of migraine is as much as three times higher in women than in men (Brandes, 2006), and evidence indicates that cyclic variations in estrogen levels, but not continuous estrogen administration, have been associated with increased frequency and severity of migraines (Brandes, 2006; Sulak, Willis, Kuehl, Coffee, & Clark, 2007). Estrogen may have an ameliorative effect on pain in disorders such as arthritis, but in other autoimmune conditions (e.g., lupus), it has the opposite effect (Craft, 2007). Other evidence indicates that pain sensitivity is enhanced when estrogen levels are high in specific chronic conditions, such as temporomandibular joint pain (LeResche, Mancl, Sherman, Gandara, & Dworkin, 2003) and fibromyalgia (Korszun et al., 2000). It has been proposed that the differential effect of estrogen on various types of pain and pain conditions may be a function of the estrogen–cytokine interaction in each disorder (Craft, 2007). Support for the hypothesized hyperalgesic effect of estrogen is supported by animal studies in which male rats injected with estrogen display enhanced pain sensitivity (Aloisi & Ceccarelli, 2000).

Although estrogen may enhance nociception in some instances, androgens appear to be analgesic. A limited number of clinical studies support this hypothesis. Low-dose transdermal testosterone

improves angina in men (English, Steeds, Jones, Diver, & Channer, 2000) and Kaergaard and colleagues (Kaergaard, Hansen, Rasmussen, & Andersen, 2000) found that women factory workers with chronic back pain had lower than normal levels of plasma androgens. Similar to the evidence for the pro-nociceptive properties of estrogen, the anti-nociceptive role of androgens is supported by animal studies (Aloisi & Bonifazi, 2006). Craft, Mogil, and Aloisi (2004) have proposed an evolutionary explanation for the contrasting analgesic effects of male and female sex hormones: They postulated that the hunter/warrior role of men in a hunter-gatherer society necessitated a sensory pain system with a high threshold for acute pain, whereas women, who were subject to the more frequent and recurrent visceral pain of menstruation and prolonged pain of childbirth, evolved a different pain modulatory circuitry. This is an intriguing hypothesis, but, like most evolutionary explanations of human physiological mechanisms and behavior, it lacks direct empirical evidence.

Emotions seem to play a significant modulatory role in pain perception. Rhudy and Williams (2005) proposed that positively valenced emotions reduce pain sensitivity. On the other hand, negatively valenced emotions enhance pain sensitivity at moderate levels of arousal (anxiety) and reduce sensitivity at higher arousal levels (fear) (Weisenberg, Aviram, Wolf, & Raphaeli, 1984). In support of this, induced humor (Weaver & Zillmann, 1994; Weisenberg, Tepper, & Schwarzwald, 1995) or viewing expressions of positive emotions (de Wied & Verbaten, 2001; Meagher, Arnau, & Rhudy, 2001) increased pain tolerance. Evidence suggests that women tend to react more strongly than men do to threatening situations (Kring & Gordon, 1998; Sutton, Davidson, Donzella, Irwin, & Dottl, 1997). Does this mean that the contrasting effect of high versus low negative arousal on pain thresholds would be evident in women but not men? Rhudy and Meagher (2000) tested this hypothesis, and they found that the anxiety (low negative arousal) experienced from threat of an electric shock reduced pain thresholds in women but not in men. When participants were presented with the fear-producing threat and delivery of a mild shock (high negative arousal), pain thresholds were increased in women but not in men. This intriguing study indicates that the scaleable emotional response of men and women to the same threat can have a profound (in some cases opposite) effect on pain sensitivity.

Can neuroimaging techniques be used to gather evidence to support previous findings that women demonstrate a greater sensitivity to pain than men do? Positron emission tomography and functional magnetic resonance imaging can be used to monitor the activity of very specific brain regions in response to an external stimulus. Not only can these techniques verify that a "sensation" was received by thalamic and sensory cortical areas, they may also be used to gain insight into the "perception" process by detecting the activation of secondary or association areas of the cortex and subcortical structures. Are the same areas activated to the same degree in women and men? Can underlying sex differences in the neural mechanisms that mediate pain perception be detected? Brain imaging studies are emerging in an attempt to answer these questions.

Positron emission tomography (PET) uses a radioactive chemical probe to label specific targets, such as neurotransmitter receptors, within the brain. Likewise, radioactive water ($H_2^{15}O$), when injected intravenously, can be used to monitor changes in regional cerebral blood flow (rCBF). Paulson, Minoshima, Morrow, and Casey (1998) used $H_2^{15}O$ PET to measure rCBF in response to noxious heat stimuli in men and women. Results showed that the same "pain-receiving" brain structures (including the somatosensory, cingulate, and insular cortices) were consistently activated in response to pain in both sexes. It is interesting that the researchers also found a significantly greater activation of the prefrontal cortex in women than in men. These results are supported by other PET studies that have shown greater prefrontal activation in the brains of women than in the brains of men regardless of perceived pain intensity (Derbyshire et al., 1994) or whether the participants suffered from chronic pain (Derbyshire, Nichols, Firestone, Townsend, & Jones, 2002). fMRI data that compare brain activation during cutaneous and muscle pain (Henderson, Gandevia,

& Macefield, 2008) and pain induced by electrical stimulation (Straube, Schmidt, Weiss, Mentzel, & Miltner, 2009) also reveal significantly greater prefrontal cortex activation in women than in men. The prefrontal cortex has been suggested to be responsible for encoding the affective component of pain (Lorenz, Minoshima, & Casey, 2003; Rainville, Duncan, Price, Carrier, & Bushnell, 1997). It should be noted that brain regions in women that showed increased activation in response to pain in the above-mentioned PET and fMRI studies are the same regions that are activated in fMRI studies that demonstrate that women display greater response to negative emotions than men do (Klein et al., 2003; Wrase et al., 2003). Thus, differential activation of the prefrontal cortex in women during a pain response suggests that women have a more emotional reaction to pain, which could account, in part, for greater pain sensitivity and more intense reports of suffering.

Audition and Vestibular Perception

Potential individual differences in audition can arise from the sound detection mechanisms in the inner ear, the processing of auditory information in the brain stem and auditory cortex, or in the complex cortical processing of auditory information in association areas for speech recognition and other perceptual processes. There are no published data on sex differences in middle ear anatomy or functioning; however, there are data about the cochlea of the inner ear. The cochlea not only passively receives sound stimuli but also actively fine tunes the vibration detection properties of the organ of Corti for frequency discrimination. The inner hair cells of the cochlea detect vibration and transmit sound information through the auditory nerve to the cochlear nucleus in the brain stem. The more numerous outer hair cells have electromotile properties and receive efferent signals from the brain that alter their length as they attempt to “tune in” to a specific frequency (for a review of cochlear functioning, see Durrant & Lovrinic, 1995). The electromotile properties of outer hair cells allow them to generate their own recordable acoustic energy called otoacoustic emissions (OAEs; Kemp, 1978). OAEs, which can be spontaneous or evoked, have been used for a number of years as a standard assessment of auditory functioning in newborns (Kemp, Ryan, & Bray, 1990). McFadden (1993) was the first to report that OAEs are laterally asymmetrical and differ by sex. Others confirmed the findings that OAEs are larger in women and right ears than in men and left ears (Cassidy & Ditty, 2001; Moulin & Kemp, 1996; Thornton, Marotta, & Kennedy, 2003). This asymmetry has been proposed to be related to asymmetries in the auditory cortex and other brain areas (McFadden, 1998) and to the difference in the length of the cochlea measured in men and women. The cochlea in women is 13% shorter than the cochlea in men (Sato, Sando, & Takahashi, 1991), which can account for both the stronger measured OAEs (Don, Ponton, Eggermont, & Masuda, 1993; Kimberley, Brown, & Eggermont, 1993) and the reported lower auditory thresholds across a wider frequency range in women than in men (Robinson, 1988).

Auditory brain stem responses (ABR) are a form of event-related potentials (see above) that reflect the activity and overall functioning of the VII (auditory) cranial nerve and the cochlear nuclei in the brain stem. ABRs are a useful clinical tool for assessing and validating hearing thresholds in infants, diagnosing developmental hearing deficits in children, and evaluating hearing loss in adults (see Chiappa & Hill, 1997). Researchers have reported sex differences in measured ABRs, which indicates that in female neonates (Stuart & Yang, 2001), girls (Don et al., 1993), and adult women (López-Escámez, Salguero, & Salinero, 1999; Stürzebecher & Werbs, 1987; Watson, 1996), the auditory brain stem response is significantly shorter than it is in male neonates, boys, and men. The shorter latencies imply faster processing of auditory information, which may reflect the increased aural sensitivity observed in girls and women. In terms of loudness sensitivity, women have a mean

maximum comfort level 8 dB lower than that of men (McGuinness, 1974; Sagi, D'Alessandro, & Norwich, 2007). Women are also able to adapt more quickly to a continuous loud tone, which allows them to be exposed to a loud sound for a longer period of time and promotes better hearing acuity (D'Alessandro & Norwich, 2009). Men display much greater age-related hearing loss than women do (Pedersen, Rosenhall, & Møller, 1989). In addition, menopausal women who use hormone therapy have better hearing than women who do not use it, which suggests that estrogen may have a protective effect against hearing impairment (Hederstierna, Hultcrantz, Collins, & Rosenhall, 2007; Hultcrantz, Simonoska, & Stenberg, 2006). These studies provide consistent evidence that women's sensitivity to sound is more acute than men's and suggest that some of the differences in auditory functioning may be influenced by the sex hormones.

Aside from women's sensitivity to sound, there is inconsistent or limited evidence to support behavioral gender differences in other aspects of sound perception, such as pitch perception or sound localization. In one study, Lewald (2004) reported that men performed better than women in monaural vertical sound localization, but only when listening with the right ear, which suggests gender-related differences in the intrahemispheric functional organization of the auditory cortex. Evidence indicates that, for visual, tactile, and auditory processing, men use the dominant hemisphere, whereas women display less laterality or more diffuse activation of sensory cortices. As evidenced for other sensory modalities, modern brain imaging techniques have revealed sex differences in audition, particularly with respect to brain lateralization of speech processing.

Anatomical analyses based on modern cytoarchitectonic methods indicate that women's primary auditory cortex is significantly larger bilaterally than men's when they are compared proportionately (Rademacher, Morosan, Schleicher, Freund, & Zilles, 2001). It appears that auditory association areas, the cortical regions that surround the primary auditory cortex thought to be responsible for auditory perception, are also larger in women than in men (Harasty, Double, Halliday, Kril, & McRitchie, 1997). What implications does this have for gender-related differences in auditory perception? Data from fMRI, PET, and other functional brain activation/imaging techniques suggest that sex differences that may not be detectable with behavioral measures are evident when brain activation is examined in response to a specific auditory stimulus, such as music or speech, or during performance of an audition-related task. For instance, when asked to perform a pitch memory task that requires participants to recall whether they had heard a specific tone frequency after a series of distracter tones, there was no difference in performance between men and women. However, fMRI brain activation data indicate that men displayed greater lateralized (left > right) activation patterns in auditory cortical processing regions during both the perception and the memory phases of the task (Gaab, Keenan, & Schlaug, 2003). In another study, participants listened to chord sequences that occasionally contained harmonically inappropriate chords. Men showed a distinct right hemisphere dominance in ERP response to the "wrong" chord, whereas the response of women was significantly more bilateral (Koelsch, Maess, Grossmann, & Friederici, 2003). So when processing specific forms of auditory information, men display a distinct lateral asymmetry that women do not show. The hemispherization sections of many current introductory psychology texts report that music processing is primarily a right hemisphere function. Evidence from modern brain imaging studies suggests that this androcentric view of brain functioning should be updated.

The literature on sex differences in language processing is extensive, and the debate over whether an actual difference exists is far from settled. Girls and women have often been reported to perform better than boys and men on language tasks. This is evidenced by girls' earlier language acquisition during early childhood (Murray, Johnson, & Peters, 1990) and girls' better performance on language ability tests throughout early education (Martin & Hoover, 1987). This gender difference in processing of language may persist through adulthood (Parsons, Rizzo, van der Zaag, McGee, & Buckwalter, 2005). It is important to note, however, that a recent review concluded

that from a meta-analysis perspective, gender differences in verbal abilities cannot be substantiated (Wallentin, 2009; see also Chapter 15). The use of functional brain imaging methods to examine sex differences in language processing may be an important approach to settling the debate. It is hypothesized that gender differences in verbal abilities could be related to how men and women process language. By far, the majority of brain imaging studies concerning auditory perception center on speech perception. Anatomical measurements of the volume of language processing areas indicate that, although left hemisphere auditory association areas such as the plenum temporal are larger in men, there is no difference in the overall volume of the left plus right hemisphere areas (Kulynych, Vldar, Jones, & Weinberger, 1994). Some functional studies have shown no difference between the sexes (Gur et al., 2000; Hund-Georgiadis, Lex, Friederici, & von Cramon, 2002) or strong left lateralization in both sexes (Frost et al., 1999), but several reports have provided evidence that language processing is more lateralized in men than in women. For instance, the left temporal cortex is unilaterally activated in men, but bilaterally activated in women, when participants are listening to a narrative. This effect disappears when the narrative is played backward (Kansaku, Yamaura, & Kitazawa, 2000; Phillips et al., 2000). In a recent study (Burman, Bitan, & Booth, 2008) brain activation patterns in boys and girls were examined during visual and auditory language perception tasks. The researchers found that bilateral activation patterns in the language processing areas of girls correlated with their performance accuracy on the tasks, but it did not matter if the tasks were visual or auditory. For boys, task accuracy brain activation patterns were dependent on the modality of the task. It was concluded that girls rely on a “supramodal language network,” whereas boys process visual and auditory words differently (Burman et al., 2008, p. 1349). Despite this evidence that gender-related differences in language processing may be present at an early age, other evidence suggests that functional asymmetries in hemispheric activation patterns are mediated by progesterone in women (Hausmann & Güntürkün, 2000). In support of this theory, a recent study (Weis et al., 2008) showed that the brain activation patterns of women performing a word-matching task were dynamic depending on the phase of the menstrual cycle. The researchers found more bilateral activation prior to ovulation when estradiol levels were high, but lateralized activation was typical during the menses.

Balance, like audition, is, in part, a function of the inner ear. The vestibular apparatus consists of a series of three fluid-filled circular canals oriented orthogonally to each other. They function to detect rotation of the head, which, in conjunction with visual and proprioceptive information, is critical for maintaining posture and balance. Damage to or malfunction of the vestibular apparatus results in vertigo, dizziness, disequilibrium, and pre-syncope (lightheadedness). Although it is not as well studied as the other sensory systems, research on the vestibular system has yielded some gender-related differences. Vestibular functioning appears to develop fully by age 16, at which age girls perform better than boys on tests of postural control (Steindl, Kunz, Schrott-Fischer, & Scholtz, 2006). In adults, women perform worse on tests of vestibular functioning than men do (Klosterhalfen, Muth, Kellermann, Meissner, & Enck, 2008), and they report a lower tolerance for motion sickness (Flanagan, May, & Dobie, 2005; Levine & Stern, 2002). These data may reflect the observation that, like the cochlea, women’s vestibular apparatus is significantly smaller than men’s in proportion to head size (Sato, Sando, & Takahashi, 1992). In an extensive epidemiological survey, Neuhauser et al. (2006) reported that vestibular vertigo, a false perception of rotation, is reported by 5% of the general population (at least one occurrence per year), and women report significantly more incidences than men do. Balance and postural control start to decline in both sexes at around age 60, and older women perform worse than men do, in general, on balance tests (Vereeck, Wuyts, Truijen, & Van de Heyning, 2008). Vestibular disorders are more common in women, especially in older adults. Moriyama, Itoh, Shimada, and Otsuka (2007) conducted a morphometric analysis of the vestibular nerves from older adult cadavers and found no sex difference in the overall size of

the nerve, but women's nerves had significantly fewer myelinated axons than men's nerves did. It is feasible that this observation, similar to the data on sex differences in age-related hearing loss, can be explained by a decline in estrogen, which may have exerted a neuroprotective effect. Estrogen therapy significantly improved balance test performance in postmenopausal women (Hammar, Lindgren, Berg, Möller, & Niklasson, 1996), which is another example of the role of sex hormones on the sensory systems.

The Chemical Senses

Most Western psychophysicists agree that there are four basic tastes – sweet, sour, salty, and bitter. An increasing number of gustation psychophysicists now include a fifth basic taste called umami, which is perceived as “savory,” and is described as the main taste in cooked meat or mushrooms. There are unique receptors for each of the four tastes located on the taste buds of the tongue and portions of the oral cavity, which convey taste information through the facial (anterior two-thirds of the tongue), glossopharyngeal (posterior one-third of the tongue), and vagus (epiglottis and larynx) nerves to the gustatory nucleus of the tractus solitarius in the medulla. Taste information is then relayed through the thalamus to the insular and the frontal operculum cortices (for a review of the neurobiology of gustation, see Finger, Silver, & Restrepo, 2000). Anecdotal evidence has long suggested that women are overall more sensitive to taste than men are, and there is some empirical evidence to support it. Some studies show that the threshold detection for sour (Glanville, Kaplan, & Fischer, 1964; Weiffenbach, Baum, & Burghauser, 1982), sour and bitter (Hyde & Feller, 1981), or sour, salty, and bitter are lower (i.e., more sensitive) in women (Yamauchi, Endo, & Yoshimura, 2002), whereas others show no sex differences in sensitivity (Cooper, Bilash, & Zubeck, 1959; Kaplan, Glanville, & Fischer, 1965; Moore, Nielsen, & Mistretta, 1982). It is important to note that published evidence to suggest greater sensitivity to tastes in men is lacking. Linda Bartoshuk and her colleagues (Bartoshuk, Duffy, & Miller, 1994) classified individuals of different taste sensitivity into non-tasters, tasters, and supertasters based on their ability to sense the chemicals phenylthiocarbamide (PTC) and 6-n-propylthiouracil (PROP). They found that non-tasters have the lowest density of taste buds and supertasters have the highest density. Supertasters were more likely to be women and to have a greater sensitivity to bitter and sweet tastes, as well as to oral irritants, such as alcohol and capsaicin, a finding that could be explained by the observation that supertasters have a 25% greater tactile acuity of the tongue than tasters do (Essick, Choprac, Guest, & McGlone, 2003).

Several lines of evidence suggest that women's sensitivity to, or preference for, certain tastes may be influenced by sex hormones. Whissell-Buechy and Wills (1989) found that development of the ability to taste PTC in girls correlated with the onset of puberty. Studies of the taste preferences of pregnant and nonpregnant women reveal that pregnant women exhibit higher taste thresholds (Kuga, Ikeda, Suzuki, & Takeuchi, 2002) and much less variance in the consensus preference of the four basic tastes than their nonpregnant counterparts do (Duffy, Bartoshuk, Striegel-Moore, & Rodin, 1998). This observation was theorized to reflect the menstrual cycle-related hormone fluctuations in nonpregnant women, whereas the pregnant women were aligned in their pregnancy stage. Hormones, specifically human chorionic gonadotropin and estrogen, have been suggested as the likely cause of nausea and vomiting during early pregnancy (Furieux, Langley-Evans, & Langley-Evans, 2001; Goodwin, 2002). Hormonal fluctuations may also explain the commonly reported cravings for sweet tasting food and aversions to meats and poultry reported by many women during pregnancy (Bowen, 1992; Hook, 1978). It has been hypothesized that the changes in pregnant women's preferences for

different tastes across the course of pregnancy could be explained from an evolutionary standpoint to support healthy pregnancy outcomes. For example, a decreased preference for bitter tastes early in pregnancy might serve to protect against ingesting poisons, and changes in salt, sour, and bitter preference later in pregnancy may help to ensure that the woman eats a healthy diet (Duffy et al., 1998). Further evidence of the influence of hormones on taste preferences indicates that women's preference for salty foods changes significantly as a function of menstrual cycle phase (Frye & Demolar, 1994). Given the influence of sex hormones on other modes of sensory functioning discussed previously, it is not surprising that sex differences in taste sensitivity and fluctuations in taste preference are also affected by them.

Functional brain imaging of gustation is an emerging field. Scientists who utilize brain imaging have discovered that perception of taste, or, more precisely, flavor, can affect a wide variety of brain structures (Small, 2006). This is a reflection of the fact that perception of flavor is a function of a combination of gustatory, olfactory, and somatosensory information. Thus, attempting to understand the integrated activity of sensory systems that generate unitary flavor perceptions is a monumental task (Small & Prescott, 2005). It is most likely for this reason that published brain imaging data on the sex differences related to gustation are thus far lacking; however, a few studies have shown differences in brain activation patterns between women and men in response to food sensation. Uher, Treasure, Heining, Brammer, and Campbell (2006) evaluated brain activation patterns in men and women to presentation of gustatory or visual food stimuli during fasting and non-fasting. They found different, and overall stronger, brain activation patterns in women than in men, which they proposed were modulated by internal states. They concluded that the stronger response of women, who are more prone to eating disorders than men are (Hoek & van Hoeken, 2003; Woods, Gotoh, & Clegg, 2003), to visual versus gustatory food presentation could potentially be used to identify women who are at risk for developing eating disorders. A related fMRI study (Smeets et al., 2006), which revealed distinct sex differences in brain activation to satiation to chocolate, indicates that satiation may work differently in women and men. In that study, sex-specific patterns were found in the hypothalamus (the hunger control center of the brain), the ventral striatum (the pleasure center of the brain), and the prefrontal cortex (important in affect and decision-making). The authors concluded that these data may be reflective of behavioral data that suggest that women are more affected than men are by the hedonic value of food (Beatty, 1982; Zylan, 1996). It is important to note that factors including social identification, developmental environment (Wansink, Cheney, & Chan, 2003), and cultural rules play an important role in people's relation to food and, by extension, are also critical factors in the development of eating disorders.

The olfactory epithelium is a postage stamp-size area (10 cm²) of the nasal epithelium. In humans it contains about 40 million olfactory receptor cells, which is significantly fewer than in other mammals. In a landmark paper, the cornerstone of a body of work for which they were awarded the Nobel Prize for medicine in 2004, Linda Buck and Richard Axel (1991) reported that individual olfactory receptor cells express only one type of olfactory receptor. It is estimated that mammals have approximately 1000 different olfactory receptor genes (Buck & Axel, 1991), of which only about 400 are expressed in humans (Zozulya, Echeverri, & Nguyen, 2001). Each receptor recognizes a specific region or domain of the 3D shape of an odor molecule. This means that an olfactory receptor can be activated by multiple chemical molecules that possess a common domain. The ability of humans to detect a variety of smells is in part due to the pattern of receptor activation that a particular odor elicits. The axons of olfactory neurons comprise the olfactory nerve (cranial nerve I) and project through the cribriform plate in the ventral skull and synapse in the glomeruli of the olfactory bulb. The olfactory bulb relays olfactory information to a number of cortical regions and subcortical structures. The main brain areas that respond to olfactory information include the orbitofrontal cortex, which is responsible for the conscious perception of odors, the amygdala, which is responsible for the often

strong emotional and autonomic response to odors, and the hippocampus, which is responsible for the strong associations between odors and long-term memory (see Finger et al., 2000, for a review of the neurobiology of olfaction).

Brand and Millot (2001, p. 263) stated, in their extensive review of the sex differences in human olfaction, that “When a difference between sexes is demonstrated, concerning either the sensitivity or the ability to discriminate or categorize (an odor), it is always in favour of women.” Although there are no reported sex differences in the number of receptor cells or the size of the olfactory epithelium, numerous published studies dating back to the 1880s have shown gender differences in olfactory performance. Among those highlighted by Brand and Millot (2001) are the results of the *National Geographic* Smell Survey, in which a set of six microencapsulated odorants were sent to 10.7 million subscribers in the September 1986 issue. Responses of 1.2 million U.S. residents (ages 10–90), the majority of whom were female and 95% of whom were White, were used in the analysis (Gilbert & Wysocki, 1987). Despite obvious sample biases, the findings with respect to gender differences were that women reported higher self-ratings of olfactory ability, which was evidenced from the data that indicated that women correctly identified more odors than men did, and the perceived intensity of these odorants was rated higher by women than by men (Wysocki & Gilbert, 1989). The tip-of-the-nose phenomenon refers to the difficulty people have in identifying an odor that is familiar (Jönsson & Olsson, 2003). However, women appear to have a documented superior ability to identify and remember odors (Doty, 1997), a gender difference that is evident in children (Richman, Post, Sheehe, & Wright, 1992) and common across ethnicities and cultures (Doty, Applebaum, Zusho, & Settle, 1985). Women also outperform men on olfactory episodic memory tasks (Larsson, Lövdén, & Nilsson, 2003; Lehrner, 1993; Oberg, Larsson, & Bäckman, 2002).

Androstenone is a steroid found in both men’s and women’s sweat and urine. Recently it was discovered that the range of the perception of androstenone from undetectable to “sweet” to urinous is dependent on how many copies of the gene for the androstenone receptor a person expresses (Keller, Zhuang, Chi, Vosshall, & Matsunami, 2007). This report is interesting in light of the many published gender-related reports of the perception of what some researchers call the “human pheromone.” Schleidt, Hold, and Attili (1981, as cited in Brand & Millot, 2001) reported that women are better able to identify the gender of the donor of axillary secretions. Women also reported higher intensity and hedonic scores for androstenone and galaxolide (a related compound), which were included in the *National Geographic* Smell Survey described previously (Wysocki & Gilbert, 1989). When presented with undetectable levels of an androstenone-related compound, women reported an improved mood, whereas men reported a worse mood (Jacob & McClintock, 2000), and, in a related study, persons who were anosmic to androstenone still displayed electrodermal responses to it (Van Toller, Kirk-Smith, Wood, Lombard, & Dodd, 1983). In a widely known report of what has become known as the “McClintock effect” or menstrual synchrony, women who lived together in a college dormitory without the presence of men synchronized their menstrual cycles with each other (McClintock, 1971). Although this finding was not without criticism centered on methodology bias (Schank, 2001; Wilson, 1992), McClintock supported her hypothesis of pheromone communication among women with a later study, in which she reported that, when women repeatedly smelled worn clothing from other women (presumably containing pheromones), their ovulation cycles were altered (Stern & McClintock, 1998). Menstrual synchrony has also been demonstrated to occur between sisters, mother–daughters, close friends, and roommates (Weller & Weller, 1993; Weller, Weller, & Roizman, 1999). The vomeronasal organ (VNO) is an auxiliary olfactory structure located within the nasal cavity that is specialized for the detection of pheromones. For many animals, the VNO is critical for inter- and intraspecies communication; however, its functionality in humans is widely debated. The intriguing studies that show subconscious effects of hormones such as androstenone suggest that the VNO may not necessarily be a vestigial organ in humans.

Do the clearly defined data on women's olfactory sensitivity translate to sex differences in olfactory-activated brain imaging studies? More information is available on ERP, fMRI, and PET studies in olfaction than gustation. The data published thus far support the results of psychophysical reports of olfactory sex differences. Electroencephalography event-related potential studies of olfactory response to hydrogen sulfide (rotten eggs; Stuck et al., 2006), isoamyl acetate (banana; Evans, Cui, & Starr, 1995), and pyridine (putrid; Olofsson & Nordin, 2004) have yielded gender-related differences; women display shorter latencies and larger amplitudes of the ERP response than men do. In fMRI studies, the area of activation of the frontal and perisylvian cortices is about eight times greater in women than in men in response to olfactory stimuli (Yousem et al., 1999). Royet, Plailly, Delon-Martin, Kareken, and Segebarth (2003) demonstrated that activation of the orbitofrontal cortex, an area responsible for assessing the emotional quality of odors was more strongly activated in women than in men when they smelled unpleasant odors. As demonstrated in fMRI investigations of other sensory modalities, this sex difference showed a distinct lateralization (Royet et al., 2003). Positron emission studies of olfaction have indicated that there are no differences between women and men in response to chemical odorants (Bengtsson, Berglund, Gulyas, Cohen, & Savic, 2001). However, a clear, gender-specific activation of the hypothalamus emerges in response to pheromone exposure (Savic, 2002; Savic, Berglund, Gulyas, & Roland, 2001). The authors of these studies argued that the results are evidence of the disputed pheromone detection system in humans because the hypothalamus plays a critical role in mediating reproductive behavior in other species (Carter, 1998). This same group of researchers used volumetric MRI to demonstrate gender-specific, lateral asymmetries in cerebral volume and PET to show that there is more bilateral functional connectivity of pheromone-responsive brain areas in women than in men. It is interesting that evidence also indicates that the brains of homosexual participants show some sex-atypical cerebral asymmetry and functional connections (Savic & Lindström, 2008). In addition, the hypothalamic activation patterns of heterosexual women and gay men in response to olfactory androgens are similar (Savic, Berglund, & Lindström, 2005), as are the responses of heterosexual men and lesbians to olfactory estrogens (Berglund, Lindström, & Savic, 2006). These studies suggest that sensory responsiveness to pheromones may be outside of the range of conscious awareness and that sensitive, modern imaging techniques may allow for a more in-depth understanding of how the manner in which the brain responds to chemical signals from other individuals may help to explain individual differences and sexual orientation.

Conclusion and Future Directions

There can be little doubt that sex and gender differences in sensation and perception exist. Many of these differences are easily, and well, documented; however, others are subtle and difficult to discern. Modern brain imaging techniques have helped to illustrate differences that may not have overt behavioral consequences. Some aspects of sensory functioning do not appear to differ between men and women; however, it is not entirely unlikely that new differences will emerge as the ability to discern finer detail, or to quantify what was previously unmeasurable, develops.

Several important themes have emerged from this overview. The role of sex hormones, especially fluctuations in the female sex hormones, plays an important role in sensory functioning and appears to be responsible for many of the differences that have been documented. On the one hand, estrogen has been proposed to serve a neuroprotective role by helping to preserve sensory functioning into the later stages of life. On the other hand, it may also enhance the sensitivity of some aspects of sensory functioning including lowered pain thresholds. A second theme that has emerged, in large

part from brain imaging studies, is the theory that brain asymmetry, or lack thereof, can explain many perceptual gender differences. In general men's brains appear to process sensory information unilaterally, whereas women's brains take a more global approach. Finally, it often helps to think about sex differences in sensory functioning from an evolutionary standpoint. Differences, when they exist, presumably evolved for a reason. If we consider what is theorized about human evolution and the proposed adaptive roles of men and women that helped the species to survive, it may help to explain some of the observed differences and allow us to transcend gender role stereotypes that hinder an appreciation of what it is to be fully human.

Sensation and perception are the processes by which we make sense of the world. The concrete, physiological process of sensation is arguably easier to study and define than the subjective, cognitive process of perception. More than a century of research in sensation and perception has yielded many significant discoveries about how we interact with our surroundings through our senses. The physiology of the retina, the cochlea, the chemical senses, and the tactile senses have been well characterized, and several interesting differences in how women and men sense the environment have been revealed. Perception is a much more difficult concept to study because, by definition, perception is variable, open to interpretation, and can be influenced by past experience. Until recently, accurate, reliable, noninvasive methods of studying how the brain processes sensory information to form percepts were not available. With the advent of modern brain imaging techniques such as fMRI, PET, and EEG, scientists are just beginning to acquire the tools that will soon bring the metaphysical aspects of perception within the realm of empirical science. It is not unreasonable to assume that in the coming decades, neuroscientists will be able to define and predict perceptual processing that will permit a much deeper understanding of human behavior. This understanding should include both nature and nurture influences that define all aspects of individual differences, including those based on gender.

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Chapter 13

On Tending to Our Scientific Knitting: Thinking About Gender in the Context of Evolution

Nora S. Newcombe

The greatest figures of nineteenth century thought on human nature are widely considered to be Marx, Freud, and Darwin. Subsequent events and reflection have led to a waning of the influence of Marx and Freud (although some of their key insights may yet survive the test of time; see Westen, 1998, for a discussion of Freud's legacy). Darwin is another matter. Controversial when first proposed, his theory of evolution has not only survived, it now has no serious intellectual competitors and provides the overall framework for thinking about all of modern biology. During the twentieth century, evolutionary theory gained in prominence as a tool for understanding cognitive and social functioning as well as biological processes, first under the banner of the term *sociobiology* (Wilson, 1975) and more recently under the term *evolutionary psychology* (Buss, 2005; Dunbar & Barrett, 2007).

Cultural anthropology represents a contrasting perspective to Darwinism on the nature of human nature. It was proposed in the early twentieth century by Franz Boas, whose way of thinking was carried forward by his famous students, Ruth Benedict and Margaret Mead. However, their collective emphasis on cultural variety and human plasticity has since come under fire, and, on the whole, the intellectual arc of the cultural anthropology tradition resembles that of Freud and Marx more than that of Darwin. Some of the specific criticisms have probably been overdone (Freeman, 1983; see Holmes, 1983, for critical commentary), but the larger thrust is serious doubt regarding how changeable human nature may be (Pinker, 2002). Overall, it appears that, in the twenty-first century, Darwin has surpassed Boas as a way to think about human variation and culture. Biological limits are more in vogue than wide reaction ranges.

Nowhere have these intellectual currents been stronger than in the study of gender. In fact, the battle on the worth of the Boas–Benedict–Mead approach was waged on the ground of the nature of adolescent female sexuality in Samoa. More important, advocates of biological limits have focused frequently on gender in lampooning what they term the *Standard Social Science Model (SSSM)*. An SSSM theory of gender is said to consist of the following set of claims:

- Gender is largely a social category, learned by children (who initially are all similar to each other) through some combination of reinforcement, imitation, and active construction.
- There is very wide latitude in how gender is expressed across cultures.
- Imposing gender as an important category with universal meaning is an example of essentialism gone awry.

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- Biology is of relatively little importance in thinking about gender, as shown by the existence of intersex, transex, and bisexual individuals.
- Proponents of evolutionary analysis are reactionary.

However, this SSSM model is more a straw person today than a serious contender as a scientific theory. Although there are some authors who still follow something like this line, many of them are humanists (e.g., Butler, 1990). Among other well-known advocates of gender as a purely cultural and social phenomenon, one was a physician, John Money, whose work (Money & Ehrhardt, 1972) has come under question (Colapinto, 2006). Psychologists of this pure persuasion generally wrote sometime ago (e.g., Kessler & McKenna, 1978). Consider, for example, proposals regarding acquisition of gender roles and gender identity. The central idea that such roles and identity need to be acquired at all is certainly suffused with cultural assumptions. From the biological-limits point of view, they might merely follow from biologically set traits and predilections. Yet theorists and researchers on the acquisition of gender roles and gender identity, such as Lawrence Kohlberg, Walter Mischel, Eleanor Maccoby, and Diane Ruble, are not reasonably categorized as wild-eyed cultural determinists. For example, Maccoby (1998, p. 312) wrote

It seems evident that we will not be able to make much progress toward gender equality simply by giving little boys dolls to play with or giving girls gender-neutral names and dressing them in blue jeans. I have argued that children would probably separate into same-sex groups during spontaneous play regardless of the efforts their parents and teachers might make to create a unisex environment, and further, that the separation of the sexes in childhood has consequences that cannot be ignored.

Despite such sober and nuanced writing, however, at this point, most investigators interested in the social and cultural aspects of gender find themselves branded as extreme social constructionists. The SSSM is too good a straw person to give up.

Let us turn to the Darwinian tradition and its stance on gender. Revision of Darwin's model to emphasize kin selection and reproductive success over individual survival of the fittest (Hamilton, 1964; Trivers, 1972) led to an intellectual tradition in which sex and gender are central categories. Concepts such as parental investment and a focus on sex-differentiated strategies for reproductive success are at the heart of this way of thinking. [The central elements of Evolutionary Psychology (EP) are listed in Table 13.1; the capitalization of Evolutionary Psychology follows Buller (2005a, b) and is intended to connote a current school of thought rather than all imaginable types of psychology positioned in the context of evolution.] These ideas have led to a Standard Sociobiology Model (SSM) regarding gender that can be summarized in this way:

- Gender is a basic biological category with central importance for reproduction and evolution.
- As such, there is surprisingly little cross-cultural variation in gender differences, mating arrangements, and sex-based division of labor, such as responsibility for child rearing.
- There is very little evidence for effects of environment and sex-differentiated parental treatment on development of traits such as aggression or nurturance.
- Despite the existence of some individuals with hormonal anomalies, most individuals have an unambiguous biological sex and a corresponding personal and social identity.
- Proponents of social analysis are naïve.

The SSM clearly has many vocal and zealous adherents today, including figures such as David Buss, Leda Cosmides, John Tooby, and Steven Pinker, most of whom seem to feel that they are under siege from cultural relativists and who respond by adhering to a party line that is remarkably uniform.

Table 13.1 Key themes in Evolutionary Psychology

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1. Evolutionary success is defined as reproductive success, i.e., inclusive fitness. This idea is also known as the “selfish gene” hypothesis.
 2. Females have a higher obligatory investment in offspring than males do across many species, due to (even if nothing else) the size of gametes. This difference between the sexes is, however, especially marked in mammals given the high physiological costs of internal gestation and lactation.
 3. Following from point 2, males have wider latitude in strategies for reproductive success—either a quantitative or a qualitative strategy can work.
 4. A correlated premise is that males have greater variance in reproductive success than females do.
-

Their intellectual agenda derives strength from its set of simple principles that seem elegant in their power to explain diverse phenomena. The impact of their point of view on contemporary American thought is profound. For example, Pinker has written five books for a popular audience, several of which have been *New York Times* best sellers, and was named one of *Time* magazine’s 100 most influential people in 2004. As another example, Leda Cosmides received a (U.S.) National Institutes of Health (NIH) Director’s Pioneer Award in 2005, one of the very few behavioral scientists to be so honored.

The purpose of this chapter is not to argue against an evolutionary framework for thinking about gender. Darwinian principles, as expanded and modified by Hamilton and Trivers, are consistent with a wide number of interesting phenomena and, as noted earlier, provide the overall way of thinking about all of modern biology. The purpose is rather to show how the zealotry of many evolutionary psychologists has led them to neglect their obligation as scientists to formulate and defend testable chains of hypotheses. Thus, the chapter follows in the footsteps of David Buller (2005b), who analyzed three favorite Evolutionary Psychology hypotheses (the cheater detection module, gender differences in jealousy, and child abuse of stepchildren). He showed that evidence for a cheater-specific kind of logical reasoning was flawed by differences in the kind of questions posed in “cheater” and “non-cheater” conditions, as well as confounded with variations in the concreteness of the reasoning required. He argued that evidence for gender differences in jealousy depends on the use of questionnaire measures that simply tap the likelihood that sexual infidelity will lead to abandonment. He also analyzed new data and critiqued old data on mistreatment of stepchildren and suggested that any such effect was at least quite small, and indeed small enough to have plausibly been created by reporting biases. In reflecting on these specific issues, he concluded overall (p. 282) that

Evolutionary Psychology’s failure to produce solid empirical discoveries, I suggest, stems from problems with its theoretical framework – in particular, its reliance on ‘reverse engineering’ the mind from the vantage of our Pleistocene past, its assumption that the adaptational architecture of the mind is massively modular, and its doctrine of a universal human nature. Thus, although the Evolutionary Psychology paradigm is a bold and innovative explanatory framework, I believe it has failed to provide an accurate understanding of human psychology from an evolutionary perspective.

In brief, the complaint against EP is not that it is wrong in general, but that it is prematurely committed to specific conclusions that are not actually compelled by the overall framework shown in Table 13.1.

There is an integrative middle position between the SSSM and the SSM that can be christened the *Standard Interactionist Model (SIM)*. Many psychologists work within a theoretical framework

something like it, and take a biopsychosocial approach to their research. It involves the following ideas:

- Despite the existence of some individuals with hormonal anomalies, most individuals have an unambiguous biological sex and a corresponding personal and social identity.
- Gender is also a social category, derived from the fundamental biological category, but on which a host of non-essential meanings are grafted by the human mind.
- Cross-cultural variation is less than expected if one expects complete malleability, but this relative uniformity needs to be understood in the context of our species' lack of a reliable means of control over reproduction until very recently, coupled with lack of incentives to control reproduction.
- Parental and environmental influences on gender-linked behaviors sometimes require close analysis to observe, but they are not non-existent and are not always even very subtle.
- Proponents of social analysis need to consider the evolutionary context of gender, and proponents of evolutionary analysis need to be aware of the current social contexts of gender.
- Both kinds of analyses require close attention to hypothesis generation and testing and the need for key tenets of their thinking to be evaluated in the light of empirical evidence.

In order to critique EP and advocate for a less constrained use of evolutionary principles and also to keep within a reasonable space, this chapter focuses on a key example of one kind of gender difference in behavior frequently discussed by Evolutionary Psychologists: sex differences in spatial ability and cognition.¹ [For critiques of EP approaches to other phenomena, see Buller (2005a, b), Eagly and Wood (1999), and Hazan and Diamond (2000), as well as Chapter 16] In this chapter I outline the reasoning of the standard sociobiological model (SSM) about why the sexes differ (in some cases) in their spatial functioning and then critique the assumptions and evidential base for the current SSM/Evolutionary Psychology analysis. I conclude by challenging future researchers to substantiate their hypotheses with more stringent empirical analyses than they have completed so far. There are several kinds of spatial ability to consider and two families of SSM explanations to critique.

What Sex Differences in Spatial Cognition?

EP writing generally begins with sweeping statements about differences in cognitive functioning between men and women. However, one take on sex differences in cognition is that they are few and far between. In fact, there are good data for the “gender similarities hypothesis” in many social, emotional, and cognitive domains, including mathematics (Guiso, Monte, Sapienza, & Zingales, 2008; Hyde, 2005; Hyde, Lindberg, Linn, Ellis, & Williams, 2008). Against this backdrop of similarity, however, we also know that there are sex differences, sometimes substantial ones, in some aspects of spatial functioning. But the picture is complex, because not all spatial tests show sex differences, including some tasks that are widely claimed by EP theorists to show such differences. In this section, I survey what is known about gender and spatial ability.

¹Because EP claims that differences between men and women have biological origins, *sex* rather than *gender* will be used to refer to the postulated differences henceforward.

The Classic Literature

The history of psychometric tests includes several hundred tests of spatial functioning, many of them now difficult to locate (see John Eliot's collection in the Archives of the History of American Psychology <http://drcdev.ohiolink.edu/handle/123456789/511> for some idea of the number and variety of the tests). The majority of the instruments were paper-and-pencil tests that could be administered to groups of people, although some tasks required individual administration and the use of props such as blocks or puzzles (e.g., Wechsler's Block Design task). Both speed and accuracy were emphasized in scoring. Given the large number of tests, a good deal of attention was devoted to simplifying the domain into factors, classes, or categories, either by statistical analysis (summarized by Carroll, 1993) or by consideration of the task demands (e.g., Linn & Petersen, 1985).

Findings on differences between men and women from this century of research have now been distilled in a meta-analysis, which showed substantial sex differences on some, but not all, of the tasks (Voyer, Voyer & Bryden, 1995). The meta-analysis showed that men do better than women by large amounts (more than one-half standard deviation of difference) on mental rotation tasks and on other tests with apparent rotational demands. Men also do better on tasks that demand the accurate determination of horizontal and vertical axes with respect to gravity, isolated from the influence of conflicting local cues. However, a substantial number of spatial tests show small or nonsignificant sex differences, including Block Design, Embedded (or Hidden) Figures, and Paper Folding tests. Thus, a sex difference in spatial thinking is far from the ubiquitous phenomenon generally implied in EP-influenced writing.

Object Location Memory

The classic literature on spatial ability testing has recently been augmented by tests of object location memory, for which it has been claimed that *women* do better, as said to be predicted by Evolutionary Psychology. When people are shown an array of line drawings of objects placed in random positions on a page, women have been reported to do better at remembering the locations (see Silverman & Choi, 2005, for an overview). This pattern has been seen as a unique and striking confirmation of the idea that ancestral patterns of sexual division of labor led to sex differences—the idea is that this task picks up the task demands of gathering, hence women are good at it. The findings are repeatedly cited as strong support for Evolutionary Psychology (e.g., Bjorklund & Pellegrini, 2002; Geary, 1998; Kimura, 1999).

However, the strength and nature of the sex difference is unclear. In a narrative literature review, Ecuyer-Dab and Robert (2007) claimed support for the hypothesis, but Voyer, Postma, Brake, and Imperato-McGinley (2007) conducted a more rigorous literature review using meta-analysis. Voyer et al.'s work showed only a small advantage for women in object location memory ($d = 0.27$), and one that was comparable in size to the advantage women showed for remembering object identity (whether a certain object was present at all; $d = 0.23$). As one can hardly remember an object's location if one forgets that the object was presented in the first place, this similarity in effect sizes strongly suggests that object location memory may simply be another instance of the slight advantage women sometimes show in a wide variety of memory tasks, many of which are non-spatial (e.g., Cox & Waters, 1986; see Voyer et al., 2007). Nothing unique may be implied about women's memory for spatial location. A second cautionary note about the Silverman–Eals (1992) claim comes from the fact that the meta-analysis provided tentative support for Cherney and Ryalls' (1999) proposal that gender-typing of the objects is relevant to object location memory: Men did much better ($d = -0.84$) in remembering location when objects were gender-typed as masculine. Yet a third reason

for caution comes from the fact that men performed better ($d = -0.41$) when researchers measured location memory in terms of distance rather than as categorically correct or incorrect. And a fourth reason comes from a study published after the meta-analysis was completed, which showed that women did better at locating objects within peripersonal space but men did better with more distally located objects (Saucier, Lisoway, Green, & Elias, 2007). Overall, the hypothesis that women excel in object location memory is far from well established and does not constitute striking proof of the predictive validity of the EP/SSM position, as is often claimed.

Navigation

It is frequently proposed that women and men differ in navigation strategies or abilities, although just how they differ is not always tightly specified. The general idea is usually that females (humans and non-humans alike) are more likely to use landmarks to remember where to go, so that they will remember how to get somewhere as a sequence of decisions (left, right, straight ahead) made at particular points in a route description. By contrast, men are said to make more use of cardinal directions and distances, and males of a variety of species are said to be more likely to show knowledge of Euclidean distances, evidence of survey representations, or reliance on the geometry of enclosures. Separately or in addition to these differences in style or strategy, it may be said that males will learn spatial navigation tasks more quickly or more accurately than females will.

There are certainly research findings that can be cited to support each of the unreferenced claims made in the prior paragraph. What is not clear, however, is whether those citations are a selective sampling from an underlying literature where sex may be routinely examined but data collapsed across sex when no differences are found or where studies are published that report nonsignificant findings on sex differences but emphasize other aspects of their data and are hence not picked up in discussions of sex differences. In other words, what we need is a meta-analysis.

The need for a meta-analysis has been met in the case of rodents by Jonasson (2005). He found that male advantages were evident for rats on both water mazes and radial arm mazes; the size of the advantage varied with various procedural variables such as group versus solitary rearing and the presence versus absence of pre-training trials, but the male advantages were typically moderate to large in size across these task variations. More telling for the present discussion, the size of the male advantage varied across strains of rats. In addition, when Jonasson examined data from mice, he found that male advantages in the radial arm maze were significantly smaller than they had been for rats and that, for the water maze, the sex difference was actually reversed. Females showed a small (albeit possibly non-reliable) advantage. Overall, one interpretation of this meta-analysis is that broad evolutionary stories are not convincing and cannot be trusted; we require individual consideration of the ecologies and adaptive demands on different mammalian species.

Against this backdrop of species variation, it would be good to know what patterns humans show. It is certainly possible to cite journal articles to support the premises of the first paragraph of this section (e.g., Driscoll, Hamilton, Yeo, Brooks, & Sutherland, 2005; Saucier et al., 2002). However, although these articles may seem to build a convincing case for human sex differences, the absence of a meta-analysis ought to give us pause. Many null and even reversed findings may be lurking in the literature. Consider Herman, Kail, and Siegel's (1979) study of students' knowledge of their campus 3 weeks, 3 months, and 6 months after their arrival at their university. The men had significantly *better* landmark knowledge than the women (the opposite of the usual claim), and men and women did not differ in their knowledge of routes and configurations. Similarly, O'Laughlin and Brubaker (1998) reported no differences between women and men in cognitive maps formed from

a videotape tour of a three-bedroom home, whether presented with or without landmarks. Perhaps most tellingly, in paradigms similar to those previously showing male advantages, Schmitzer-Torbert (2007, Experiment 2) found that women did better than men.

Although there is no meta-analysis of the question of whether there are sex differences in human navigation, Coluccia and Louse (2004) completed a narrative literature review augmented with a box-score approach to differences, that is, they simply tallied how many studies showed male advantages, female advantages, or no differences. They reported that not quite one-half (49%) of the studies showed male advantages; most of the rest showed no difference. However, this approach does not allow for the evaluation of effect sizes. More disturbing, the strategy for the literature search is not described, and, in any case, the authors only included studies published from 1983 to 2003, thus omitting Herman et al. (1979) and Schmitzer-Torbert (2007) along with many other studies, as well as unpublished studies that might be more likely to show no sex differences. Clearly, a systematic and exhaustive examination of the human literature on cognitive mapping, much of which is not centrally involved with sex differences, would be required to establish that human sex differences in navigation are a real phenomenon.

Summary

There is no real doubt that men do substantially better than women on tasks involving mental rotation and assessments of horizontality–verticality. The causes of this difference will be considered next—they may or may not be easily explained within Evolutionary Psychology. What is also clear, however, is that two other sex differences that are frequently discussed by evolutionary psychologists have a very shaky empirical footing. The literature on object location memory makes at best only a weak case that women do better than men, and the literature on use of landmarks versus use of other cues in navigation shows species-specific effects in the case of rodents and has not been meta-analyzed in the case of humans. In addition, some apparently spatial tests such as Block Design and Embedded Figures show very small, if any, sex differences. Thus, one requirement for a successful account of sex differences in spatial ability, whether from an Evolutionary Psychology perspective or any other, is to account for the specific pattern of results. Why do some kinds of tasks show large sex differences and others show none at all? This question has not been answered by any theory so far, but failure to answer it is particularly embarrassing for EP/SSM theorists whose claims about gender differences in spatial functioning have been broad and global.

Two Kinds of Evolutionary Explanations

EP/SSM theorists use at least two approaches to explain male advantages in spatial functioning. [Jones, Braithwaite, and Healy (2003) discussed seven hypotheses, but I will simplify somewhat by amalgamating some of the hypotheses and concentrating on the two leading approaches.] One hypothesis can be called *Man the Hunter, Woman the Gatherer*. It is easy to explain and appeals to most people's understanding of gender roles and the gendered division of labor. The idea is that in traditional hunter–gatherer societies, men do the bulk of the hunting and women do the bulk of the gathering of edible plants; because hunting involves spatial activities such as aiming spears or other weapons, tracking animals long distances from home and then finding the way back, and making the tools and weapons for hunting, there were evolutionary advantages to men who were better at these (apparently spatial) activities. This approach is central to Silverman's research (Silverman & Choi, 2005; Silverman & Eals, 1992), and it is also commonly used by authors of overview articles and books (e.g., Bjorklund & Pellegrini, 2002; Geary, 1998; Kimura, 1999). *Man the Hunter, Woman*

the Gatherer is not, however, tied very closely to the specific SSM postulates listed in Table 13.1, although it is consistent with them.

The other explanation, which can be called the *Man Who Gets Around*, is more distinctively in the EP/SSM tradition, as it is tightly linked to the postulates of Table 13.1. The idea in this way of thinking is based on the hypothesis that males have reproductive advantages if they are able to mate with multiple females. In order to do so, they have to make the rounds of fertile partners efficiently, keeping ahead of their competitors while reaching as many females as possible. Good spatial navigation is vital to this effort. Support for the hypothesis comes from a series of elegant studies done by Steven Gaulin and his collaborators, which showed that, for a polygynous species of vole (a small rodent), but not for a very similar pair-bonded species of vole, there are male advantages in spatial tasks such as mazes, advantages that are particularly evident during the mating season and that are supported at that time by an enlarged hippocampus, a part of the brain very involved in navigation (Gaulin & Fitzgerald, 1986, 1989; Jacobs, Gaulin, Sherry, & Hoffman, 1990). This approach to male spatial advantages is also frequently mentioned in overview articles and books (e.g., Geary, 1998; Kimura, 1999), although usually without explicit consideration of whether it is a rival hypothesis to *Man the Hunter*, *Woman the Gatherer* or a complementary account.

Evaluating Man the Hunter, Woman the Gatherer

Man the Hunter, Woman the Gatherer has a great deal of intuitive plausibility. But it makes a number of assumptions, and some are on tenuous empirical footing and others have not been evaluated at all. In addition, both this hypothesis and the *Man Who Gets Around* face a number of overall questions about how they fit within the SSM paradigm and its assumptions. In this section, I consider issues specific to *Man the Hunter, Woman the Gatherer*.

Aiming. The first assumption is that aiming at moving animals is a spatial task with relevance to the abilities that are sex differentiated. In some sense, the spatial nature of aiming seems true by definition. Both hunter and hunted live in a spatial world, and their relative positions and paths in that world need to be evaluated in order for a spear or arrow to pass successfully from one to the other. But the question needs to be more focused. Do the processes involved in aiming have substantial overlap with the processes involved in the two abilities that show substantial sex differences, namely mental rotation and horizontality–verticality? The answer to this question is unknown. Watson and Kimura (1991) did not find significant correlations between throwing or intercepting accuracy and measures of spatial ability, but unfortunately they used tests such as Hidden Patterns (similar to Embedded Figures) and Paper Folding, which, as we have seen, show small and unreliable sex differences. Similarly, with a self-report approach, Newcombe, Bandura, and Taylor (1983) did not find consistent correlations between participation in sports involving aiming and spatial ability, but, again, assessed spatial ability with a Paper Folding test. Thus, there has really been no attempt to answer the specific question relevant to evaluating whether aiming is related to relevant spatial abilities, such as mental rotation. However, the two failures to find relations between aiming and spatial tests (albeit ones on which the sexes do not differ) highlight the need for direct support for a relation between aiming and mental rotation and/or horizontality–verticality, not just assertion that there must be one. Another reason to be dubious about commonalities across these tasks is that contemporary analyses of motion and intersection problems by investigators interested in perception (e.g., Fajen & Warren, 2004) utilize highly specific analytic categories that do not apply clearly either to mental rotation or horizontality–verticality.

Tracking. The second assumption is that tracking moving animals, as well as returning home after the hunt is over, is a spatial task. The outward part of the hunting journey, however, may not be very spatial at all. Following a moving animal by sight or sound involves heading toward

a continuing stimulus that can be easily localized. Following a moving animal by the tracks or indicators it left some time ago is a different matter, but this task seems to involve static analytic abilities—if anything, it has the most similarity to Embedded Figures tests that, as we have seen, do not show sex differences. Returning home after the hunt is over does seem, however, to be a potentially challenging spatial navigation task. In fact, men do better than women on returning to a starting point after being led on a circuitous path through the woods, and success at returning to the starting point is correlated with mental rotation scores (although only for women, not for men, and at fairly modest levels; Silverman et al., 2000). However, the challenge of returning to an origin might be reduced if the hunting range were typically in a well-known territory with recognizable markers. Further empirical evaluation of this issue is needed.

Gathering. The third assumption is that gathering is not a markedly spatial task (or, alternatively, that it requires different spatial skills of the kind supposedly assessed by the object location memory task). It is true that individual plants do not move around the way animals do. Yet edible plants may vary in where they grow from season to season and year to year, and these locations might be quite distant from a home settlement. A gathering trip to several locations might pose demands on finding the way back home similar to those of a hunting trip. Variability in location of edible plants (and hence spatial demands) would be even greater if a human group were nomadic.

Although there are no empirical evaluations of these issues, a memoir of berry gathering on the Great Plains (Jager, 1990, p. 148) gives some sense of the issue (and remember that an hour's drive would be a very great distance on foot):

Picking wild berries is the sweetest and best of our vagrant summer pleasures, the fruit sometimes abundant beyond belief. It's a nice way to live. If we had to drive some distance to get them, so much better the berries, so much stronger the mystique. . . the blackberry Plains was an hour's drive to the north, the huckleberry Plains an hour to the east. ("Plains", like "oats", was often treated as a singular word.). The Plains was a light and airy region: many clearings, few large trees, scarcely a forest, not intimidating. Still, I had no idea at all where I was or where anything was. On the flat and open terrain of our farm community we could always tell at least directions, for we were seldom out of sight of roads and fields that ran north-south and east-west. Now a sense of direction and place, when I wanted to lean on it, simply wasn't there at all.

This passage hardly supports the premise that navigational skills are irrelevant to successful gathering.

Tool making. A final way in which men's involvement in hunting might require differentially greater spatial ability could be that making spear or arrow heads, and other tools needed for hunting, requires spatial ability. This argument is less frequently made than the aiming and tracking arguments, and, indeed, it is a weak one. The problem is that many other activities in artifact production also seem, at least on the surface, to require spatial skill, and some of these are very likely to have been done by women, including weaving, producing baskets and clothing, and pottery making.

What was our environment of adaptation like, anyway? Of course, all of the assumptions above rest on an overarching assumption that we have a good idea of what kinds of labor were done by whom during our evolutionary history. Do we? Tooby and DeVore (1987) using various kinds of data, including patterns of division of labor in contemporary hunter-gatherer societies, suggest that the rule that "men hunt, women gather" applies to human history dating back as much as 2 million years (see also Ecuyer-Dab & Robert, 2007). Recently, however, Kuhn and Stiner (2006) reviewed evidence that suggests that the rule may not have characterized our species until the Upper Paleolithic period, or as recently as 40,000 years ago. Although this extent of time is sufficient for evolutionary pressures to operate, even though shorter than sometimes assumed by EP theorists, Kuhn and Stiner also noted that there are numerous exceptions to the rule and that men sometimes gather and women sometimes hunt. In addition, Edwards (2007) reported evidence that, as recently as 14,000 years

ago, hunting and gathering may have been done by the same individuals. Then, by the Agricultural Revolution of 12,000–10,000 BCE or so, the need for both hunting and gathering may have been substantially diminished, again changing the evolutionary pressures on spatial ability. Overall, there may have been a window of time during which men hunted and women gathered, but it may be shorter than is often assumed, with less pronounced separation than is often assumed, and it may have closed quite sometime ago for many human populations.

Another overarching assumption is that we know how hunting and gathering were done. Tracking moving animals is one way to hunt, but other ways include waiting for animals to appear at water holes or building pits along routes the animals are known to take. Methods such as these require far less extensive ranging and aiming. Along similar lines, gathering edible vegetation from known patches is one way to gather, but searching for new edible vegetation in unfamiliar areas might require much wider ranging than is sometimes envisioned.

Evaluating the Man Who Gets Around

The *Man Who Gets Around* hypothesis is not an idea that would come to the mind of the average person in the street if asked to speculate about the evolutionary cause of male advantages in some spatial tasks. However, this hypothesis is more attractive than *Man the Hunter, Woman the Gatherer* in some ways. It is more tightly tied to the Table 13.1 postulates, and it has the Gaulin research with voles to provide it with empirical support. Nevertheless, there is reason to think that this approach is not on firm ground either, evaluated within its own theoretical context. That is, would men's reproductive success really have been tied to their spatial ability?

The primary issue in going from the vole research to conclusions about *Homo sapiens* is whether we are justified in making the cross-species leap. Recall that the contrast between rats and mice in Jonasson's (2005) meta-analysis suggested that such generalizations are not always wise. In fact, Gaulin's research shows the same thing, very powerfully, because the whole point of it is that the species of pair-bonded voles do not show the sex difference that their polygynous cousins do. So, what kind of species are we?

A great deal of discussion has occurred on this issue, and many answers have been offered. A recent review from an EP/SSM perspective suggests that human mating systems are in a pluralistic situation with a variety of short- and long-term strategies differentiated by sex (Schmitt, 2005). There are some signs that we are a species that has been evolving toward pair bonding, but that has not made it all the way. One sign of the trend toward pair bonding is that height and weight differences between men and women, although evident, are far smaller than among other mammalian, and indeed than among other primate, species (Schmitt, 2005). Comparable size is a characteristic of pair-bonded species. Another sign of this situation may be women's continuous sexual receptivity (Thornhill, 2007). Yet a third sign (and one reason for the trend to pair bonding) may be the difficulty of human birth in a bipedal species with relatively large heads, and the consequent premium for reproductive success that comes from paternal investment, at least around the time of parturition. Nevertheless, despite all these signs, it is also clear that the variance in men's reproductive success is far higher than that for women. Some men have very large numbers of offspring and others have none, and it is also true that some human societies profess monogamy and others profess polygamy, but polyandry is extremely rare (Schmitt, 2005). These facts indicate that men probably have a mixed quantity and quality strategy for achieving reproductive success.

So, despite the trend toward pair bonding in humans, there is still a probable premium in reproductive success for men who can impregnate a larger number of mates, especially if they are able to invest in the offspring at least to some extent (as is the case in polygamy). Does that mean that one

reason why some men succeed in fathering larger numbers of offspring is their superior spatial skill? The conclusion does not follow, for one simple reason. Human beings live in social groups. This living arrangement stands in clear contrast to the situation facing the male voles that Gaulin found to have high spatial ability in the breeding season. The voles had to travel efficiently among territories defended by females of their species, who were widely scattered but sexually receptive when found. In a human settlement, success in finding receptive women is not assured simply by locating them, which in any case does not pose much of a challenge.

But perhaps men in our environment of adaptation did have to wander to find mates? One way this might be argued to occur is if men were ejected from their natal group and had to establish themselves in a new area in which to live as adults, as happens among gorillas. Nothing seems to be known about whether this was true of our species earlier in its evolution, but, in contemporaneous societies, there is no sign of such an arrangement—societies in which women go with their husband's kin when married are probably a bit more common than situations where the converse happens (Ember & Ember, 1971), and women disperse farther than men (Jones et al., 2003). Another way that spatial ability might be linked to number of mates is if raiding parties led to the acquisition of extra wives, as has been reported among the Yanomamo (Chagnon, 1988). However, the success of such raiding parties would seem to depend more on aggression and prowess in warfare than on successful spatial localization of neighboring villages. In fact, the relation between dominance and spatial ability appears to be complex even among rodents and to vary across species (Spritzer, Meikle, & Solomon, 2004). It is true that men in contemporary society have somewhat larger spatial ranges than women do (Ecuyer-Dab & Robert, 2004), but there may be many reasons for this situation, most notably variation in perceived safety.

On the whole, it is not clear that higher spatial ability would be associated with greater reproductive success, and there seems to be no direct tests of this proposition. There has, however, recently been a study of the relation between spatial ability and reproductive success in the species that Gaulin used in his research, the meadow vole (Spritzer, Solomon, & Meikle, 2005). Spritzer et al. did not find that male voles sired more offspring if they had higher spatial ability (although the trend was in the expected direction, and they noted that different housing conditions might have led to a different result). However, coupled with the failure to find a sex difference in spatial ability in the meadow vole using a different spatial task than that used by the Gaulin group (Sawrey, Keith, & Backes, 1994), Spritzer et al.'s data give reason to be cautious in accepting the *Man Who Gets Around* hypothesis, even for a species to which it is very well suited and on which it was originally tested.

Overarching Issues

One of the main reasons to like an evolutionary framework is that it potentially provides a rigorous basis for the generation and evaluation of testable theories about behavior. Given this advantage, it is distressing to see many EP/SSM theorists paying little attention to two ways in which their hypotheses about the evolutionary pressures on human spatial abilities do not conform to some of the considerations generated from within the evolutionary framework.

Would an Advantageous Trait with No Obvious Cost Be Sex-Specific?

Some of the most striking examples of sex-differentiated structures and behaviors are the lion's mane, the peacock's tail (and its display), and the antlers grown by males in various species of deer

and moose (and used in inter-male competition). In each case, males show a structure, and associated behavior, that is physiologically costly to produce and maintain. Despite this cost, the manes, tails, and antlers persist (and even grow in size and ornateness over evolutionary time) because they increase reproductive success, either through increasing the likelihood that males will be chosen by females for mating or through their influence on the male dominance hierarchy. Females do not show these structures because their physiological cost far outweighs their reproductive usefulness. (There are also cases where females show displays that males do not show; human breasts are one possible example.)

How do we fit spatial ability into this conceptual world? Even if spatial ability is somewhat more useful to men than to women, it is certainly also useful to women, and there is no obvious physiological cost of any great consequence to its development. Thus, selection pressures for the two sexes, albeit somewhat different, seem unlikely to be different enough to support sex-differentiated evolution. Evolutionary psychologists seem not to have considered why, on their own theory, we should expect sex differences in a trait advantageous to both sexes and with no large cost.

How Does Hormonal Variation Fit EP Hypotheses?

There is a very large literature on how levels of various hormones are related to spatial ability, either in terms of hormones present during fetal development or in terms of individual differences and cyclic variation during adulthood. A complete review of this literature is beyond the scope of this chapter. Existing reviews (e.g., Hampson, 2008; Hausmann, Slabbekoorn, Van Goozen, Cohen-Kettenis, & Güntürkün, 2000; Puts, McDaniel, Jordan, & Breedlove, 2008) suggest that there is a reasonable amount of evidence that women do better in spatial tasks around the time of menstruation rather than around the time of ovulation. In addition, along similar lines, they suggest that it is possible that higher androgen within the range of androgen levels found in women is associated with higher spatial ability, perhaps in conjunction with lower estradiol levels and/or different hormonal ratios. For men, lower testosterone levels are often claimed to be associated with higher spatial ability. However, there is also disconfirming evidence for each of these ideas, and at least one researcher who has been active in examining the relation between hormones and cognitive abilities has concluded that “sex differences in cognitive abilities have not been clearly linked to either organizational or activational effects of hormones” (Hines, 2007, p. 109).

Let us suppose for the moment, however, that the hormonal effects are real and see how such effects fit with evolutionary explanations. When researchers find that spatial ability is correlated with hormonal levels, it may seem natural to conclude that these biological effects fit well with evolutionary theory and even confirm its value. However, this conclusion is too hasty. As Hampson (2008, p. 321) wrote in discussing effects of menstrual cyclicality on mental rotation and horizontality–verticality, “the theories assume a static male advantage, not one that waxes and wanes depending upon a woman’s reproductive status. This sort of dynamic endocrine regulation was not anticipated.” Hampson went on to speculate that the reason for the cyclicality effects may be that lower spatial ability leads to reduced mobility, which in turn allows for a reduction in energy expenditures necessary to maintain levels of body fat sufficient to support fertility (see Ecuyer-Dab & Robert, 2004, for a similar argument). But this suggestion seems ad hoc and unmotivated; maintaining enough body fat for fertility would require consistent not sporadic reductions in spatial range, and, in addition, there is no evidence that women’s mobility is related to cyclicality or to spatial ability (Jones et al., 2003). Similarly, how does EP/SSM theory explain the negative correlation between testosterone levels and spatial ability in men? Hormonal variation is a challenge to EP/SSM theory, not an evidence in favor of it.

Is Causation of Sex Differences the Right Question?

One of the major reasons to be interested in sex differences in spatial ability is that, to most people, the presence or absence of differences, and the cause of any differences observed, seems to bear on real-world issues such as whether men (or women) are better suited for certain tasks or occupations than others. Do men like maps, and are women dependent on verbal directions? Will men always make up most of our engineering work force? However, causation of differences is less relevant to answering such questions than is the malleability of spatial skill. A recent meta-analysis shows that there is now abundant evidence that spatial thinking can be substantially improved and that these improvements generalize fairly widely and are maintained over time (Hand et al., under review). Hand et al. found that improvements for men and women are equal in size, so that sex differences are not diminished after training. However, further research may show how to attain convergence (Terlecki, Newcombe, & Little 2008). In addition, substantial overall improvements may allow large numbers of women to pass a threshold required for successful map use, work as an engineer, and so on. We know little about whether relations between such real-world tasks and spatial ability are linear, or whether success above a certain level of skill becomes more related to other factors such as motivation. One of the unfortunate aspects of most writing in the EP/SSM tradition is that it generally reduces a focus on malleability. Scientists are often aware that plasticity and evolutionary theory are quite consistent with each other, but the average literate newspaper reader and cocktail party attendee tends to reason in a more either–or way.

Conclusion: Prospects for an Empirically Rigorous Evolutionary Psychology

Darwinian theory provides an important way to think about human cognitive and social functioning. Indeed, it is hard to imagine that, in the modern age, it could be ignored. The question is not whether we should use it in our work, but for what, in particular, we should use it. In the context of gender, there has been far too much uncritical use of speculation about our environment of adaptation and the possible reasons for differences between men and women, including both differences that have empirical support and others that are on shakier ground. For spatial ability alone, there are many important and unanswered empirical questions including

- Why do some but not all spatial tasks show sex differences?
- Are there consistent sex differences in human navigation?
- What are the spatial demands of aiming? Of return to starting points after meandering paths? Of gathering?
- What was our environment of adaptation like in terms of what kind of hunting, what kind of gathering, done by whom?
- What explains cross-species variation in spatial sex differences—mating, foraging, etc.?
- Why would an advantageous trait with no obvious cost be sex-specific?
- Why would an advantageous trait show menstrual cyclicity?
- Why is the relation of spatial ability and testosterone levels curvilinear?

Returning to the SIM model that I mentioned earlier, let me remind readers of its last two propositions. The second-to-last idea was that proponents of social analysis need to consider the evolutionary context of gender, and proponents of evolutionary analysis need to be aware of the

current social contexts of gender. It is clear that many (though not all) investigators of gender differences have erred in one or the other direction, and the field will not make progress until a balance is achieved. The last tenet of SIM was that both social and evolutionary analyses require close attention to hypothesis generation and testing, and both need to evaluate their thinking in the light of empirical evidence. It should hardly be necessary to mention this proposition in polite scientific discourse, but the zeal of EP theorists has, I believe, frequently blinded them from seeing clearly the internal contradictions in their claims and what exactly has been evaluated and what has gone unexamined. As Buller (2005a, b) argued, when evolutionary psychologists begin to focus more carefully on empirical research and the internal logic of their theory, their approach will change from being a controversial school of thought to being a useful tool in the armamentarium of thinking about gender.

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Part IV
Learning, Education, and Cognitive Processes

Chapter 14

Gender in the Classroom

Susan A. Basow

There are many ways that gender operates in the educational system, especially the classroom. This chapter focuses on the gendered organization of schools themselves, the gendered classroom experience, competing explanations for gender differences in educational attainment, and suggestions for the future. Most of the research is from developed countries, especially the United States, so the content may not generalize to countries in which education is not public and/or is not mandatory for both girls and boys, such as southern Asia, sub-Saharan Africa, and western Asia (United Nations Population Fund [UNFPA], 2005). In some of these countries (e.g., Chad, Yemen, Niger, Ethiopia), fewer than 75 girls are in primary school for every 100 boys enrolled. Thus, it is not surprising that the women constitute 64% of all adults who are illiterate (UNFPA, 2005). Given the gross inequalities in educational opportunities for girls relative to boys in some developing cultures, the picture in developed countries is much brighter. Nonetheless, gender inequalities still exist, albeit of a subtler nature.

The Gendered Structure of Education

The organization of schools (who teaches what grades and subjects, who is in positions with the most power and status) is a reflection of the gendered nature of society itself. The fundamental pattern is that, as status and pay increase, the percentage of women decreases. The teaching jobs with the least status and lowest pay are those in early childhood education. These jobs are disproportionately held by women (91% of U.S. elementary school teachers were women in 2000) (National Center for Education Statistics [NCES], n.d.). The teaching jobs with the most status and pay are those in the upper ranks of university teaching; these jobs are disproportionately held by men (75% of U.S. full professors were men in 2005) (NCES, 2007a). Jobs in educational administration (principals, superintendents, provosts, university presidents) reflect the same gender hierarchy. In 2003–2004, women were 56% of U.S. elementary school principals (despite the fact that women constitute 91% of the teachers) and 26% of secondary school principals (despite the fact that women constitute 55% of teachers at this level) (NCES, 2007b). At U.S. colleges and universities, women were only 23% of college presidents in 2006, despite the fact that they constitute 41% of the professorate (King & Gomez, 2007). Women were most likely to head 2-year colleges and least likely to head doctorate-granting universities (King & Gomez, 2007).

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Although one might argue that the gender of the top administrator is immaterial to the running of the school, the gendered organization of schools themselves conveys several gender messages: that men have more power and status than do women; that men are leaders and authority figures, whereas women are subordinates and have a narrower sphere of influence; and that women are better than men at dealing with the emotional and social needs of younger children, whereas men are better than women at dealing with the intellectual and vocational needs of older children/young adults. It is within this gendered social context that boys and girls are educated.

Gender messages also can be found in fields of study themselves. Not only are women more likely than men to be teaching and associated with early childhood education, but women also are more likely than men to be associated with the creative arts (art, music, writing) and the humanities in general. In contrast, men are more likely than women to be associated with math, science, and technology. These trends both reflect and reinforce academic gender typing. Evidence suggests that students do associate different subject areas with men and women, and such associations affect students' academic performance as well as their career choices. Similar patterns of gender segregation in field of study have been found in most developed countries: Women are under-represented in engineering, mathematics, computer science, and, to a lesser degree, natural science; they are over-represented in education, humanities, and health fields; and there is approximate gender parity in the social sciences (Charles & Bradley, 2002).

There has been change over time in the United States; increased numbers of women have joined educational administration, the professorate, and science fields. For example, in the decade from 1993 to 2003, the percentage of women principals in elementary and secondary schools increased 10%, and the percentage of women teaching in colleges and universities increased 6% (NCES, 2007a). These numbers still fall short of gender parity, however. Furthermore, gains by women in traditional male-dominated careers have not been matched by increased numbers of men in traditional female-dominated careers, such as early childhood education and the humanities. Thus, the overall pattern is one of many changes for women in terms of nontraditional career choices but few changes for men. Gender segregation in field of study and careers may be particularly difficult to change because it appears to be based less on beliefs about gender equality than on beliefs about innate gender differences in abilities and interests (Charles & Bradley, 2002).

Women students now outnumber men in colleges and universities in most developed countries (Charles & Bradley, 2002; UNFPA, 2005). This is in marked contrast to the historical picture in such countries, as well as to the gender ratio in the developing world (UNFPA, 2005). For example, in 2006 in the United States, women received 58% of all bachelors and masters degrees and almost reached parity with men for doctoral and professional degrees (NCES, 2005). Although there is still tremendous variation by field (with men over-represented in the physical sciences, math, and engineering), the trend is clear: By 2014, women are expected to receive the majority of all educational degrees beyond high school. In only 20 years, the pattern of more men than women in higher education has been reversed. This reversal in the gender ratio has given rise to concern on the part of many regarding what has happened to boys (Gurian & Henley, 2001; Gurian & Stevens, 2005; Sax, 2005; Sommers, 2000).

It is important to note that the recent reversal in the gender ratio of educational achievement in the United States and other developed countries is not due to fewer men participating in higher education than in the past, but rather to the dramatic increase in the percentage of women doing so. For example, in 1967 in the United States, 33% of all men aged 18–24 years attended college; in 2006, the percentage was similar (34%). But for women aged 18–24 years, only 19% attended college in 1967, whereas 41% did so in 2006 (NCES, 2008a). A similar pattern has occurred with respect to the attainment of advanced educational degrees: Men have shown a modest increase, whereas women have shown a more dramatic increase (NCES, 2005). For example, the number of doctoral degrees

awarded between 2002–2003 and 2013–2014 is projected to increase 19% overall, but 12% for men and 28% for women. Thus, the new pattern is less a change in men's education-related behavior than a tremendous increase in women's educational attainment, especially among older women. The possible reasons for this change are addressed later in this chapter, after an examination of the classroom experience itself.

The Gendered Classroom

There are many ways in which gender shapes the classroom experience of students, starting with what boys and girls bring to school and the curricular materials they encounter there. Gender also shapes the classroom experience through both peer and teacher behaviors. The resulting picture is one wherein boys and girls receive strong gender messages and variable treatment based on their gender.

What boys and girls bring to school. Several popular contemporary writers in the United States have argued that boys and girls have “different brains” that require gender-specific teaching techniques (Gurian & Henley, 2001; Gurian & Stevens, 2005; Sax, 2005). Because girls and boys typically are taught together in the same classroom by teachers using methods supposedly geared to “girls’ learning styles,” boys are at an educational disadvantage. This disadvantage manifests itself in several ways: boys’ poorer grades, greater learning and behavioral problems, and lesser educational attainment. Several assumptions underlay these popular views: that boys and girls have “different brains”; that boys and girls benefit from gender-specific teaching techniques (e.g., emotion-laden lessons for girls; activity-based lessons for boys); that current classrooms are geared to girls; and that these elements are the reasons for boys’ general difficulties in school.

The research on gender differences in brain structure, organization, and development is complex and controversial (see Hines, 2004; Kimura, 1999, for summaries of brain gender research, as well as Chapter 11.) Although there is considerable evidence that prenatal sex hormones may affect the development and organization of the brain such that men tend to have more lateralized brains and women tend to use both brain hemispheres jointly, these differences are small in size and highly variable. Girls, on average, may be more predisposed than boys to develop strong verbal skills and to integrate those skills with emotional development, such that girls on average may be better than boys on average at labeling and perceiving emotions. In contrast, boys, on average, may be more predisposed than girls, on average, to develop strong visual-spatial skills, to be aggressive, and to engage in rough-and-tumble play. Overall, though, most researchers (e.g., Haier, 2007; Hines, 2004) have noted that individual differences often overshadow gender differences in brain structure and organization. Furthermore, environmental influences, both prenatal (e.g., maternal nutrition) and postnatal (e.g., diet, experience) also affect brain development. Thus, the statements that boys and girls have different brains and that these differences are “hard-wired” are broad overstatements.

Gendered patterns of brain organization may underlie gendered patterns in performance on some cognitive tasks with academic implications (Berenbaum & Resnick, 2007; Gur & Gur, 2007; Kimura, 1999). For example, boys tend to perform better than girls in mentally rotating or manipulating an object and navigating their way through a route. This may affect performance in geometry, map reading, and some technological areas. Boys also tend to be better than girls in mathematical reasoning. In contrast, girls tend to perform better than boys in measures of verbal and landmark memory and in finding words that match a particular pattern (e.g., begin with a specific letter). Girls also tend to do better than boys in tasks that require mathematical calculations and fine-motor coordination. These skills may affect performance in reading and language-related subjects as well as certain math and lab activities.

A recent longitudinal neuroimaging study of nearly 400 participants from ages 3 to 27 years yielded evidence that different areas of the brain develop in a somewhat different sequence and at different rates in girls and boys (Lenroot et al., 2007). Girls' peak brain development (at around age 11) occurs 1–2 years earlier than boys', similar to the gender difference in age of puberty. Boys also show a steeper increase in brain white matter development than do girls during adolescence. Although the actual meaning of these gender patterns in terms of cognitive abilities and performance is unclear, it is possible that age-matched girls and boys are at somewhat different developmental levels, which might suggest that they would benefit from different teaching strategies (Sax, 2005).

Although some of the gendered patterns of cognitive performance may be linked to differential prenatal hormone exposure or different developmental patterns, gendered socialization experiences cannot be overlooked. There is considerable evidence that boys and girls typically grow up in different "cultures" (Basow, 2008; Leaper & Friedman, 2007; Maccoby, 1998). As soon as parents know the sex of their child, they start treating that child differently. If the child is a girl, she is likely to be talked to often and softly, to be handled gently, and to be clothed in pastel colors (especially pink) and in dresses. As she matures, she is likely to be encouraged to develop strong emotional and social ties, to use words to connect with others and to solve problems, and to engage in play activities that simulate domestic activities (e.g., doll and house play). If the child is a boy, he is likely to be handled more roughly and encouraged to develop autonomy and assertiveness. He is also likely to engage in play that involves gross motor skills as well as object manipulation (e.g., building things, "zooming" cars). Thus, gender differences in verbal and fine-motor skills (girls tend to do better) and gross motor and visual-spatial skills (boys tend to do better) may well be due to gender differences in early experiences, which, perhaps, build upon biological predispositions.

It must be emphasized that gender differences in pre-school children's behavior and cognitive abilities, although often found when large groups are examined, tend to be small and highly variable. In fact, gender similarities far outweigh gender differences, as Hyde (2005) concluded after reviewing the results of 46 meta-analyses (see also Chapter 15). Hyde's research shows that few systematic gender differences exist, and those that do are usually small and vary by age and context. By examining the magnitude of gender differences, and not just whether differences occur and are statistically significant, Hyde found that the largest gender differences were in motor behaviors, especially throwing speed and distance. On those measures, boys (aged 3–20 years) outperformed girls by about two standard deviations, which means that of the best throwers, 95% were likely to be boys and only 5% girls. In contrast, gender differences in mental rotation tasks, aggression, and activity level, on which boys tend to do better, were of moderate size. Of those who excelled in these tasks, about 65% were likely to be boys and 35% were likely to be girls. Gender differences in language and spelling, in which girls tend to do better, also were of moderate size. Most other differences, including gender differences in math performance, were much smaller. Clearly, girls and boys overlap greatly in their cognitive abilities.

Overall, boys and girls may enter school with somewhat different cognitive and physical skills due to a combination of biological predispositions and gendered socialization experiences. Once there, they may encounter classrooms geared more to girls' physical, cognitive, and social skills than to boys' (e.g., sitting still for long periods of time, controlling impulses, complying with adult directions) (Gurian & Stevens, 2005; Martino & Meyenn, 2001). Such environments may make school a less comfortable experience for boys than for girls, which may account, in part, for boys' higher rates of learning and behavioral problems. Boys also may become less interested than girls in school, in general. A study based on a nationally representative sample of nearly 4,000 U.S. students in grades 3–8 showed that boys were significantly less likely than girls to find class activities interesting and enjoyable (Gentry, Gable, & Rizza, 2002).

Still, it is important to remember that gender differences tend to be small, highly variable, and generally outweighed by individual differences. Thus, gender-specific teaching techniques, such as the use of more action-based learning with boys and more group work with girls, as promoted by Gurian and others (Gurian & Henley, 2001; Gurian & Stevens, 2005; Sax, 2005), seem to be missing the larger picture of gender similarity in abilities. In other words, many boys may benefit from class activities that are more activity-based, but so may many girls. Similarly, many girls may benefit from group as opposed to individual activities, but so may many boys. A classroom that uses a variety of teaching and learning techniques will surely appeal to more students than a classroom with only one, regardless of the gender of the students.

Nonetheless, gender often serves as a cue for differential treatment and differential experience both in school and out. Furthermore, the curricular materials that children encounter convey gender messages as well.

The gendered curriculum. Unequal gender-based educational practices, such as offering “home economics” only to girls and “shop” only to boys, were ended in the United States by a series of laws passed during the 1970s (e.g., Title IX of the Education Amendments of 1972, the Women’s Educational Equity Act of 1974, the Vocational Educational Act of 1976, and the Career Incentive Act of 1977). Still, certain less obvious discriminatory practices remain. In particular, most curricular materials focus on boys and men and convey the message that they are more interesting, dominant, and important than are girls and women.

Analyses of the storybooks that are used in schools (Gooden & Gooden, 2001; Purcell & Stewart, 1990) indicate that boys are more likely than girls to be active agents; girls more often play the role of observer or cheerleader or the one who needs help. Furthermore, men are depicted in a greater variety of occupations than are women. Most commonly, male characters simply outnumber female characters, by a ratio of 2:1 or 3:1.

In upper grades, men are more often the focus of study than are women, whether in regard to history (mainly a chronicle of men’s lives in politics and war), literature (novels, poetry, and essays written by men), or science (great discoveries by men) (Koch, 2003). Academic areas themselves are still gender-typed: Math, science, and computers are viewed as more appropriate for men than for women; literature, foreign languages, and the arts are viewed as more appropriate for women than for men (Eccles, Jacobs, & Harold, 1990; Nosek, Banaji, & Greenwald, 2002). In U.S. high schools, more boys than girls take computer design and Advanced Placement (AP) science courses, and more girls than boys take AP courses in English, biology, and foreign languages (Koch, 2003). (AP courses allow high school students who achieve high grades on standardized tests to attain college credit for their work.) College majors reflect this gendering of academic interests, as well: Women are over-represented in the humanities, some social sciences (especially psychology), and biology; men are over-represented in the physical and computer sciences, business, and engineering.

Thus, although schools in developed countries may not be discriminating on the basis of gender in the overt ways they once did, they are transmitting gendered messages through their very structure and their curricular materials. Gender messages also permeate the classroom experience of girls and boys through the interactions they have with their peers and teachers.

Peer interactions in school. By the time children enter school, they have typically had 5 or 6 years of differential gender socialization, which may enhance small, possibly biologically-based behavioral, emotional, and cognitive predispositions. As noted previously, boys and girls typically grow up in different “cultures,” with different language and play styles, different clothes and customs, and different expectations from adults. For example, girls’ activities, such as playing house, tend to be cooperative and verbal. Boys’ activities and games tend to be more competitive and physical. Because of these gendered play styles, girls and boys tend to segregate themselves into same-gender groups, which further reinforce gendered patterns of play and behavior.

Although there is considerable overlap in abilities and interests between girls and boys in the early school years (Hyde, 2005), frequent sex segregation and expectations regarding strong gender differences may lead to larger differences in interests and abilities as schooling progresses. Teachers often play a strong role in this regard, as discussed below. But peers exert influences that are often more powerful than those of parents and teachers. For example, children often ignore or discourage play with a child of the other sex, thereby reinforcing same-gender behavioral patterns (Bigler & Liben, 2007; Koch, 2003). As a result, girls often fail to learn the gross motor and assertiveness skills utilized in boy groups; boys often fail to learn the fine-motor and empathy skills utilized in girl groups. These different social norms and experiences are most likely to emerge in mixed-gender contexts, such as the co-educational classroom (Harris, 1995).

Peers actively monitor the gender-related behaviors of their classmates; they use derogatory language and harassing behaviors to keep others "in line," that is, conforming to gender expectations (Basow, 2008). For example, boys who might be interested in the arts, or girls who might be interested in mechanics, typically get a clear message that their interests are not gender appropriate. Boys, who have a stricter gender role than girls do, are more often punished by their peers for perceived gender-role violations. The major social control mechanisms utilized are verbal denigration and social ostracism. For boys, the worst thing they can be called is "gay," "queer," or "girlie" (Kehily, 2001). In a 2001 survey on sexual harassment conducted by the American Association of University Women (AAUW, 2001a), 83% of boys reported having experienced unwanted sexual behaviors (including accusations of homosexuality) during their school years, usually from male peers. These verbal, and sometimes physical, assaults are attempts to punish boys and to keep them conforming to an extreme definition of masculinity, one in which boys must be tough, unemotional, aggressive, and heterosexually focused. Bullying in general, both verbal and physical, is a more common experience for boys than girls and occurs in a large number of industrialized countries (e.g., Wolke, Woods, Stanford, & Schulz, 2001). The most frequent perpetrators of such bullying are male peers.

Girls too are pressured to conform to the feminine gender role by their peers, but because their role is more flexible than is boys' in the early grades (e.g., girls can wear dresses or pants, can be athletic or bookish, can be assertive or dependent), the conformity pressures are somewhat less intense than for boys, at least until puberty (Basow, 2008). It is around this time that the major imperative for girls (i.e., to be sexually attractive to boys) intensifies. Girls uninterested in boys do risk being called "queer" or "dyke," but most of the epithets used for girls refer to heterosexual promiscuity ("slut," "ho"). In the 2001 AAUW sexual harassment survey, 88% of the girls reported having experienced such behaviors during their school years, mainly from male peers (AAUW, 2001a). Other research supports these findings and suggests that sexual harassment is virtually a universal experience for adolescent girls (Leaper & Brown, 2008). A majority of middle and high school girls report having been the brunt of unwanted or inappropriate romantic attention from a boy, having been the target of unwanted physical contact from boys, having been called demeaning names or told an embarrassing or mean joke about being a girl, and having been teased about their appearance (e.g., "look at those boobs!"). Furthermore, at least one in four girls report having been teased, bullied, or threatened by a boy (Leaper & Brown, 2008). European American and African American girls report more unwanted sexual attention than do their Asian American and Latina counterparts in the United States; still, nearly all girls experience at least some of these harassing behaviors (Leaper & Brown, 2008). In addition to sexual harassment, about 30% of girls report having received some type of academic discouragement about their math, science, or computing abilities from male peers (Leaper & Brown, 2008).

The results of peer sexual harassment are negative for both sexes, although the negative effects are more intense and pervasive for girls (AAUW, 2001a; Ormerod, Collinsworth, & Perry, 2008). In the

2001 AAUW survey, girls reported feeling more self-conscious and less confident because of sexual harassment than did boys. Girls also were more likely than boys to attempt to avoid the harasser and to keep silent in class. Such harassment also contributes to girls' negative feelings about their bodies, especially as puberty begins. The AAUW results were supported by a more methodologically rigorous study of nearly 700 students from seven public high schools in the midwestern United States (Ormerod et al., 2008). For girls, a higher level of peer harassment was associated with more negative body image, more negative psychological well-being, and more negative perceptions of school safety. For boys, the negative effects of peer sexual harassment were limited to more negative body image. Thus, although peer sexual harassment is extremely common, especially in high school, it is even more common for girls and directly affects their school experience. Unfortunately, peer sexual harassment often is tolerated by school personnel, who too often engage in similar behaviors themselves.

Teacher behaviors. Teachers and other school personnel can contribute to a gendered school experience in several ways: directly, via their own behavior with boys and girls, as well as indirectly, via the behaviors they expect and tolerate.

In Ormerod et al.'s (2008) study of sexual harassment in U.S. high schools, the behavior of school personnel strongly affected students. Not only did school personnel also sexually harass female students more than male students (53 to 38%), but they were perceived by students as tolerating sexual harassment. Such perceptions of the school climate negatively affected the school experience of both girls and boys by contributing to lower self-esteem, lower feelings of school safety, and greater school withdrawal for both sexes. For boys, negative perceptions of the school climate also were associated with greater psychological distress and lower health satisfaction. Thus, the perception that school personnel tolerate sexual harassment sends a message to students, whether they are victims or not, that students have little recourse for their complaints. Such powerlessness has negative effects on both boys and girls. The effects appear to be more profound for girls because they are even more likely than boys to be victims of sexual harassment by peers as well as by school personnel.

In the classroom, teachers tend to pay more attention to boys than to girls, both positively and negatively (Duffy, Warren, & Walsh, 2001; Harris, 1997; Meece & Scantlebury, 2006; Sadker & Sadker, 1994). That is, teachers tend both to praise and to reprimand boys more than they do girls, and boys tend to dominate classroom interactions. Girls tend to receive teacher approval mainly for being quiet and compliant. In an observational study of more than 100 fourth-, sixth-, and eighth-grade classrooms in several communities, Myra and David Sadker (1994) found that teachers called on and encouraged girls less often than they did boys, although they rarely were aware of doing so. This is particularly true in math and science classrooms, subject areas gender-typed as masculine (Altermatt, Jovanovic, & Perry, 1998; Jovanovic & King, 1998). Teachers (as well as parents) tend to believe that boys are more "gifted" in math and science than are girls, and these beliefs shape the way teachers interact with their students (Ceci & Williams, 2007). In Leaper and Brown's (2008) study, about one-half of middle and high school girls reported having received some type of academic discouragement related to their math, science, or computer abilities, and about one-half of those remarks came from teachers. Perhaps the lower expectation for and involvement of girls in math and science classes contribute to women's consistent under-representation in related careers. The general message sent by these teachers' behaviors is that boys, at least White boys, are more talented and their voices should be heard, whereas girls should be more passive learners. Perhaps this helps to explain why girls tend to be quieter in the classroom and to ask fewer questions than do boys (Koch, 2003).

The finding that teachers give more encouragement to male than female students appears predominantly with White students. Black boys, in particular, appear to be viewed by teachers in the United States as having the least academic potential when compared to White boys and to girls of

both races (Grant, 1985; Neal, McCray, Webb-Johnson, & Bridgest, 2003; Ross & Jackson, 1991). Perhaps this explains the academic disengagement that occurs among Black boys, who drop out of high school at a higher rate (9.7%) than do White boys (6.4%). Hispanic boys may be even more neglected by teachers; their drop-out rate is 25.7% (NCES, 2008b). Black girls also may become disengaged due to lack of teacher attention and discouragement of their typically more verbal and active behaviors (Wilkinson & Marrett, 1985). In 2006, the high school drop-out rate was 5.3% for White girls, 11.7% for Black girls, and 18.1% for Hispanic girls (NCES, 2008b). Research confirms that teachers' expectations strongly affect students, especially students from groups that are academically stigmatized (Blacks and Hispanics, in general, and girls in math). For example, McKown and Weinstein (2002) found that the expectations that teachers of the first, third, and fifth grades held in the fall regarding their students' academic abilities were significantly related to the students' actual achievement at the end of the year, regardless of the students' previous academic performance, especially for those in the most stigmatized groups. More research is needed on the ways gender and race intersect in the classroom, especially with respect to teachers' expectations and behaviors.

One of the outcomes of differential teacher treatment is that boys and girls develop different levels of self-confidence, especially regarding academic achievement (Dweck, 1999). Boys, at least European American boys, tend to believe in their ability to solve problems, so they typically attempt and persist at challenging tasks. Girls tend to believe that they are either smart or not smart; they are less likely to believe in their ability to figure things out. Thus girls, especially high-achieving ones, tend to develop more feelings of helplessness when they encounter academic difficulties, and they give up more quickly than do boys. Girls often feel more valued for "being good" and for their appearance than for their intellectual skill. Academic self-confidence is important when attempting and persisting with new tasks. It is in this area that girls increasingly fall behind boys, even as girls generally continue to attain higher grades. This occurs at the college level as well. Annual surveys of entering students show that nearly two of three men rate themselves as at least "above average" in academic self-confidence, whereas fewer than one-half of women make similar ratings (Sax, 2007).

The gender stereotyping of academic fields by society in general and by teachers in particular may also contribute to differential student confidence and achievement. As previously noted, math and science are perceived as "masculine," whereas literature, languages, and the arts are perceived as "feminine." Because people expect to succeed in tasks that they view as gender appropriate, girls tend to have lower feelings of self-efficacy in math and science fields than do boys (Dweck, 2007; Eccles et al., 1990; Sax, 2007). Low expectations of success can lead girls to become uninterested in those fields and the occupations related to them. The same is true regarding boys and the humanities. Furthermore, when such gender stereotypes are made salient (e.g., by a teacher remarking that boys typically are better at math than are girls), students' actual performance can be affected. As numerous studies have confirmed, when a student's gender identity is primed, such as when she has to write down (or check a box) regarding her gender before taking a test, her academic performance on a masculine gender-typed task can suffer (Steele, 1997; Steele & Ambady, 2006). For example, female students who are identified as such or who are a numeric minority in a testing situation perform more poorly in a math test than male students and than a matched female control group whose gender identity has not been primed (Inzlicht & Ben-Zeev, 2000). Just taking a math test in a classroom with boys may elicit girls' performance decrement, as found in a study of French middle school students (Huguet & Régner, 2007). This *stereotype threat* phenomenon is robust and occurs for any group performing a stereotype-related task when a stigmatized identity is made salient. For example, when Asian American women's gender identity was made salient, their math performance decreased relative to a control condition, but when their Asian identity was made salient, their math scores increased because of the stereotype that Asians are good at math (Shih, Pittinsky, & Ambady, 1999).

Thus, academic performance and interest can be boosted or impaired depending upon the stereotyped nature of the task and the identity that is made salient, and this seems especially likely to occur for those individuals who identify most strongly with the group in question (Chavous, Harris, Rivas, Helaire, & Green, 2004; Oswald, 2008; Steele, 1997). In this respect, teachers' expectancies and transmittal of academic achievement stereotypes can become prophecies that students fulfill. For example, the stereotype that African Americans are not as academically competent as European Americans can negatively affect the academic performance of the former group and can even lead to disidentification and disengagement with academic achievement in general (Steele, 1997). This idea is supported by the finding that, among nearly 600 students from four different colleges, academic self-concept was more related to grade point average for seniors than for freshmen, as would be expected if one depended on the other, but this was found only for European American men and women and for African American women. For African American men, in contrast, the relationship between academic self-concept was *less* related to grade point average for seniors than for freshmen, an indication of academic disidentification over time (Cokley, 2002). The fact that this occurred with college students, who presumably already had developed some degree of academic identification, suggests that the process may be even more severe in the lower grades. Indeed, the phenomenon of stereotype threat may contribute to the higher high school drop-out and lower college attendance rates of African Americans and Hispanics compared to European Americans.

Gendered classroom dynamics occur at all grade levels, including college. Women in college appear to receive less encouragement than men do for speaking in class, and they are more likely to be ignored or interrupted by both peers and professors (Sadker & Saker, 1994; Whitt, Edison, Pascarella, Nora, & Terenzini, 1999). The qualities that seem to facilitate more gender equity in the classroom include a smaller class size, more feminine-oriented or androgynous subject matter, more classroom interactions, a more cooperative than competitive atmosphere, and a more gender-balanced or female-dominant student gender ratio (Brady & Eisler, 1999). These qualities are more likely to be found in classes of female rather than male instructors, although teaching style may be confounded by subject matter (Basow & Montgomery, 2005; Brady & Eisler, 1999; Canada & Pringle, 1995). That is, women are more likely to be teaching in the humanities, and humanities professors are more likely to use discussion and small group work, to have smaller classes, and to have relatively more female students than do professors in the physical sciences, who are more likely to be men. Still, even when male and female faculty teach in the same discipline, they tend to use different teaching styles. For example, Statham, Richardson, and Cook (1991) interviewed 15 women and 15 men who were matched for rank, discipline, and the gender ratio of their departments at a large state university in the United States. The researchers found that, compared to their male counterparts, female faculty tended to be more student-oriented and to engage students more in discussions, regardless of discipline. In contrast, male faculty were more likely than female faculty to assert their authority in the classroom through public reprimands and corrections.

Different teaching styles may appeal to different students. There is some evidence that female students may particularly appreciate female professors, as they are more likely than male students to nominate a female instructor as their "best" teacher (Basow, Phelan, & Capotosto, 2006), and they frequently rate female professors higher than male students do on evaluation forms (Basow, 1998). Traditional pedagogical styles appear to benefit male students more than female students (Gabriel & Smithson, 1990), whereas "female friendly" styles (such as those that involve more cooperation than competition) benefit both sexes (e.g., Rosser, 1997). Thus, the increasing number of women on college faculties may be helping to increase gender equity in college classrooms, and may partially account for the increased retention of female students in higher education.

Although female faculty seem to be particularly appreciated by female college students, such is not the case with male college students. The latter are less likely to cite a female faculty member as

their best instructor than would be expected based on the number of female professors they have had, and they frequently rate female faculty lower than female students do and lower than they rate male faculty (Basow, 1998; Basow et al., 2006). Given the nature of gender roles [men have more status than women and masculinity is defined, at least in part, as “non-feminine” (Basow, 1992, 2008; Brannon, 1976)], perhaps it is not surprising that male college students value male faculty more than female faculty. A similar process is at work with respect to other cultural figures: Boys are less likely than girls to read books or watch television shows or movies with predominantly female main characters, and they are less likely to cite a female role model as influential. Girls, in contrast, watch, read about, and choose role models of both sexes (Basow, 1992, 2008; Basow & Howe, 1980).

This antipathy that many boys have to girls and women may partially explain the greater difficulty boys have adjusting to school. If boys learn that they must avoid anything feminine in order to be masculine, and if schooling is associated with girls and women (because of the greater number of female teachers in the lower grades and the emphasis on being compliant to adults), then boys may consider school and school achievement as antithetical to being “real boys” and “real men.” Certainly, something is going on that has led to the strong concern about boys’ educational achievement and to the backlash against gender equity programs and goals.

Competing Explanations for Gender Differences in Educational Attainment

As previously described, students enter the educational system at age 5 or 6 with varied abilities and school readiness. Individual differences greatly outweigh the few small gender differences that can be found in cognitive, emotional, and behavioral abilities. These small differences may be partially attributed to biological predispositions (such as boys’ greater tendency toward aggressive behaviors) but are more likely to be due to differential pre-school socialization experiences. Once children are in school, they encounter even stronger gender messages directly from their peers and teachers, and indirectly from the structure of the school and the curricular materials utilized. The messages are gender stereotypic: Boys are important and should be dominant, both physically and socially. They have “natural” gifts in math, science, technology, and athletics. Girls, on the other hand, are cooperative and should be “nice.” They have “natural” gifts in empathy and nurturing, and in the humanities and helping professions. Girls also receive the message that their appearance is important and that they can be harassed with little recourse. Although messages to girls have become more nontraditional since the 1970s in the United States, such that girls today typically receive encouragement at least to develop career objectives, messages to boys have not changed much. The result, as noted earlier in this chapter, is that girls have increasingly been outperforming boys academically, not only in grades attained, which they historically did, but also in degrees attained. A closer look is needed at why this might be happening and at the current intense public concern about the well-being of boys.

Since the beginning of the 21st century, when women first started outnumbering men in college attendance in developed countries, writers have expressed concern about the “plight” of boys. Titles, such as *The war against boys: How misguided feminism is harming our young men* (Sommers, 2000) and *What about the boys? Issues of masculinity in schools* (Martino & Meyenn, 2001), convey the concern that boys are being neglected and hurt by an education system geared to supporting girls at the expense of boys. In actuality, as has been shown, the percentage of boys attaining higher education is the same or higher than it was in the 1970s. What has changed is not that boys have decreased their educational attainment, but rather that girls have increased theirs so much more.

A more accurate description of current education statistics is that, prior to the second wave of the women's movement in the late 1960s and 1970s in the United States, girls had been discouraged, or at least not actively encouraged, to pursue higher education to develop their minds as well as to expand their job opportunities. With the rise of second-wave feminism and consequent changes in laws related to education (as well as in other areas of society), girls stopped being held back. Internationally, the United Nations World Conferences on Women, held in 1975 (Mexico City), 1980 (Copenhagen), 1985 (Nairobi), and 1995 (Beijing), all served to encourage governments to improve the lives of girls and women. The elimination of sex discrimination in education and training was a key component (UNDAW, 2007). The current statistics, then, may more accurately reflect women's potential than do the statistics of the 1970s and earlier. A recent comprehensive analysis by the AAUW (2008) of educational trends in all 50 U.S. states showed that girls as well as boys from the fourth grade through the end of college are making steady educational gains. The accusation that there is a "war against boys" appears to be more of a backlash against feminism and an expression of anxiety over men losing their position of dominance, at least in the realm of education, than an accurate representation of reality.

A legitimate question remains, however: Why are boys not achieving educationally (in terms of grades, high school graduation rates, and college attendance rates) to the same degree as girls? Actually, the focus of the question needs to be narrowed to ethnic minority boys, and to boys from poorer families, because they are the ones with much lower educational attainment than their female counterparts. Have these boys been negatively affected by gender equity programs put in place during the last 30 years?

Gender equity programs. Research on such programs, including the use of gender-neutral materials, suggests that girls do appear to benefit more than do boys, but only when compared to more traditional curricular practices (AAUW, 2008; Koch, 2003). Boys either perform similarly or better in gender-equity-focused classrooms than they do in traditional ones. In particular, "female friendly" teaching styles, such as those involving more cooperation than competition, appear to benefit both sexes, especially in math and science courses (e.g., Rosser, 1997). Thus, curricular and pedagogical changes toward more gender equity, which perhaps explain girls' increased interest in higher education since the 1970s, do not seem likely to explain why many boys have not become equally motivated.

Biological and learning differences. Are boys' brains "hard-wired" differently than girls' brains, as several currently popular writers (Gurian & Henley, 2001; Gurian & Stevens, 2005; Sax, 2005) state? Are boys innately more active and physical and girls more verbal and social? As already noted, gender differences in cognition, emotions, and behaviors are typically small or nonexistent, especially in the pre-school years. Individual differences vastly overshadow gender differences, and most of the gender differences found are strongly shaped by gender socialization, rather than "hard-wired." In fact, as the recent AAUW (2008) study showed, students' race/ethnicity and family income are more associated with academic achievement than is gender.

Do boys and girls learn differently and need to be taught with gender-specific teaching techniques? Many popular writers (e.g., Gurian & Henley, 2001; Gurian & Stevens, 2005; Sax, 2005) answer in the affirmative; they assert that boys need a cooler classroom (both in terms of colors and temperature), louder voices, more physically based instruction, and more direct confrontation by their teachers. In contrast, girls' education supposedly should focus on connections among people (peers, teachers) and the material, such as through role playing, small group work, and story-based problems. Again, although there are individual differences in students' learning styles, the evidence does not support that these styles vary mainly by student gender. Some boys may benefit from a more activity-based classroom, but so may some girls. Overall, research demonstrates that effective teaching increases student achievement for everyone in a classroom and closes gender-based

and ethnicity-based achievement gaps, especially in science education (Johnson, Kahle, & Fargo, 2007).

Many writers concerned about boys' educational difficulties have argued that boys especially benefit from being taught by male teachers (e.g., Gurian & Henley, 2001; Gurian & Stevens, 2005; Sax, 2005). However, research with nearly 1,000 Australian students aged 12–16 years did not show that boys benefited more from male than from female teachers (Marsh, Martin, & Cheng, 2008). In fact, both boys and girls typically had higher self-efficacy in classes taught by women. Other research also has failed to show a significant effect of male teachers on boys' behavior or achievement (e.g., Bricheno & Thornton, 2007, in the U.K.), although more research is needed on this topic, especially in elementary school, where female teachers typically outnumber male teachers 9:1 (NCES, n.d.).

Single-sex education versus co-education. Even if gender differences are not innate and even if individual differences in learning styles overshadow gender differences, might boys and girls both do better being taught in same-sex classrooms or schools? As has been shown, the co-educational classroom is a gendered one, and girls especially experience considerable sexual harassment from male peers. Would single-sex education be preferable? The answer to this question currently is unclear and depends to a large extent on a variety of variables, for example, the specific outcomes examined, the age/race/ethnicity/socioeconomic class of the students, the quality and type of training of the teachers, and the level of funding. Most single-sex schools until recently have been private, either religion-based (e.g., Catholic schools, yeshivas) or for students primarily from wealthy families (e.g., prep schools). Because students who attend these schools may not represent the general population (for example, their families may be more religious and/or more concerned with their child's education than are other parents), it is hard to generalize findings from research on these programs. Furthermore, much of the research on the topic is anecdotal or not well-controlled.

A recent comparison of single-sex and co-educational schooling by the U. S. Department of Education and the American Institute for Research (USDOE, 2005) indicated that, of 2,221 studies, only 40 met the criteria for inclusion (the population consisted of full-time pre-college students from English-speaking countries who attended either a co-ed or a single-sex school; the methodology included at least some statistical control for individual differences, such as socioeconomic status). None of the studies utilized the most rigorous methodologies (e.g., in none of the studies were students randomly assigned to one type of school or the other). Overall, 45% of the 40 studies showed no difference between single-sex and co-ed schooling, whereas 41% favored single-sex schools; only 8% favored co-ed schools, and 6% showed positive effects for one gender but not the other. When differences were found, they typically were small or short term. For example, although single-sex schools showed some advantage on measures of all-subject achievement, there was no difference on longer-term indicators of academic achievement, such as postsecondary test scores or college graduation rates. Girls did seem to benefit from single-sex schools more than co-ed schools with respect to higher educational and career aspirations, as well as interest in nontraditional fields (such as math and science). Boys' educational and career aspirations also appeared to benefit from single-sex schools more than from co-ed schools, although their self-esteem appeared to be higher in the latter.

The biggest effects of single-sex schools appear to be for minority students and those from poorer families, the students who typically do the worst in educational attainment (Riordan, 1990; Weil, 2008). Whether their improved performance in single-sex environments comes from the gender composition of the classroom, which may enhance their academic self-esteem, or from the increased teacher attention that may occur, or from the parental involvement implicit in the choice of a single-sex environment is unclear. Also unclear is whether simply having single-sex instruction in some subjects (e.g., math and science) rather than throughout an entire school might have some benefits.

For example, there is some evidence that single-sex environments, at least in industrialized countries, improve the performance of girls in such “masculine” areas as mathematics and computing, perhaps because of the elimination of stereotype threat or the positive presence of female role models (Huguet & Régner, 2007; Logan, 2007). The effect on boys is much more equivocal, perhaps due to the tendency of many of these programs to reinforce notions of traditional masculinity (Gray & Wilson, 2006; Jackson, 2002; Younger & Warrington, 2006). More research definitely is needed in this area, especially because single-sex education is being promoted as the answer to boys’ relatively lower rates of educational attainment (Weil, 2008). With the 2006 modifications to Title IX regulations in the United States that now allow public schools to offer single-sex classes for such purposes as “improving the educational achievement of students” or to meet students’ “particular educational needs,” the path has been cleared for more single-sex educational offerings. Similar trends are occurring in the U.K., for example, the Raising Boys’ Achievement Project (Younger & Warrington, 2006). Whether single-sex education will be an effective intervention to maximize the educational outcomes of all students remains to be seen.

Cultural factors. If co-education and gender equity programs cannot be held accountable for the lesser educational achievement of boys, especially African American and Hispanic boys and those from poorer families, what does account for the statistics? One very important aspect of the U.S. education system is that public schools are, in large part, locally funded. That means that students from poorer neighborhoods, who may start off at an educational disadvantage due to poor nutrition, limited pre-school stimulation, and stress related to racism and to living in dense housing in high-crime areas, typically also receive a poorer education (overcrowding, limited educational resources, demoralized teachers, deteriorating facilities) than do students from wealthier neighborhoods. Such factors may go far in explaining the different educational attainments of students from different socioeconomic levels as well as students from certain ethnic minority groups (Salomone, 2006). Boys may be more affected than girls by an impoverished background due to both biological and cultural factors. For example, poor nutrition (both pre- and postnatal) may have more negative effects on boys’ brain development than on girls’, and low societal status for poorer and minority boys, who by gender are expected to be dominant, may contribute to negative social behaviors that interfere with learning.

Thus, society needs to look beyond the educational system to understand what is happening to boys. The real issues involve factors that interact with educational practices, such as cultural messages about masculinity and race and ethnicity. In the last 30 years, expectations regarding feminine gender roles and behaviors have been challenged, and the resultant changes have been incorporated at least partially into educational programs intended to empower girls and women. Similar changes with respect to challenging traditional masculine gender roles and behaviors have not occurred; thus many boys are struggling to define themselves as masculine or as men now that they no longer are assumed automatically to be dominant and superior. Many boys focus on sports and physical aggression as ways to achieve dominance, often encouraged by the media (“gangsta rap,” extreme sports, superheroes) and the toy industry (e.g., extreme G.I. Joe). Such aggressive behaviors, along with the fact that many boys enter school with fewer school-related skills than do girls (e.g., the ability to listen, sit still, pay attention, utilize fine-motor skills, cooperate with peers), means that boys often have more difficulty conforming to school expectations than do girls (AAUW 2001b, 2008; Childs & McKay, 2001; Koch, 2003; Van Houtte, 2004). Thus, rather than schools privileging girls to the detriment of boys, it is actually traditional gender socialization and masculine peer culture that are alienating boys from school.

African American and Hispanic boys in particular may be viewed as not academically inclined, especially by their communities and by their primarily European American teachers. Research on stereotype threat, previously reviewed, documents the likelihood that the performance of a

stigmatized group will suffer when the related stereotype is made salient. Disidentification and disengagement with the stereotyped task also can occur. Although girls from these minority groups also may suffer from racial and ethnic stereotypes, they tend to be viewed with less hostility and suspicion than are the boys. Academic achievement may be viewed as a “White thing,” as well as a “female thing” (Fordham, 1996; Van Houtte, 2004). No wonder so many minority boys perform poorly in the educational arena.

Another group of students who may become disengaged from academics are sexual minority students, especially boys. Numerous studies have shown that lesbian, gay, bisexual, transgender, and questioning (LGBTQ) high school students typically are on the receiving end of long-term and systematic homophobic teasing and bullying from other students. As a result, these students are at greater risk than their heterosexual peers for depression, isolation, suicide, and drug use (Espelage, Aragon, Birkett, & Koenig, 2008; Rivers & Noret, 2008). Indeed, as the February 2008 classroom murder of a 15-year-old gay boy by a classmate in California indicates, LGBTQ students may risk physical assault and even death in their schools due to their sexual orientation (Cloud, 2008). It is not surprising, then, that the drop-out rate for gay youth is 28%, over three times the U.S. national average (Bart, 1998). Changes in the school climate, such as the presence of LGBT support groups, have been shown to reduce the victimization and suicidality of these at-risk groups (Espelage et al., 2008; Goodenow, Szalacha, & Westheimer, 2006).

In summary, girls’ achievements should not be viewed as incompatible with boys’. We need to move “beyond the ‘gender wars’” (AAUW, 2001b) and find ways to reach all children (boy/girl, majority/minority, poor/wealthy, gay/straight, urban/suburban/rural) in the school system.

Future Directions

This chapter demonstrates how gender permeates the educational system and the classroom environment in ways that may limit the educational achievements and aspirations of both boys and girls. The current gender disparities in educational attainment (compared to boys, girls get higher grades and are more likely to graduate from high school and college) are cause for concern as is the continuing high level of sexual harassment experienced predominantly by girls and the under-representation of girls in math, technology, and the physical sciences. But before we can develop effective solutions, we need to understand the problems themselves. Such understanding is made more difficult by strongly held beliefs in gender differences and/or traditional gender roles that influence what research questions are asked and what conclusions are drawn.

First, we need to recognize how gender intersects with race/ethnicity and class to affect educational experiences and attainment. It simply is not accurate to say that “boys are failing at school” when problems exist mainly for poorer boys, especially those who are African American and Hispanic. We need more research to understand the complex causes of their educational problems and to develop effective ways to improve educational engagement and outcomes. Such solutions are likely to involve aspects of society outside the classroom, such as reducing poverty and racism, as well as improving nutrition and job opportunities. Schools themselves need to find ways to reach students, especially minority students, before they become disengaged. This may mean including more minority role models in curricular materials or developing teaching materials and programs with students’ specific cultural identities in mind (e.g., Kincheloe & Hayes, 2007; Reid & Roberts, 2006).

In this respect, more research is needed on the effectiveness of the single-sex classroom before it is widely promoted as a panacea for the current gender differential in educational attainment

(Salomone, 2006; USDOE, 2005). As has been shown, research is equivocal regarding whether and under what circumstances single-sex education is superior to co-education. There simply are not enough quality studies of the issue to reach any conclusion at this point. Future researchers would do well to implement random assignment, to examine single-sex classes in grades below high school, and to utilize a large variety of outcome measures over longer periods of time. It may be that single-sex teaching of nontraditional subjects may be helpful for the nontraditional group with respect to achievement level and interest (such as computing for girls, language arts for boys), but it needs to be done in a way that does not reinforce traditional gender stereotypes (Martino & Meyenn, 2002; Younger & Warrington, 2006).

Second, we need to stop thinking of education as a zero-sum game, that is, if one group (e.g., girls) benefits from a program, their gain must come at the expense of another group (e.g., boys). Education can and should benefit all students, and it serves no one well to set one group against another. The development of educational materials and teaching techniques that help under-motivated or under-prepared students is likely to benefit both girls and boys. Because individual differences overshadow gender differences, encouraging teachers to utilize a variety of teaching styles and materials is likely to benefit more students than encouraging teachers to use some styles only with boys and others only with girls.

Indeed, we need to stop seeing the educational needs of girls and boys as inherently different. As noted in this chapter, there is a very large gender overlap in most aptitudes and talents, and the lives of adult women and men are increasingly similar. For example, most women will be employed most of their adult lives, as will most men. Thus, we need to reduce gender stereotyping of cognitive and emotional abilities and prepare future generations of girls and boys for lives that will include both family caretaking and paid employment. Because expectations have powerful effects on students' behavior, teachers in particular need to be educated on these topics in order to reduce their own inadvertent reinforcement of gender- and race-stereotyped behaviors.

Every society needs to invest adequate resources, both financial and intellectual, into developing a system that provides an equal and adequate education for girls and boys of every race/ethnicity, religion, and socioeconomic background. The elimination of traditional gender stereotyping and sexual harassment is only a start. Educational systems need a great deal of improvement before all students reach their intellectual and social potentials.

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Chapter 15

Gender and Academic Abilities and Preferences

Heather A. Priess and Janet Shibley Hyde

Questions of gender differences in intellectual abilities and academic preferences have fascinated researchers for more than a century. Notably, many early studies on this topic examined samples that were not representative of the population, often chosen because they were convenient or highly selective. Furthermore, the existence of markedly different opportunities for education and careers among women and men further obscured gender similarities and differences in academic preferences. Given these methodological shortcomings and cultural factors, it has been difficult to make adequate assessments of gender similarities and differences in academic abilities and preferences. Although gender stereotypes concerning academic ability and appropriate academic and occupational choices still abound, growing equality in these domains and methodological advances allow us to address these compelling questions better.

Methodologies Used to Study Gender Similarities and Differences

Gender differences in academic abilities and preferences have been considered with numerous methodologies, some of which are helpful to review at the start of this chapter. First, however, it is important to note that all gender difference studies are quasi-experimental, not experimental. Therefore we cannot know whether it is a person's gender that causes a difference, or whether it is instead one of dozens of other variables correlated with gender. Many studies of gender differences, particularly those on course and career selection, have relied on correlational designs and, more recently, advanced statistical techniques such as structural equation modeling, which allow researchers to test complex models in which various individual, family, peer, education, and cultural influences impact people's perceptions of their academic abilities and their academic choices. These methods are often applied to large-scale, longitudinal data sets. Eccles' (1983) expectancy-value model of achievement provides an excellent example of this type of methodology. Similarly, with the advent of national and international achievement and aptitude testing, as well as the increase in construction of large-scale databases, researchers have been able to address more adequately questions of academic ability using nationally representative samples and samples that are large enough to allow for reliable tests of academic performance among racial and ethnic minorities and children with varied socioeconomic backgrounds. Experimental studies, on the other hand, have typically been more limited in scope and less frequently used, though these methods provide excellent and

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underutilized means of assessing, for instance, the degree to which individuals can be trained to enhance their academic performance.

With regard to synthesis of research findings, until about 30 years ago, the narrative review represented the primary means of aggregating data on gender differences in ability. Although the work of Maccoby and Jacklin (1974) succeeded in organizing and integrating a large literature on gender differences, the narrative review approach was vulnerable to subjective interpretation and synthesis and made it difficult to review the quickly growing literature on gender differences. Shortly after the publication of *The Psychology of Sex Differences* (Maccoby & Jacklin, 1974), however, researchers began to turn to meta-analysis as a way in which to synthesize the literature quantitatively. In a typical meta-analysis, a researcher first conducts a thorough literature review to locate all studies that have been conducted on the topic of interest. These articles are then used to calculate effect sizes (described below) for each study. Finally, the effect sizes are averaged to determine the magnitude and direction of an effect across all studies.

Meta-analyses offer several advantages over traditional narrative review (Hyde, 1981, 1990). First, a meta-analysis can more easily encompass hundreds or thousands of studies that represent the testing of sometimes millions of individuals, which allows researchers to synthesize effectively a much larger body of work than would ever be possible with a narrative review, thereby increasing confidence in the reliability of findings. Second, meta-analysis allows for the testing of heterogeneity of variance in its findings, so that moderators, such as age or nationality of participants, year of publication, type of measure used, can be tested. Thus, the ability to conduct moderator analyses allows researchers to consider, for instance, whether there are age differences in the magnitude of gender differences (as has been suggested, for example, in quantitative ability) or whether gender differences are shrinking over time. Finally, the quantitative nature of meta-analysis allows for a potentially more objective review of the literature, including a statistical test of gender differences when all studies are combined.

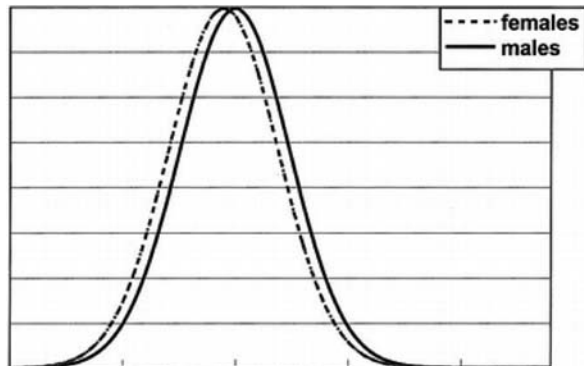
Common Statistics Used in Gender Difference Research

Two statistics are worth mentioning before we delve into a review of the literature. First, the results of meta-analyses and large-scale studies are frequently reported as effect sizes. The effect size, d , is calculated as the mean score of male participants minus the mean score of female participants, which is then divided by the pooled (within-gender) standard deviation (Cohen, 1988).¹ In other words, an effect size indicates the size of a gender difference in standardized units, which allows for the combination of multiple studies and for comparisons of different effect sizes to one another. The sign of the effect size, positive or negative, indicates the direction of the effect. In this chapter and in most of the literature, a positive effect size indicates that men and boys, on average, exhibited higher scores, whereas a negative effect size indicates higher scores among women and girls. Cohen (1988) suggested that in general, an effect size of 0.20 be interpreted as a small difference, 0.50 a moderate difference, and 0.80 a large difference. Given the commonality with which these guidelines are used in the literature on gender differences, we will adopt them here. For consistency of interpretation in this chapter, we have formed intervals around Cohen's values (using midpoints between values) to

¹The formula for d computed in this manner means that positive values will reflect higher scores by male participants – whether higher math scores or higher self-esteem scores. We use it in this manner throughout this chapter to avoid confusion. The formula could equally well be (mean for female participants – mean for male participants)/SD, and some other meta-analysts have chosen that definition, particularly if the hypothesized direction of difference is female participants scoring higher (e.g., Twenge & Nolen-Hoeksema, 2002).

interpret 0.10–0.35 as a small effect size, 0.35–0.65 as a moderate effect size, and 0.65 or greater as a large effect size. In addition, we have interpreted 0.10 or less as a trivial difference, based on previous precedence in doing so (e.g., Hyde, 2005). Most research on gender differences in abilities, reviewed below, reports small effect sizes, if any. Figure 15.1 provides a graphical representation of a small effect size to illustrate the substantial degree of overlap represented by such an effect size (Kling, Hyde, Showers, & Buswell, 1999).

Fig. 15.1 Graphic representation of a 0.21 effect size. *Note.* This graph depicts an effect size of $d = 0.21$, which represents a small effect size. From Kling, Hyde, Showers, and Buswell (1999). Copyright 1999 by the American Psychological Association



The second statistic of note is the variance ratio (VR). The VR is a ratio of the variance in male participants' scores compared to that in female participants' scores. Therefore, a VR greater than 1 indicates greater variance in male participants' scores and a VR less than 1 indicates greater variance in female participants' scores.² Gender differences in the VR are important in that they address a different question than that of mean gender differences. Whereas mean gender differences reflect ability differences between the “average” woman and “average” man, the VR indicates whether the proportion of women and men differ at the tails of a distribution. These proportions are often described in relation to certain sections of the tails, such as the top and bottom 10, 5, or 1%. For instance, the mean gender difference in verbal ability among college students may be small, but if the VR is significantly smaller than 1, this may indicate that more women than men are represented at the very top, and very bottom, of the verbal ability distribution. The VR, rather than the mean difference, is at the focus of debates concerning the underrepresentation of women at the highest levels of mathematics and science because researchers are interested in the proportions of women and men who excel at this high ability level, not the ability of an average person. Likewise, a VR may also serve as an important indicator that one gender is overrepresented at the bottom of an ability distribution.

Therefore, the VR has taken on increasing importance in research on cognitive gender differences. Whereas researchers were previously interested in mean differences in abilities, as measured by the effect size, an extensive body of research has indicated that most effect sizes are small for academic abilities (Hyde, 2005). In contrast, there is some evidence of greater score variability among boys and men in some academic domains, which results in more men and boys than women and girls being at the higher and lower ends of ability distributions (Hedges & Nowell, 1995; Hyde, Lindberg, Linn, Ellis, & Williams, 2008). Gender differences in variance have been attributed to biology (e.g.,

²The formula for VR can also be computed as a ratio of variance in female participants' scores to male participants' scores. Given that the literature typically reports the VR in the manner we described, however, we will use VR in this manner throughout this chapter to avoid confusion.

Baron-Cohen, 2003) and to culture (Guiso, Monte, Sapienza, & Zingales, 2008), and researchers continue to debate the reasons for gender differences at the tails of ability distributions. Thus, much attention is currently focused on the VR, particularly in debates concerning the underrepresentation of women in mathematics and science.

The Complexity of Questions Concerning Gender and Academic Abilities and Preferences

As discussed later, however, many researchers are concluding that questions about gender differences in abilities must be answered “It depends” (Williams & Ceci, 2007), for it is increasingly clear that previous notions of mathematically skilled men and verbally skilled women oversimplify the reality of gender similarities and differences. First of all, there are, of course, many distinct abilities that comprise “quantitative ability” or “verbal ability,” and, although abilities tend to be somewhat stable over time, they are by no means static. Ability can be fostered, and new skills can be learned. As mentioned above, gender differences in ability may also depend on participants’ location in the distribution, with small to no differences for average individuals but larger gender differences in some domains for the very brightest or most talented. The degree to which differences are found also depends on the age, ethnicity, and nationality of those tested, whether they are tested on familiar or novel material, in what historical time they are living, how the material is presented, and so on. Likewise, it is difficult to address gender preferences for academic domains, which incorrectly implies that girls and boys/women and men make academic choices in a vacuum, for no doubt numerous individual characteristics and parents, peers, teachers, and the broader culture influence individual perceptions of abilities and the appropriateness of various courses of life action. The following sections review what is known about gender similarities and differences in academic abilities and preferences, with particular attention paid to the various influences on gender effects, to the extent that they have been addressed by extant research.

Gender and Academic Abilities

Given that this volume presents a full chapter on gender and spatial ability, we have limited our discussion of academic abilities to overall intelligence and quantitative and verbal domains. Briefly, most research shows a marked gender difference in some types of spatial ability, most notably three-dimensional mental rotation, in which the effect size equals 0.56–0.73. There is also some evidence of men’s greater variability in spatial tasks (Feingold, 1992). We refer readers to the relevant chapter in this volume (Chapter 16; see also Chapter 13) and to two meta-analyses concerning gender and spatial ability (Linn & Petersen, 1985; Voyer, Voyer, & Bryden, 1995).

Intelligence

Before we consider gender similarities and differences in intelligence, it is essential to acknowledge what intelligence tests do (and do not) measure, in light of ongoing controversy in this area. Intelligence, as measured by the most commonly used intelligence tests, defines “intelligence” as it predicts performance in traditional academic settings that are primarily Western in nature. As such,

intelligence tests are thought to be valid when they successfully predict classroom grades, performance on achievement tests, and other academic markers. Although scholars continue to debate whether intelligence reflects a single, underlying factor (“*g*”) or is instead best conceptualized as incorporating multiple intelligences, most intelligence tests continue to assess intelligence as a single factor. We make these points because there remains considerable debate on what intelligence is, how it can be assessed, and how adequately it is assessed by contemporary measures.

Gender Similarities and Differences in Means

Most intelligence tests used today have been designed explicitly not to have gender differences in the general population, either by eliminating or balancing questions that exhibit gender bias. Thus, although there have been some reports of gender differences in intelligence (e.g., Irwing & Lynn, 2005; Lynn & Irwing, 2004, reported better performance by boys and men) particularly among samples that are not representative of the general population, gender differences are not typically reported and are not expected. Therefore, questions of gender differences typically shift from overall intelligence quotient (IQ) to performance on subtests, where gender differences do occur. Commonly used intelligence tests, such as the Wechsler Adult Intelligence Scale (WAIS), the Wechsler Intelligence Scale for Children (WISC), and the Stanford–Binet Intelligence Test, as well as other standardized tests used to assess intellectual aptitude (such as the SAT and GRE), are constructed with several underlying subtests, including verbal comprehension, quantitative processing, visual–spatial processing, perceptual organization, working memory, processing speed, verbal memory, visual memory, and general knowledge. As we noted earlier, gender differences in spatial ability are addressed elsewhere (see Chapter 16); in many tests of spatial ability, boys and men perform markedly better than girls and women. Gender similarities and differences in mathematical and verbal ability are discussed in more detail below. In general, girls and women perform slightly better on tests of verbal abilities, and boys and men perform slightly better on tests of quantitative abilities, as tapped by intelligence tests, but, as we will discuss, these gender differences vary substantially by test content, test-taker age, and a host of other factors.

In addition, an extensive cross-national literature suggests that girls and women have better memory for various types of information assessed in intelligence tests, including memory for visual, visual–spatial, verbal, associative, and episodic memory, on which effect sizes range from -0.20 to -0.56 (Halpern & LaMay, 2000). Girls and women also exhibit faster perceptual/processing speed on cognitive tasks, $d = -0.38$ to -0.42 in a representative U.S. sample (Camarata & Woodcock, 2006). In contrast, boys and men may exhibit better general knowledge, with reports of $d = 0.096$ – 0.207 for representative samples of the general population and 0.680 in a college sample (Ackerman, Bowen, Beier, & Kanfer, 2001; Camarata & Woodcock, 2006; Feingold, 1996). Halpern and LaMay (2000) cautioned, however, that because general knowledge subtests assess information to which test-takers have been exposed, and exposure varies greatly between groups, performance may vary dramatically by gender, ethnicity, and culture, and this variation may have little to do with “smartness.” The magnitude of this problem depends on how test-makers select knowledge that is worthy of an intelligence test, and whether that knowledge is more likely to reflect the experiences of one group over another.

Gender Similarities and Differences in Variance

Although gender differences in mean IQ scores tend to be small or non-significant, gender differences in variability indicate that boys and men are overrepresented at the tails of the distribution. In the largest study to examine gender differences in score variability, Deary and colleagues (Deary,

Thorpe, Wilson, Starr, & Whalley, 2003) analyzed data from the Scottish birth cohort of 1921, from which over 80,000 children, 95% of their cohort, completed an intelligence test in 1932. In this study, termed the Scottish Mental Survey 1932, children across Scotland completed a series of tests designed to measure intelligence. The tests chosen correlate highly with the Stanford–Binet scale of the time (the Stanford Revision of the Binet–Simon scale) and Raven’s Progressive Matrices. To provide further evidence of their validity, scores were also predictive of later academic outcome. Although girls and boys performed similarly on average (a notable finding itself given the large sample size), boys exhibited greater variability in their scores and were overrepresented markedly at the bottom and top of the distribution. Deary and colleagues noted, for instance, that at approximately two standard deviations above and below the mean scores, boys outnumbered girls at a ratio of 1.4 to 1; the further out one went in the distribution, the more divergent the genders became in score variability. Despite the age of the original study, completed some 75 years ago, the study’s results were groundbreaking in their illustration of gender differences in variability on intelligence tests.

More recent research also supports the contention that boys and men exhibit greater variability in IQ scores than do girls and women. In a longitudinal study of intelligence among British children born in the 1990s, boys exhibited greater score variance than girls did, beginning at age 3 (Arden & Plomin, 2006), and by age 10, boys were overrepresented in the top 10% of test-takers. Likewise, based upon data from several large-scale studies in the United States, Hedges and Nowell (1995) reported that boys had greater variability than girls did in their intelligence and aptitude scores on almost every measure examined, including tests of mathematical, verbal, spatial, scientific, and mechanical reasoning. Girls exhibited greater variability in only 2 of 37 tests; one measured perceptual speed, and the other measured associative memory. Analyses of normative data for the Differential Aptitude Tests (DAT), Preliminary Scholastic Aptitude Test (PSAT), Scholastic Aptitude Test (SAT), Wechsler Adult Intelligence Scale (WAIS), and California Achievement Tests (CAT) also showed gender differences in score variability (Feingold, 1992). Boys and men had more variable scores on overall performance and on measures of quantitative reasoning, spatial visualization, spelling, general knowledge, and mechanical reasoning, whereas girls and women had more variable scores on perceptual speed. There were fewer gender differences in variability for most measures of verbal ability and for short-term memory and abstract reasoning. Most of these effects were stable across several decades, but, in a few instances, gender differences in variability depended on age and on year of testing.

In summary, there are few gender differences in mean performance on intelligence tests due to the construction of these tests, though better performance by boys and men has occasionally been reported in non-representative samples. In contrast, there is strong evidence that boys and men exhibit more variable scores on intelligence tests overall and in many of the subtests that comprise these assessments. Despite a lack of difference in mean intelligence scores, gender similarities and differences vary by subtest. We now turn to the most commonly studied of these areas: quantitative and verbal ability.

Mathematical Ability

Gender Similarities and Differences in Means

The stereotype that men and boys excel at math relative to women and girls is one of the most prevalent gender stereotypes, and it was supported by Maccoby and Jacklin’s (1974) conclusion that the gender difference in quantitative ability was one of the few notable gender differences of the many they reviewed. However, the nature of gender differences and similarities is in reality much more

complex. For instance, there was early evidence that girls excelled at quantitative computation, whereas boys excelled at mathematical reasoning, the latter difference not evident until adolescence (Fennema, 1974; Halpern, 1986).

To address these questions better, Hyde, Fennema, and Lamon (1990) conducted a large meta-analysis on gender differences in mathematical ability, in which they synthesized findings from 100 studies that provided 259 effect sizes to reflect scores from almost 4 million individuals. They found that, in studies conducted in general populations (rather than in selective samples), d was -0.05 , which indicates that girls and women had slightly better mathematics performance, although the magnitude of this difference is trivial. Girls and women performed slightly better at computation ($d = -0.14$) and boys and men at problem solving ($d = 0.08$), whereas there was no gender difference in comprehension of mathematical concepts. With regard to content area, there were no gender differences in arithmetic or algebra, but boys and men performed somewhat better in geometry ($d = 0.13$) and calculus ($d = 0.20$), both small effect sizes. Similar to previous researchers (e.g., Halpern, 1986), Hyde and colleagues found that the direction and magnitude of gender differences changed across age but varied with the cognitive difficulty of the task, which indicated age by cognitive level interactions. For computation tasks, girls tended to perform better than boys in elementary ($d = -0.20$) and middle school ($d = -0.22$), but there was no gender difference in computation by high school ($d = 0.00$). Girls and boys performed similarly on tests of conceptual understanding throughout childhood and adolescence ($d = -0.02$ in elementary school, -0.06 in middle school, and 0.07 in high school). On problem solving tasks, performance was similar in elementary ($d = 0.00$) and middle school ($d = -0.02$), but boys and men performed somewhat better in problem solving in high school ($d = 0.29$) and college ($d = 0.32$). Therefore, the pattern of gender differences across ages depends on the cognitive level of the test. The gender difference in mathematics performance varied somewhat across racial/ethnic groups. Blacks and Hispanics exhibited essentially no gender difference, whereas girls and women performed slightly better than boys and men among Asian Americans ($d = -0.09$). In contrast, boys and men performed better than girls and women, on average, among Whites ($d = 0.13$). Thus, there was slight racial and ethnic variation in gender differences, but all differences were of only a small magnitude.

Finally, this meta-analysis indicated that the magnitude of gender differences was shrinking. In studies prior to 1974 (the year in which Maccoby and Jacklin's groundbreaking book was published), $d = 0.31$, whereas studies published after this date showed an effect size of 0.14 . More recently, Hyde and colleagues (2008) analyzed mathematics performance data drawn from now-mandated assessments in the United States and reported an effect size of 0.0065 , which indicates that there was essentially no gender difference in mean mathematics performance. Although test content may have changed somewhat over time, there is nonetheless strong evidence that the gender difference in mean mathematics performance has been lessening over time. Furthermore, international studies indicate that the magnitude of gender differences varies substantially by nation. Although cross-national data reveal a tendency toward small gender differences with higher mathematics scores by boys and men, the nations with the greatest gender equality now exhibit no gender differences or gender differences that indicate higher scores by girls and women (Guiso et al., 2008).

Gender Similarities and Differences in Variance

In summary, Hyde and colleagues (1990) found only small gender differences in average mathematics performance, when they found any differences at all. However, as we noted earlier, questions of mathematics ability have largely shifted from mean differences, those which appear to be small or nonexistent, to gender differences in variance (e.g., Feingold, 1992). Indeed, although Hyde et al.'s (1990) meta-analysis yielded an effect size of -0.05 for general populations, effect sizes for

moderate to highly selective ($d = 0.54$) and extremely selective ($d = 0.41$) samples were larger, which indicates larger gender differences at the upper end of the ability distribution. Likewise, in their analyses of six large-scale data sets, Hedges and Nowell (1995) found only small effect sizes for mathematical aptitude (range was from 0.03 to 0.26) but larger gender differences in variance, particularly at the tails of the distribution. There was considerable variation across studies in the ratio of boys to girls in the bottom 10% of the distribution (VR = 0.72–1.84); however, there were clearly more boys than girls in the top 10% (VR = 1.33 to 1.90) and top 5% (VR = 1.50 to 2.34). In perhaps the most commonly cited statistic on this topic, Benbow and Stanley (1983) reported that, among gifted middle school students, the ratio of boys to girls who scored above 700 on the Scholastic Aptitude Test-Math (SAT-M) was 13:1. Almost 8% of boys, but only 2% of girls, scored more than one standard deviation above the boys' mean score. More recent research indicates that a gender gap remains, but has shrunk considerably, to perhaps 3:1 or 4:1 (e.g., Brody & Mills, 2005). In their recent analysis of state assessment data from across the United States, Hyde and colleagues (2008) reported that all variance ratios for mathematics performance were greater than 1.0; most ranged between 1.03 and 1.30, which indicates greater variability among boys than among girls in mathematics performance. Also important, however, is that the variance ratio appears to vary by ethnicity. For instance, in analyses of selective high school students from one U.S. state, the authors noted that VR = 2.06 for White, but only 0.91 for Asian American, 11th graders who scored in the top one percent on their state assessment. That is, among Whites, more boys than girls scored at the top of the distribution, whereas among Asian Americans, more girls than boys scored in the top one percent. Similarly, the ratio of boys to girls varies substantially by country, and a few countries now show equal or greater numbers of girls at the top of the ability distribution (Guiso et al., 2008). These findings shed some doubts on the notion that boys and men always exhibit more variance in ability than do girls and women. Nonetheless, the tendency toward greater variability in boys is a commonly reported finding that merits the attention of researchers, particularly because it means that, although girls and boys do not seem to differ much *on average*, more boys than girls perform at the highest levels in mathematics. The reasons for this finding, and questions of how fixed this effect is, are hotly debated. Much of this debate is reviewed below.

Aptitude Versus Grades

Above we described gender similarities and differences on standardized tests. However, another important question concerns classroom performance. Research consistently indicates that girls receive better grades than boys, on average, at both the secondary and college levels, even in demanding mathematics courses, in which girls and boys are now enrolled at similar levels (Bridgeman & Lewis, 1996; Gallagher & Kaufman, 2005; Kimball, 1989; Xie & Shauman, 2003). Spelke (2005; Spelke & Grace, 2007) argued that performance in the classroom is at least as important as performance on standardized tests because grades reflect students' ability to learn and to apply challenging new material. Furthermore, Spelke criticized an over-reliance on gender differences on the SAT-M to inform the debate about gender differences in abilities, given that the SAT underestimates girls' performance in college (Mau & Lynn, 2001), and presumably their abilities, which indicates a discrepancy between performance on a single standardized test and long-term performance in the classroom, where Spelke argued performance matters more. Of course, numerous arguments could be made regarding why girls and women might receive better grades than boys and men, but their tendency to earn higher grades across all grade levels indicates that girls and women are succeeding in the classroom, even when that classroom offers lessons in advanced mathematics and science.

In summary, meta-analyses and analyses of large-scale data sets indicate that gender differences in mean mathematics performance are of small magnitude and have been shrinking over time. These

effects are similar across ethnicity but vary somewhat depending on the content and complexity of the material, the age at which testing occurs, and the degree to which test material examines information explicitly taught or instead relies on application of knowledge to novel problems. Despite the small average differences, there is evidence that boys and men exhibit greater variability than girls and women do on tests of mathematical performance, which may result in more boys than girls with scores at upper and lower extremes of ability distributions. Explanations for this difference are discussed in a later section of this chapter.

Verbal Ability

Gender Similarities and Differences in Means

The question of gender similarities and differences in verbal ability has captured less attention; however, empirical evidence suggests that girls and boys are increasingly demonstrating similar average ability, as well as similar variability in ability. In their meta-analysis of research on gender differences in verbal ability, Hyde and Linn (1988) reported an overall effect size of -0.11 , which suggests that the girls and women perform slightly better on tests of verbal ability. Girls, on average, tended to perform similar to or better than boys on vocabulary ($d = -0.02$), reading comprehension ($d = -0.03$), speech production ($d = -0.33$), essay writing ($d = -0.09$), anagrams ($d = -0.22$), and general verbal ability ($d = -0.20$), whereas boys performed better than girls on analogies ($d = 0.16$). There was evidence of some shrinkage in the gender difference in verbal ability: The effect size was -0.23 for studies published prior to 1974 and -0.10 for studies published in 1974 or later. Unlike mathematical performance, there was no evidence of systematic change across age in the direction or magnitude of the gender difference. Hedges and Nowell (1995) reported similarly small effects in their analyses of large-scale data sets. Effect sizes were of small to trivial magnitude for reading comprehension ($d = -0.05, -0.09, -0.15, -0.18, 0.002$ across five studies) and vocabulary ($d = -0.03, -0.06, 0.07, 0.25$ across four studies), and girls performed slightly better in two-thirds of these studies. International data have also shown that girls and women tend to exhibit better verbal performance than boys and men across nations (Guiso et al., 2008). Thus, gender differences in verbal ability appear to be small and consistent across ages. In general, girls and women perform slightly better than boys and men, particularly in verbal fluency.

Gender Similarities and Differences in Variance

In contrast to studies of quantitative ability, there appear to be only small, if any, differences in variability for verbal ability among girls and women compared to boys and men (Feingold, 1992). Hyde and Linn (1988) reported that effect sizes were of only small magnitude for both general and selective samples, which indicates that the gender difference in verbal ability was not markedly more pronounced at some points of the ability distribution than at others. Similarly, Hedges and Nowell (1995) reported smaller variance ratios for verbal ability (reading comprehension and vocabulary) and that boys tended to be overrepresented in the bottom 10% of the ability distribution, particularly for reading comprehension, whereas girls were overrepresented in the upper 10% of the distribution. For most studies, the gender ratio was similar for the top 5% of verbal ability. Thus, the “male variability” debate that now occupies the attention of many researchers of gender and cognition seems to be more specific to quantitative than to verbal abilities.

Summary of Gender Similarities and Differences in Academic Ability

In summary, evidence indicates that the patterns of gender differences in academic ability are considerably more complex than the common stereotypes that boys and men excel in mathematics and girls and women in verbal abilities. Most gender differences in these abilities are of only small magnitude, and these gaps are closing over time. Furthermore, the pattern of ability varies within each domain. For instance, girls excel at mathematical computations relative to boys, whereas boys excel at verbal analogies relative to girls. There is evidence that gender differences in mathematics ability become larger in magnitude with age and among the most selective samples, which draws attention to gender differences in variation, rather than averages, in performance. In contrast, verbal abilities do not show systematic changes across age or sample selectivity. Numerous explanations have been advanced to explain these patterns of gender similarities and differences in academic ability, which we now review.

Explanations for Gender Similarities and Differences in Academic Ability

Before we consider explanations for gender differences in academic ability, it is important to note the many ways in which women and men are similar. There is a tendency for both academic publications and the mass media to provide more coverage of studies that show gender differences, particularly when the results conform to culturally held gender stereotypes. However, women and men tend to be more alike than different, as highlighted in Hyde's gender similarities hypothesis. In her review of 124 effect sizes generated by major meta-analyses of gender differences in cognitive, communicative, social/personality, psychological well-being, motor, and other domains, Hyde (2005) found that 78% of the effect sizes were of only small magnitude ($d < 0.35$); larger effects were found for just a few domains, such as motor performance, some areas of sexuality, and aggression. In contrast, gender differences in cognitive domains, as discussed above, were consistently of small magnitude and appeared to be shrinking over time. These findings are important in illustrating how stereotypical notions of gender and ability are incorrect or greatly exaggerated. These stereotypes may result in failure to identify high – or low – ability in individuals, and thus cause educators to miss the opportunity to foster the academic talents of some and to intervene in the academic struggles of others.

Another important point is that there is a distinction between ability (aptitude) and performance, even beyond the possibility that some tests are biased toward one gender or the other. Girls' performance on standardized tests such as the SAT often underestimates their performance in the classroom (Mau & Lynn, 2001; Spelke & Grace, 2007). Furthermore, various psychological processes, such as stereotype threat, have been shown to affect women's performance. For instance, when college test-takers are asked to note their gender *before* a mathematics test, women perform worse than men, but when this request is not made until *after* an examination, women and men perform equally well, possibly because women experience cognitive interference when their gender is made salient before an exam, presumably because it activates gender stereotypes regarding gender and mathematics (Spencer, Steele, & Quinn, 1999). Parents' and teachers' perceptions of children's ability, including a tendency to overestimate boys' and underestimate girls' mathematics ability, is also known to affect children's own perceptions of their ability, which in turn affects their performance (e.g., Frome & Eccles, 1998; Jacobs & Eccles, 1985; Rosenthal & Jacobson, 1968; Tiedemann, 2000). Thus, it is important to recognize that cultural stereotypes may enhance or impede performance on tests.

Given those caveats, there are some differences in ability, particularly boys' slightly lower verbal ability, as well as their greater variability in mathematical performance. Numerous explanations have been offered for these differences. First, parents and teachers can exert a large impact not only on

children's perceptions of their abilities, but also on the degree to which those abilities are fostered. Accounts of teachers interacting differently with their male and female students are well-known (e.g., Becker, 1981; see also Chapter 14) and may contribute to the degree to which male and female students develop particular abilities. Parents also interact differently with their sons and daughters, for instance, by engaging in more and higher quality discussions of science with boys than with girls (Crowley, Callanan, Tenenbaum, & Allen, 2001; Tenenbaum, Snow, Roach, & Kurland, 2005). The gender differences in these experiences not only convey messages about for whom a particular domain is most appropriate or most relevant, but also enhance or restrict opportunities for intellectual development.

Another important contributor to gender differences in abilities may be the different play experiences of girls and boys. Some researchers have argued that girls' closer friendships encourage the development of verbal skills, whereas boys' greater participation in sports and use of video games encourage the development of mathematical and spatial skills (e.g., Feng, Spence, & Pratt, 2007). Boys are also more likely to roam their neighborhoods, perhaps because parents are more likely to allow sons than daughters to do so, which may also enhance the development of spatial skills (Matthews, 1986). Thus, gender differences in play activities may influence the development of particular cognitive skills that lead to slight differences in abilities later in life.

Apart from these environmental explanations, there have been several biological explanations for the existence of gender differences in abilities. The notion that men are right-brained and women are left-brained, though still prevalent in the culture, has been discounted by science, as have contentions that spatial abilities are X-linked (Hines, 2007). Contemporary biological arguments, based largely on research with girls with congenital adrenal hyperplasia (CAH), suggest that gonadal hormones may exert organizational effects on the development of the brain or activational influences on cognitive processes at a given point in time, and thus create gender differences in cognitive abilities and processes (Hines, 2007). If gonadal hormones do influence cognitive processing, this could explain how gender differences in cognitive abilities could be biologically based yet not appear until adolescence. The research on hormones and cognition is markedly inconsistent, however, and suggests that perhaps hormones exert less influence than previously believed or that they exert their influence in a more complex manner than studied to date. There appear to be some minor gender differences in brain organization and neural processing of complex cognitive tasks (Dubb, Gur, Avants, & Gee, 2003; Gur et al., 1999); however, the extent to which these differences may influence actual ability is not yet understood.

Finally, cultural influences no doubt play some role in the development of academic abilities and academic performance. For instance, the nature of gender differences in mathematical ability varies across countries, and the level of performance is determined much more strongly by one's country than one's gender, which illustrates that academic abilities can be fostered and are thus markedly (though of course not entirely) malleable (Stevenson, Chen, & Lee, 1993; National Center for Education Statistics [NCES], 2003). These national differences may reflect, in part, cultural views about the nature of performance (Dweck, 1986; Stevenson et al., 1993). Those cultures or individuals who believe that academic success is attributable to effort tend to have higher mathematics scores than do cultures or individuals who believe that success results from innate and largely immutable ability. Cultural roles may also be important. For instance, women's participation in the workforce and other indices of gender equality in a nation predict the magnitude of gender differences in mathematics and verbal performance among that nation's students (Baker & Jones, 1993; Guiso et al., 2008). Those countries with high gender equality, as measured by the World Economic Forum's Gender Gap Index (GGI), show little if any gender differences in mathematics performance; in one of those countries (Iceland), the trend has reversed, such that girls have higher performance than boys. The GGI predicts not only mean performance but also variability. As a nation's gender

equality increases, the ratio of top-scoring boys to girls becomes smaller; in a few countries, there are now more girls than boys with scores in the top five percent or one percent (Guiso et al., 2008). A similar pattern exists for verbal ability, such that girls outperform boys across nations but even more so in the most equitable nations (Guiso et al., 2008). Thus, nations that are more gender equitable exhibit higher performance by girls relative to boys, thus the gender gap in mathematics has closed and girls' already better verbal performance has increased. Although the reasons for gender differences in academic abilities are complex, there is strong evidence that societal and cultural factors influence academic performance.

One final point with regard to gender and academic ability, alluded to above, is the degree to which gender differences are immutable, for whether gender differences are environmentally or biologically influenced is a separate question from whether these differences can be modified. Of course, the very existence of educational systems implies that we have some confidence in the belief that cognitive performance can be fostered. There is also evidence that the very specific academic ability differences between girls and women and boys and men can be addressed. For instance, spatial abilities such as mental rotation can be easily taught with interventions such as video games (Baenninger & Newcombe, 1989; Vasta, Knott, & Gaze, 1996). There is some debate about whether spatial training advantages women and men equally (i.e., increases the skills of both but maintains a gender difference) or indeed closes the gender gap; however, it may be sufficient to get both women and men to an adequate level of spatial ability, regardless of a remaining gender gap (Newcombe, 2007).

In conclusion, evidence suggests that most gender differences in academic abilities are of small magnitude and are shrinking over time. Many of these differences can be addressed through training. Women and men have access to more equitable educational and career opportunities than ever before, and the genders demonstrate similar abilities on average, yet there remain gender differences in some academic programs of study and careers. These remaining differences in academic choices may be due to a host of individual and social factors, which are described in the next section.

Gender and Academic Preferences

Historically, there have been rigid societal rules regarding appropriate coursework and adult occupations for women and men. As abilities and opportunities converge, there has been a movement toward equality in many domains, both with regard to coursework and careers. As noted above, girls are now enrolling in demanding high school mathematics classes at the same rates as boys and are typically receiving better grades in these courses (Gallagher & Kaufman, 2005; Xie & Shauman, 2003). The National Science Foundation (NSF; 2008) reported that in the United States, high school girls are now more likely to enroll in biology and chemistry, whereas boys are more likely to enroll in physics and engineering-related courses. By 2000, women were earning almost as many bachelor's degrees in science than men were, including 54% of social science degrees, 52% of biological science degrees, 45% of mathematics and statistics degrees, 43% of physical science degrees, and 42% of earth science degrees (NSF, 2007). Only in computer science (22% women) and engineering (20% women) do women continue to be markedly underrepresented at the bachelor's degree level. Women earn 61.1% of non-science bachelor's degrees, though men are now almost twice as likely to earn a non-science degree as a science degree, compared with 1966, when their science and non-science degree rates were similar (NSF, 2007). At higher levels of education, women now earn almost 38% of doctoral degrees awarded in the sciences. Overall, women are seeking higher education at greater rates than men are, with 62% of associate's degrees, 58% of bachelor's degrees,

and 60% of master's degrees awarded to women, and among people of color, women earn degrees at even higher rates than do men (NCES, 2007). Clearly, the genders are becoming more similar in coursework and number and types of degrees earned.

Despite these converging numbers, there is variation in the genders' participation in specific academic domains. For instance, women now earn 50% of medical degrees and 49% of doctoral degrees in the biological sciences, but only 27% of doctoral degrees in mathematics and 18% in engineering (Halpern, 2007; NSF, 2007). Men are more likely than women to earn degrees in the physical sciences and engineering but less likely to earn degrees in the social sciences. Indeed, there seem to be fields in which the representation of women and men is similar and fields in which marked gender differences remain. The reason for these patterns has been attributed to a variety of causes, including gender differences in preferences for people versus objects, gender differences in actual or perceived abilities, and external factors, such as pressures from parents and peers toward gender conformity and the prevalence of gender stereotypes and schemas and gender discrimination. Many of these explanations are discussed below. As with academic abilities, however, there is considerable similarity in the extent to which men and women seek advanced degrees and in the fields that interest them, and some of the remaining gaps are narrowing. Further, there is a close, and probably reciprocal, relation between abilities and preferences. Individuals tend to engage in activities at which they excel, and their further engagement enhances their ability. Likewise, if individuals are encouraged to engage in activities because of external pressures, they may develop abilities in these areas. Although in this chapter we divide abilities and preferences into separate sections, in reality they are closely linked.

Explanations for Gender Similarities and Differences in Academic Preferences

Perhaps the most compelling, though debated, argument for differential gender representation in some academic fields is simply that girls and women tend to enjoy working with people more than with objects, whereas boys and men have a particular interest in objects and mechanical relations. This proposed preference might also explain gender differences in abilities, as men and women develop different cognitive abilities based on their preferred activities. According to Baron-Cohen (2003, 2007), women have an innate predisposition toward people and emotions, which leads them to function as "empathizers," whereas men have an innate predisposition toward objects, which leads them to be "systemizers," an alleged difference of such magnitude that Baron-Cohen argued that the genders have different types of brains. As support for his position, one study showed that newborn girls looked longer at a face and less at a mobile than did newborn boys (Connellan, Baron-Cohen, Wheelwright, Ba'tki, & Ahluwalia, 2000). However, Spelke (2005) reviewed an extensive body of evidence that both girls and boys prefer faces over objects and criticized the Connellan study for a number of methodological flaws.

Lippa (1998, 2005) has advanced arguments similar to those of Baron-Cohen. He has cited evidence that the genders, on average, show unique career clusters, due in part to men's greater interest in objects and lesser interest in people, as measured on Prediger's People-Things dimension. Notably, the effect size of this preference is much larger than the effect size of academic performance; it ranges from about 1.19 to 1.35 (our calculations are based on the formula provided by Cohen, 1988, and the correlation coefficients provided by Lippa, 1998). According to Lippa and other researchers, such a gender difference in preferences for people or objects, or organic versus inorganic content as the dimension is sometimes labeled, may explain why women have pursued degrees and careers in medicine, veterinary medicine, biology, law, and social sciences at increasing rates but have not

shown a similar growing interest in engineering and physical sciences. Of course, there is also wide misinformation about the nature of science and other fields of study, including the ability of science and engineering to “help people.” Even if girls are inclined toward people and “helping” careers and boys toward “mechanical” careers, they may limit their academic options if they do not understand the full range of options available to them. However, even among those with extremely high mathematical ability, men exhibit more interest in mathematics than do women, and, although girls get similar or better grades in mathematics, they report lower enjoyment of math than boys do (Catsambis, 1994; NCES, 2004). This is not to say that girls who are gifted in math are not successful. Indeed, among participants in the Study of Mathematically Precocious Youth (SMPY), girls were less likely than boys to pursue careers in the sciences, particularly engineering and physical science, yet male and female participants reported similar levels of education and career successes (though in different fields) and comparable life satisfaction (Webb, Lubinski, & Benbow, 2002). Furthermore, individuals may be more likely to pursue academic paths in which they have greater *relative* ability. Because girls with high mathematical ability tend to have higher verbal ability than boys do, they may be more likely to pursue coursework and careers outside of science (Lubinski & Benbow, 2007). Nonetheless, more research is needed to determine the extent to which these gender differences represent actual choice on behalf of individuals. Given the numerous pressures that girls and boys still face to conform to culturally sanctioned gender roles, discussed below, as well as unequal experiences with regard to family responsibilities, it may be difficult at this time to state with certainty that gender differences in academic or career choices reflect only individual “preferences.”

In this vein, Eccles (1983) has proposed a much more extensive model to explain gender differences in course selection, degree-seeking, and career choice that integrates research on the ways in which individuals, their parents, teachers, peers, and the broader culture together influence academic choices and outcomes. In her expectancy-value model of achievement, Eccles proposed that an individual’s academic decisions are influenced by both expectations (probability) of success, as well as one’s value of the task in question. One’s expectancy of success is determined by multiple factors, including one’s self-concept of ability, perception of the difficulty of a task, attributions of causation for success, and locus of control. In addition, the perceptions and behaviors of others may influence expectancy of success. The influence of others may take the form of stereotypical attitudes held by parents and teachers (such as expectations that girls excel at verbal tasks and boys excel at mathematical tasks) or more explicit gender discrimination intended to maintain traditional gender role boundaries. In turn, task value is comprised of three characteristics: attainment value (how important is it to do well on the task), intrinsic/interest value (the degree to which a task is of interest to oneself and for oneself), and utility value (the importance of the task in reaching future goals). Eccles argued that gender stereotypes may influence, among other things, perceptions of ability and attainment value of a task. For instance, if stereotypes hold that girls are not good at math and should not do math, then an individual girl may have low expectations for success and her parents and teachers may also hold this perception, she will attribute success to luck rather than to ability, and she will not value the task relative to other tasks in which she might engage. Gender differences in academic preferences may play some role in this model (e.g., by influencing intrinsic/interest value in a task), but Eccles’ model succeeds in illustrating the many other factors, both internal and external, that are likely to play a role in what might be termed academic preferences. It is clear from her model, and its supporting empirical research, that the decisions of men and women to pursue some academic domains and not others are influenced by myriad forces, some of which have changed more in recent years than others and some of which continue to exert a considerable impact today on academic preferences and, possibly, abilities.

Implications of Gender Similarities and Differences in Academic Abilities and Preferences

The extant research indicates few gender differences in academic abilities; most of these are of small magnitude. These findings suggest that perhaps we should move on from the determined search for gender differences and instead turn our attention to more profitable areas of research. Gender similarities also suggest that male and female students should be treated similarly with regard to their academic potential.

There are, nonetheless, some domains in which gender differences remain, particularly with regard to three-dimensional visual–spatial abilities and academic preferences, and these differences may have important implications for individual and societal well-being. First, any differences in abilities or preferences, particularly at earlier points in education, restrict the educational and career opportunities for individuals later in their lives. When these restrictions involve training in mathematics or science, people’s lifetime earning potential is also affected (Paglin & Rufolo, 1990). More generally, there are societal costs of not having the most able workers in positions that require their abilities. In particular, the United States is facing workforce shortages in occupations that require advanced training in mathematics and science, which makes it more essential than ever that more citizens, particularly women and ethnic minorities, have training and opportunities in these fields. As the results reviewed here show, the issue is not so much one of gender differences in abilities, but rather one of gender differences in preferences and opportunities.

Directions for Future Research

We conclude this chapter by proposing some fruitful areas for research in the study of gender and academic abilities and preferences.

Effect Size Versus Practical Significance

Previously, many researchers who studied gender similarities and differences were concerned with significance tests. Attention has now shifted to effect sizes, which move beyond the question of whether gender differences exist to ascertain the magnitude of those gender differences. This trend has been particularly evident in meta-analysis and analysis of large-scale databases. An important next step is to ask what the implications are for gender differences of a given magnitude. For instance, if an effect size equals 0.20 for a given ability, we must now ask what implications that gender difference has for academic success, occupational opportunities, potential earnings, and so on. This knowledge will help educators and policymakers identify the areas for which intervention will be most fruitful and to recognize the many areas in which gender differences are no longer evident.

Moving Beyond Girls and Mathematical Ability

The gender difference in mathematical ability is probably the most studied topic in cognitive gender difference research. This subject undoubtedly has important implications for the academic and career opportunities for girls and women. Nonetheless, there are other valuable avenues of research that are not being explored fully. First, greater variability in the scores of boys and men not only indicates

that many boys and men perform at high ability levels in mathematics; this also means that many boys and men have particularly poor abilities in mathematics and other domains. The reasons for and the consequences of the overrepresentation of boys and men at the bottom of ability distributions are not understood. Second, little attention has been paid to the poorer mean performance of boys and men on some tasks, including many verbal tasks. Indeed, in contemporary research there are many groups whose academic struggles are overlooked, as well as many groups whose academic potential goes unrecognized. These groups would benefit from an approach to research that considered the diversity of abilities among girls and boys.

Availability of Intervention

As we reviewed earlier, intervention studies have shown that spatial abilities can be taught explicitly to enhance girls' visual-spatial performance and, therefore, their ability to succeed in fields, such as engineering and science, that require such abilities. There remain several avenues for research, however. In particular, it will be beneficial to identify additional ways to train students in visual-spatial skills, to determine the degree to which intervention can close the gender gap in visual-spatial abilities, or at least raise students to a higher ability level, and to assess how well training in visual-spatial skills increases success in fields that depend on these skills. Furthermore, little research has tested targeted interventions designed to close specific ability gaps, such as boys' relatively poorer verbal fluency, although the development of such interventions are important. Regardless of the reasons for gender differences in specific cognitive abilities, whether biological, social, or cultural, it is likely that interventions can be developed to help most students achieve competencies in basic academic domains. These interventions will be most beneficial for subject areas in which large gender differences still remain, particularly in spatial ability.

Another promising point of intervention concerns academic preferences. Interventions designed to expose girls and boys to a wider variety of educational and career opportunities will give them more information to make academic choices that align with their abilities and their preferences and will help them to develop new interests and preferences.

Gender Differences in Academic Preferences

Several scholars have attributed gendered academic and occupational segregation to gender differences in academic preferences and noted that girls and women favor working with people, whereas boys and men favor working with objects (e.g., Lippa, 1998, 2005). Despite decreases in gender segregation in many fields, however, girls and boys continue to face strong pressures to conform to culturally sanctioned gender roles, and women continue to perform the majority of household and childcare tasks; both of these factors restrict academic and occupational choice. One fruitful area for future research, therefore, is to study academic preference patterns and take into account the pressures and life situations that influence people's decisions. This research would enhance our understanding of preferences held by girls and women compared with boys and men, as well as elucidate how academic preferences are exhibited in light of one's cultural context. On a related note, if gender differences in academic preferences are robust, it will be important to identify the sources of those differences. To date, there has been speculation on evolutionary roots, but this evidence is weak and incomplete, and sociocultural factors must also be taken into account. Research in the area of academic preferences offers numerous opportunities for interdisciplinary approaches, as social,

cross-cultural, neurological, biological, educational, and family systems approaches are all likely to shed light on the ways in which people express academic preferences given their experiences and their environments.

Extend Gender Differences Research Cross-Nationally

Another important area for future research is to extend gender difference research cross-nationally. Several scholars have reported that gender differences in ability and preference vary substantially across countries, but can often be explained by the level of gender inequality in a given nation (e.g., Eagly & Wood, 1999; Guiso et al., 2008). A cross-national approach allows researchers to consider how gender differences in mean ability and in variance of ability might be related to the educational and career opportunities available to women and men in different countries. Furthermore, because gender differences are so often explained well by gender inequalities, this approach poses a significant challenge to arguments that women and men differ in innate and immutable ways. That is not to say that biology does not influence ability – it probably does – but cross-national research can also illustrate how academic ability and preferences are influenced by the gendered experiences one encounters in a given country.

Constellations of Abilities

Scholars often attribute the underrepresentation of women at the highest levels of math and science to shortcomings in one or two abilities, such as weaker performance in advanced mathematics tests and difficulties with spatial rotation. However, the great amount of attention paid to individual fields of knowledge ignores the reality that strong performance in any field relies on a constellation of abilities rather than on a single skill. Indeed, varied constellations of abilities are generally important, in that they diversify approaches to pressing problems, both within and outside of academia (Handelsman et al., 2005). In domains such as science, success comes not merely from being able to rotate a three-dimensional object in one's mind, but rather from the combination of strong abilities in logical thinking and mathematical reasoning, facility of written and oral communication skills, good reading comprehension, and so on. Thus, a promising direction for future research would be to consider the interaction of various types of ability. We will better understand the nature of academic performance, and gender differences in performance, when we can better address the ways in which multiple abilities function together.

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Chapter 16

Gender, Spatial Abilities, and Wayfinding

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Gender, Spatial Abilities, and Wayfinding

Spatial abilities refer to the cognitive processes involved in locating targets in space, perceiving distance and directional relationships, and mentally transforming objects with respect to their position or orientation in space. These abilities are used in everyday activities (e.g., finding one's way home after driving an unfamiliar route) and in occupations that require design and planning in two- and three-dimensional space (e.g., engineering, architecture). Spatial abilities are of interest to gender researchers because they show the clearest evidence of gender differences in cognition; in fact, few other types of cognition show anything more than minimal gender differences (Hyde, 2005). Gender differences are larger for some spatial abilities than for others, but, with one exception, men perform better on average than do women. Before examining these differences in detail, it is important to establish why we should care about the relationship between gender and spatial abilities.

Beginning with early reports of gender differences in spatial abilities, researchers have suggested that these differences might contribute to the low proportions of women in mathematics-based fields that draw on spatial skills, such as physics, engineering, and architecture (e.g., Fennema, 1975; Maccoby & Jacklin, 1974; Sherman, 1967). Spatial ability predicts the likelihood that students will remain in engineering programs (Kinsey, Towle, O'Brien, & Bauer, 2008) and accounts in part for performance differences between the genders in certain areas of mathematics (Casey, Nuttall, Pezaris, & Benbow, 1995; Casey, Nuttall, & Pezaris, 1997, 2001; Casey, Winner, Brabeck, & Sullivan, 1990; Geary, Saults, Liu, & Hoard, 2000). Among boys and girls identified as gifted in early adolescence, high spatial ability predicts liking for math and science classes in high school and likelihood of pursuing occupations in the physical sciences, mathematics, and engineering (Shea, Lubinski, & Benbow, 2001). Many researchers are concerned that such findings may be used to justify the under-representation of women in mathematics and engineering careers (a viewpoint expressed by Harvard University President Lawrence Summers in a much-publicized speech in January, 2005), and they argue that the debate would be better served by focusing on the social disparities that discourage women from entering these fields (e.g., Hines, 2007; Newcombe, 2007). However, research on gender and spatial cognition can be used to inform methods of improving spatial abilities and perhaps also to increase interest in pursuing careers that rely on those abilities. Other practical applications include improving wayfinding skills and reducing anxiety about performing navigational tasks.

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Some researchers have questioned the importance of studying gender differences in spatial abilities on the grounds that these abilities do not represent a unitary construct, gender differences on some spatial tasks are small, and differences are decreasing over time (Becker & Hedges, 1984; Caplan, MacPherson, & Tobin, 1985; Feingold, 1988, 1993; Rosenthal & Rubin, 1982; Stumpf & Klieme, 1989). However, even a small difference in the upper tail of spatial ability can meaningfully impact the gender ratio in careers that draw from that upper tail (Halpern, 2000; Halpern & Wright, 1996; Hyde, 1981), and the size of the gender effect is shrinking only for some spatial abilities. Mental rotation, the ability for which the largest gender difference is found, shows little evidence of decreasing over time (Masters & Sanders, 1993), and, in fact, it may be increasing (Voyer, Voyer, & Bryden, 1995). Whether the gender gap in spatial abilities can be eliminated entirely remains a central theme that drives much of the research in this area.

This chapter focuses on four issues in current research on gender differences in spatial abilities and wayfinding. The first issue involves identification of cognitive strategies that may account for gender differences in spatial performance and the reasons that certain strategies are likely to lead to performance advantages. The second and third issues involve biological and sociocultural influences on gender differences in spatial abilities, including hormones, brain organization, gender stereotypes, and differences in spatial experience. The final issue is the effectiveness of training in reducing or eliminating gender differences in spatial performance.

The chapter begins with descriptions of three spatial abilities (mental rotation, spatial perception, and spatial visualization) that have been identified in the classic meta-analyses on gender differences in spatial abilities (Linn & Petersen, 1985; Voyer et al., 1995) and two spatial abilities (memory for object locations and dynamic spatial ability) that reliably show gender differences but were not studied extensively until after the publication of those meta-analyses. Next, I examine evidence from each of these tasks as it bears on the four research issues of cognitive strategies, biological factors, socio-environmental factors, and training effects. Wayfinding is discussed separately as a real-world application of spatial abilities with relevance to each of the four research issues. This chapter ends with conclusions regarding each of the four major issues and directions for future research.

Types of Spatial Abilities

Mental Rotation

Mental rotation is the ability to judge how an object would look if turned in two- or three-dimensional space. The most common test is the Vandenberg and Kruse (1978) modification of the Shepard and Metzler (1971) Mental Rotation Test, in which participants are asked to choose two of four drawings that represent different orientations of a three-dimensional arrangement of blocks shown in a sample drawing. Another frequently used measure is the Primary Mental Abilities Test, which requires participants to rotate two-dimensional characters that resemble letters of an unfamiliar alphabet (Thurstone, 1958). Effect sizes for gender range from 0.48 to 0.90, with higher scores for men and boys (Linn & Petersen, 1985; Masters & Sanders, 1993; Silverman, Choi, & Peters, 2007; Voyer et al., 1995), and are consistent across cultures (Silverman et al., 2007). Higher scores for boys on a simple spatial transformation task with a rotation component are found by age 5 (Ehrlich, Levine, & Goldin-Meadow, 2006; Levine, Huttenlocher, Taylor, & Langrock, 1999), and boys are more likely than girls to distinguish a rotated familiar stimulus from its mirror image as early as ages 3–5 months (Moore & Johnson, 2008; Quinn & Liben, 2008). Effect sizes on mental rotation tasks tend to remain constant across age groups (Linn & Petersen, 1985) or to increase with age (Voyer et al., 1995).

A number of task variables have been investigated for their effects on gender differences in mental rotation. Time limits may contribute to women's lower scores because men tend to work faster than women at mental rotations (Goldstein, Haldane, & Mitchell, 1990). However, a gender difference remains, although smaller in size, even when time limits are removed and scores are based only on items attempted (Masters, 1998; Stumpf, 1993). Complexity of test items appears to be an important factor; large effect sizes are found for items that are three-dimensional as opposed to two-dimensional (Linn & Petersen, 1985; Voyer et al., 1995), contain occluded parts (Voyer & Hou, 2006), are complex in shape (Heil & Jansen-Osmann, 2008), or require a large angle of rotation (Collins & Kimura, 1997; Kail, Carter, & Pellegrino, 1979). It is interesting that gender differences are found when rotations are performed on items that are presented haptically (Robert & Chevrier, 2003), but are not found when items are presented as fully visible rotating holograms (Parsons et al., 2004). It is clear that the necessity of representing rotating items mentally underlies the gender effect and that the difficulty of rotations is positively associated with the size of the effect.

Spatial Perception

Spatial perception is the ability to determine verticality or horizontality in the presence of distracting angles of orientation. One measure of this ability is the rod-and-frame test (Witkin & Asch, 1948), in which participants are asked to adjust a rod within a tilted rectangular frame until the rod appears to be vertical. Another measure is the water-level task based on a test by Piaget and Inhelder (1956) that was designed to test children's concepts of Euclidean coordinate space. In this task, participants are asked to indicate how a line of water would appear inside a tilted bottle that is half full; answers are correct if they show the water line as horizontal regardless of the orientation of the bottle. A variant of this task tests the ability to represent plumb lines as vertical by asking participants to indicate how a light bulb would appear if hanging from a string inside a van parked on a hill (Liben, 1978). An average effect size of 0.44 is obtained on spatial perception tasks; again men and boys score higher than women and girls (Linn & Petersen, 1985; Voyer et al., 1995). Although significantly better performance on the water-level task has been found for boys as young as age 9 (Silverman & Choi, 2006; Vederhus & Krekling, 1996), effect sizes are not generally reliable until adolescence (Voyer et al., 1995) or adulthood (Linn & Petersen, 1985). The effect size for the water-level task, but not for the rod-and-frame test, has decreased over time (Voyer et al., 1995).

A primary focus of research on spatial perception is whether gender differences in task performance may be accounted for by differences in knowledge that surfaces of liquids are always horizontal and plumb lines are always vertical (the invariance principle). It is indeed the case that men are more likely than women to express knowledge of this principle (Liben & Golbeck, 1984; Vasta, Lightfoot, & Cox, 1993; Wittig & Allen, 1984), and knowledge of the principle tends to be positively correlated with performance on the water-level and plumb-line tasks (Liben & Golbeck, 1984; Wittig & Allen, 1984), although more so in men than in women (Vasta et al., 1993). In women, less accurate water-level performance is associated with a tendency to picture the water as being in motion rather than at rest (Robert & Morin, 1993; Robert & Tremblay, 1992). Yet a gender difference in spatial perception persists among undergraduates in physics, engineering, architecture, and computer science majors, who have received formal training in physical principles (Robert & Harel, 1996), and among individuals in occupations that provide considerable experience with liquids in containers (i.e., servers and bartenders; Vasta, Rosenberg, Knott, & Gaze, 1997). Presentation of the invariance rule sometimes removes the gender gap on the water-level task (Liben & Golbeck, 1984) but usually does not (Parameswaran, 1995; Parameswaran & De Lisi, 1996). Even when all

contextual cues related to physical phenomena are removed, as when participants are asked simply to draw horizontal or vertical lines in tilted rectangles (Liben & Golbeck, 1980; Vasta et al., 1993), a gender difference is still found. An interesting finding is that knowledge of the invariance principle is associated with performance on the non-contextual rectangle task (Vasta et al., 1993). It is difficult to see why knowledge that water is always horizontal would contribute to ability to determine horizontality in a context devoid of real-world meaning; it is more plausible that ability to detect horizontality facilitates realization that water is invariably horizontal. This account may explain why men are more likely than women to express knowledge of the invariance principle.

Given that knowledge of physical principles cannot entirely account for the gender difference on spatial perception tasks, we must consider the idea that women and men differ in susceptibility to the distracting visual cues provided by the tilted frames on these tasks. This idea is supported by the finding that the gender effect disappears when the water-level task is presented in a haptic version in which sight may not be used (participants must adjust a horizontal rod representing a water line within a container perceived by touch only; Berthiaume, Robert, St-Onge, & Pelletier, 1993; Robert, Pelletier, St-Onge, & Berthiaume, 1994), especially when proprioceptive cues are emphasized (participants perform the haptic task in an unstable posture or without full support for their arms; Robert & Longpré, 2005). The relative intractability of the gender gap in spatial perception to repeated observations of tilted bottles half filled with water (Liben, 1978; Thomas, Jamison, & Hummel, 1973) suggests a visual illusion that is difficult to overcome with repeated observations or knowledge of the invariance principle.

Another task that is considered to be a measure of spatial perception, but has only recently been used to study gender differences, is the line-angle judgment task (Cherney & Collaer, 2005; Collaer & Hill, 2006; Collaer & Nelson, 2002). This task requires participants to select from a fan-like array of 13 or 15 lines the two lines that have the same orientation as two shorter line segments displayed above the array. Men are more accurate than women (effect sizes range from 0.85 to 1.11), and the gender difference is larger for lines that are approximately midway between vertical and horizontal than for lines at or near the axes. Collaer and Nelson (2002) suggested that the line-angle judgment task is similar to the water-level task in that both require accurate perception of line orientation; however, there are no published reports of a correlation between the two tasks. It is surprising that mental rotation performance shows a moderate correlation ($r = 0.41$) with line-angle judgment accuracy (Cherney & Collaer, 2005), possibly due to common demands on spatial working memory by task requirements to compare images.

Spatial Visualization

This category of spatial tasks is less clearly defined than the other two, but it includes tasks that require several steps for solution and may be solved by a variety of different strategies. Examples include the Embedded Figures Test, which requires finding a simple geometric shape within a more complex figure, the Differential Aptitude Test-Spatial Relations Subtest (Bennett, Seashore, & Wesman, 1947), in which participants must decide which shape will result when an unfolded figure is folded, the Block Design subtest of the Wechsler intelligence scales for adults and children (Wechsler, 1949, 1955), which requires participants to use blocks to construct a specified three-dimensional arrangement, and Paper Folding, in which participants indicate how a folded piece of paper with a hole punched through it would look if unfolded. Men and boys perform slightly better than women and girls on these tasks. The average effect sizes are 0.13–0.19 and are found to be nonsignificant at all ages (Linn & Petersen, 1985) or significant only over age 18 (Voyer et al., 1995). In addition to the inconsistency of gender differences on these tasks, it is difficult to identify factors that distinguish spatial visualization performance of women and girls from that of

men and boys (Kramer & Smith, 2001); indeed, individuals tend not to apply a consistent solution strategy to all items even on the same test (Kyllonen, Lohman, & Woltz, 1984). For these reasons, spatial visualization tasks are not very useful in understanding gender differences in spatial ability.

Object Location Memory

The only spatial task on which women and girls consistently perform better than men and boys is memory for locations of objects in an array. Women show significantly more accurate object location memory in adolescent and adult samples (Voyer, Postma, Brake, & Imperato-McGinley, 2007) and across many countries (Silverman et al., 2007), but the average effect size is relatively small; the range is 0.27–0.31. Women also score higher in memory for the objects themselves (Voyer et al., 2007). In younger samples, girls show higher accuracy in location memory at ages 12–14 (Silverman & Choi, 2006) and in object memory at age 9 (Choi & Silverman, 2003); other researchers, however, have reported no gender differences in object location memory in children up to age 16 (Barnfield, 1999). According to the meta-analysis by Voyer et al. (2007), women score higher when objects in the array are geometric, and men score higher when the objects are stereotypically masculine. Women also tend to score higher when asked to identify objects that have changed locations from an initial array to a subsequent array (Barnfield, 1999; Eals & Silverman, 1994; James & Kimura, 1997; Levy, Astur, & Frick, 2005; Silverman & Eals, 1992), whereas men tend to score higher when the task requires reconstruction of the exact locations of the objects without regard to their identity (Iachini, Sergi, Ruggiero, & Gnisci, 2005; Postma, Izendoorn, & De Haan, 1998; Postma, Jager, Kessels, Koppeschaar, & van Honk, 2004; Postma, Winkel, Tuiten, & van Honk, 1999). These findings suggest that object location memory tasks are not pure measures of spatial ability and that women are more accurate than men only when memory for object identity is an integral part of the task.

Several findings suggest that verbal encoding may play a role in women's performance on object location memory tests. Women score higher when the array comprises objects that are concrete and can readily be named, but men score higher when the array comprises abstract objects (Choi & L'Hirondelle, 2005). Moreover, higher accuracy in women on the concrete version of the task is no longer seen when verbal memory is controlled. The higher accuracy of women on the standard paper version of the object location memory test also disappears and in fact reverses (i.e., men score higher) when the same array of objects is projected onto the walls of a room (Saucier, Lisoway, Green, & Elias, 2007). This finding cannot be attributed to a difference in the nameability of the objects because the same objects are used in both conditions; rather it may reflect a propensity for women to remember locations of objects in peripersonal space (immediately surrounding the body) more accurately than objects in extrapersonal space (beyond arm's reach). Saucier et al. suggested that, given previous evidence that representations of peripersonal and extrapersonal space are neurologically distinct, further research may be warranted to examine whether there are gender differences in the representations of peripersonal and extrapersonal space at the neurological level. The representation of extrapersonal space may be considered to play an especially important role in the performance of navigational tasks; given that men are more accurate than women on many navigational tasks, it may not be surprising that men's accuracy increases relative to women's when object location memory is performed in extrapersonal space. Related findings, which show that women tend to use nearby landmarks and men tend to use distant landmarks for navigation, are described in the section on gender differences in wayfinding behavior.

Dynamic Spatial Ability

Dynamic spatial ability involves judgments about the trajectories of moving objects and the times at which they will arrive at specific locations. Men are more accurate than women in judging relative velocities of moving objects (Law, Pellegrino, & Hunt, 1993; Law et al., 1993) and more efficient at guiding objects that intrinsically move along different courses toward a common destination on a computer screen (Contreras, Colom, Shih, Álava, & Santacreu, 2001; Contreras, Rubio, Peña, Colom, & Santacreu, 2007). Men's accuracy on the latter task is associated with a higher tendency to wait before initiating the first response (presumably to develop a plan of action) and to make adjustments in accord with the effects of previous responses (Peña, Contreras, Shih, & Santacreu, 2008). Further research is needed to clarify the basis of gender differences in dynamic spatial ability, which has received less attention than the other spatial abilities.

Underlying Cognitive Processes

Spatial Strategies

Insight into gender differences in spatial performance may be gained by comparing the strategies that women and men use to solve spatial problems. It has long been thought that women use a more "analytic" strategy than do men on mental rotation problems (e.g., Maccoby & Jacklin, 1974); that is, women analyze each part of a figure to be rotated for comparison with its corresponding part in the alternative figures, whereas men visualize transformation of the figure as a unified whole. Self-reports of strategies on spatial tasks generally corroborate this distinction between analytic and holistic strategies (Glück & Fitting, 2003; Peters et al., 1995; Robert & Chevrier, 2003), although a gender difference in reported strategies is not always found (e.g., Cherney & Neff, 2004). A tendency to use holistic rather than piecemeal strategies may explain why men are faster than women at mental rotations and less affected by the angle of rotation required (Kail et al., 1979) or complexity of the figures (Heil & Jansen-Osmann, 2008). Alexander and Evardone (2008) found that women's speed at mental rotations is more affected than men's when the figures to be rotated are three-dimensional drawings of the human body rather than the standard Vandenberg and Kuse drawings of abstract arrangements of blocks. The researchers suggested that women may be more likely to use a holistic strategy if they can imagine rotating themselves while carrying out mental rotations of the human figure drawings.

Gender differences on spatial perception tasks may be a function of attention to different task cues. Collaer and colleagues (Collaer & Hill, 2006; Collaer & Nelson, 2002) used a variation of the line-angle perception test in which the comparison array of lines is presented out of alignment with the surrounding page; this manipulation causes a decline in men's accuracy but has no effect on women's performance. Men may be more likely than women to refer to geometric cues of the task environment, such as the borders of the page, which are disrupted when the page is misaligned. Attentional factors are also implicated by the finding that instructions to focus on internal cues improve women's performance on the rod-and-frame test (Reinking, Goldstein, & Houston, 1974) and on another task that requires perception of "straight ahead" while lying in a tilted position (Tremblay, Elliott, & Starkes, 2004).

Spatial Memory Processes

A number of findings suggest that gender differences in spatial performance may be related to differences in speed or capacity of visuospatial memory. Men are faster than women in making spatial

judgments based on mental images (Loring-Meier & Halpern, 1999) and more accurate in memory for visuospatial stimuli that are highly complex (Lewin, Wolgers, & Herlitz, 2001). Men also score higher on spatial working memory tasks that require recall of increasingly longer sequences of spatial information (e.g., marked locations in a matrix) while simultaneously engaging in active processing of other stimuli (Geiger & Litwiller, 2005; Kaufman, 2007; Vecchi & Girelli, 1998). This difference in spatial working memory span has been shown to account, at least in part, for men's higher scores on spatial visualization and mental rotation tests (Kaufman, 2007).

In contrast, women score higher on another task that is considered by some researchers to tap spatial working memory. Similar to the card game *Memory*, this task requires participants to remember the locations of concealed objects, which they are permitted to reveal two at a time, and find matched pairs of objects in as few choices as possible (Duff & Hampson, 2001; McBurney, Gaulin, Devineni, & Adams, 1997). Women's higher scores on this task may result from the necessity of remembering associations between individual objects and their locations, much as in tests of object location memory. It is interesting that men's performance on an object relocation task is disrupted less than women's by increasing demands on visuospatial processing, which further suggests that men have a larger spatial working memory.

Biological Factors in Gender Differences in Spatial Ability

Hormonal Influences

Much attention has been given to the possibility that sex hormones contribute to gender differences in spatial abilities. Because ethical and practical considerations may preclude hormonal manipulations in humans, conclusions regarding hormonal effects on spatial abilities are often drawn from research with rats, which, like humans, show more efficient navigational performance in males (Jonasson, 2005; Williams & Meck, 1991) and better performance on object location memory tests in females (Saucier, Shultz, Keller, Cook, & Binsted, 2008). Female rats treated at birth with estradiol, a metabolite of testosterone, subsequently show a male-typical pattern of navigation, whereas male rats castrated at birth show a female-typical pattern of navigation (Williams, Barnett, & Meck, 1990). High levels of circulating estrogen in female rats, during proestrus or following injections of estradiol, are associated with a shift away from a response learning strategy (consistent turns to the right or left) in favor of a place learning strategy (responses relative to placement of extramaze cues; Korol & Kolo, 2002; Korol, Malin, Borden, Busby, & Couper-Leo, 2004). These effects on spatial learning appear to be modulated by the action of sex steroids on the hippocampus. Early androgen exposure affects the morphology of cells in the hippocampus (Isgor & Sengelaub, 1998; Roof & Havens, 1992), and direct infusion of estradiol into the dorsal hippocampus enhances place learning in female rats (Zurkovsky, Brown, & Korol, 2006). These findings from the animal literature suggest that masculinized spatial behavior results from exposure to testosterone or its metabolites early in development.

Organizational effects of hormones on spatial abilities in humans may be inferred from studies of individuals with congenital adrenal hyperplasia (CAH), a condition in which testosterone is overproduced by the adrenal glands during prenatal development. CAH girls tend to show better spatial performance, and CAH boys tend to show worse spatial performance, than same sex individuals without this condition (see reviews by Liben et al., 2002; Puts, McDaniel, Jordan, & Breedlove, 2008), which indicates that an intermediate level of androgen exposure may be optimal for spatial ability. It should be noted that CAH girls are more likely than other girls to engage in stereotypical boys' play; therefore, effects on spatial ability may be due to differences in experience rather than

to direct hormonal effects. Researchers have also examined whether spatial ability may be related to another marker for prenatal exposure to testosterone, the ratio of index finger length to ring finger length (2D:4D ratio). Although some studies show that mental rotation ability is better in women with a lower 2D:4D ratio (shorter index finger relative to ring finger, which is more typical of men; Kempel et al., 2005; Peters, Manning, & Reimers, 2007), a meta-analysis by Puts et al. (2008) shows only negligible effect sizes for 2D:4D as a predictor of spatial ability. Differences in spatial ability related to sexual orientation, such as better mental rotation performance in heterosexual than gay men and in lesbian than heterosexual women (Peters et al., 2007), also may be suggestive of prenatal hormonal influences, but could as likely be due to differences in experience.

Mixed findings have been obtained regarding effects of circulating hormones on spatial abilities in adolescents and adults. Some studies show better spatial performance in women during the low-estrogen phase of the menstrual cycle (i.e., the menstrual period) than during the high-estrogen pre-ovulatory and mid-luteal phases (Hampson, 1990a, 1990b; Hampson & Kimura, 1988; Moody, 1997; Postma et al., 1999; Silverman & Phillips, 1993); others have shown the reverse (Chiarello, McMahon, & Schaefer, 1989; Halpern & Tan, 2001). Studies of the relationship between testosterone levels and spatial abilities in men likewise have produced mixed findings (see review by Liben et al., 2002). A well-controlled study by Halari et al. (2005) showed no relationship between levels of either testosterone or estrogen and performance on spatial tests known to produce large gender differences. Of the few research teams that have examined spatial abilities in individuals who have received direct administrations of sex steroids, during the course of treatment for delayed puberty (Liben et al., 2002) or transsexual conversion therapy (Miles, Green, Sanders, & Hines, 1998; Van Goozen, Cohen-Kettenis, Gooren, Frijda, & van de Poll, 1995; Van Goozen, Slabbekoorn, Gooren, Sanders, & Cohen-Kettenis, 2002), or for short-term experimental purposes (Postma et al., 2000), only two have reported effects of direct hormone administration.

In summary, the clearest findings regarding gender differences are seen in studies of CAH individuals and in animal experiments in which sex steroids are administered during prenatal or perinatal development. These findings suggest that there is a curvilinear relationship between spatial ability and androgen exposure during a critical period of development; poorer spatial ability results from androgen exposure that is either higher or lower than an optimal level.

Brain Organization

Gender differences in brain organization have been linked to men's higher scores on spatial tasks. One long-held theory is that men's better performance is due to more pronounced right hemisphere dominance for spatial processing (e.g., McGlone, 1980). Although both women and men show activation over the right hemisphere during mental rotations, men show more activation than women over parietal areas, and women show more activation than men over frontal regions (Hugdahl, Thomsen, & Ersland, 2006; Thomsen et al., 2000). These findings are consistent with previous evidence that implicates right parietal regions in visuospatial processing. In addition, the larger activation in women over frontal lobe areas, which may be related to language functions, is consistent with the idea that women use a more analytic or piecemeal rotation strategy on mental rotation problems (e.g., "if this part turns this way, then that part must turn that way").

Other findings related to cortical activation patterns tend to support more bilateralized processing in women than in men during mental rotations (Johnson, McKenzie, & Hamm, 2002; Jordan, Wüstenberg, Heinze, Peters, & Jäncke, 2002). However, during performance of a line-angle orientation task, men showed more lateralized activation in primary spatial areas and more bilateralized

activation in associated secondary areas than did women (Gur et al., 2000). In one study, women became more strongly right-lateralized when required to respond with their non-dominant hand during mental rotations; the researchers suggested that spatial processing is shifted more to the right hemisphere in women when left hemisphere resources are needed for control of the non-dominant hand (Johnson et al., 2002). Another way to test hemispheric asymmetries in spatial processing is to compare performance when the task is presented in the right versus left visual fields. Men show a right hemisphere advantage and women show no hemispheric difference on a simple two-dimensional rotation task (Rilea, Roskos-Ewoldsen, & Boles, 2004), whereas both men and women show a right hemisphere advantage on spatial perception tasks (water-level and rod-and-frame; Rilea et al., 2004; Voyer & Bryden, 1993). Only women show a left hemisphere advantage on an object location test (Alexander, Packard, & Peterson, 2002). Therefore, gender differences in hemispheric processing may vary by task.

Casey and her colleagues (see review by Casey, 1996) have suggested that hemispheric lateralization is genetically determined and interacts with spatial experience to influence levels of spatial ability in women. Their “bent twig” model is based on the premise that a high likelihood of left hemispheric dominance in right-handed women with right-handed relatives puts them at risk for poor spatial ability (see Annett, 1992), but brain lateralization in right-handed women with nonright-handed relatives is favorable to the development of high spatial ability as long as appropriate spatial experience is acquired. Evidence in support of the model has been obtained in several studies (Casey & Brabeck, 1989, 1990; Casey, Nuttall, & Pezaris, 1999; Casey et al., 1990), but other researchers have been unable to replicate critical findings (e.g., Cerone & McKeever, 1998). Also, the model does not make clear predictions about women who are themselves left-handed or ambidextrous (these women sometimes show effects similar to those of right-handed women with all right-handed relatives; Casey, Colön, & Goris, 1992; Casey et al., 1990). Nonetheless, the bent twig approach represents an important effort to understand how biological and experiential factors may interact to produce gender differences in spatial ability.

Evolutionary Explanations

Given evidence for biological influences and the robust nature of gender differences in spatial abilities, some researchers have proposed that there must be evolutionary significance to these differences (see reviews by Ecuyer-Dab & Robert, 2007; Jones, Braithwaite, & Healy, 2003). One suggestion is that men in prehistoric times needed highly developed spatial skills because they had to travel in search of mates, whereas women needed to attend to stimuli in the immediate surround in order to protect themselves and their offspring (Ecuyer-Dab & Robert, 2004a). Consistent with this idea, sex differences in spatial abilities occur in polygamous species where the male must travel between mates (e.g., meadow vole), but not in monogamous species where the male remains with the female (e.g., prairie mole; Gaulin & FitzGerald, 1989; Gaulin, FitzGerald, & Wartell, 1990). However, as pointed out by Newcombe (Chapter 13), there is no evidence that men in early human societies had to travel great distances to find mates.

Another version of the evolutionary explanation holds that men required spatial skills (e.g., mental rotation) that would allow them to hunt and track moving prey over large territories, whereas women required skills for gathering food in proximate areas, such as remembering the locations of edible plants (Silverman & Eals, 1992). In support of this idea, there are some hunting and gathering societies today in which there is a gendered division of labor; however, controversy exists about the extent to which labor in prehistoric times was sharply divided based on gender and about the notion

that gathering or trapping of small prey, which is likely to have been carried out by women, would not itself require a high level of spatial skill (see Newcombe, 2007, and Chapter 13). Another variation of the theory is that men required good spatial skills to travel over long distances to engage in warfare and to aim accurately at opponents (Ecuyer-Dab & Robert, 2004a; Geary, 1995). These explanations certainly present interesting ideas about the possible origins of gender differences in spatial abilities, but at present cannot be conclusively established or rejected.

Experiential and Sociocultural Factors

Spatial Experience

A popular explanation of gender differences in spatial ability is that men are more likely than women to have had experiences that promote the development of spatial skills. Correlational evidence is consistent with the idea that participation in spatial activities is related to spatial performance (Baenninger & Newcombe, 1989) and that boys are more likely than girls to acquire spatial experiences, such as spatial manipulation play (Robert & Héroux, 2004). Boys' more extensive experience with computers and video games accounts in part for the gender difference in mental rotation performance (Terlecki & Newcombe, 2005). Furthermore, in support of the spatial experience hypothesis, gender differences in spatial performance are small or nonsignificant in women and men who both report high spatial experience (Kuhlman & Beitel, 1991; Ozel, Molinaro, & Larue, 2001; Quaiser-Pohl & Lehmann, 2002; Voyer, Nolan, & Voyer, 2000). Of course, the correlational nature of these findings leaves open the possibility that individuals with more spatial experience have higher initial spatial ability. A finding not easily explained by initial differences in spatial ability is that both genders perform better on the water-level task if they are in occupations that provide experience with liquids (bartenders and servers) than in occupations that do not (clerical and sales workers; Vasta et al., 1997); neither of these two sets of occupations would appear differentially to attract people with different levels of initial spatial ability. Thus, it appears that both women and men can benefit from spatial experience.

Sociocultural Differences

Another way of testing the spatial experience hypothesis is to compare gender differences in spatial abilities across cultures that vary in gender socialization practices. Some studies have shown gender differences in spatial performance to be more likely in cultures where gender roles are more sharply differentiated (e.g., Berry, 1966; Shrestha & Mishra, 1996). For example, the Brahmins of Nepal socialize conformity and social sensitivity more strongly in girls than in boys, and Brahmin boys score higher than Brahmin girls on an embedded figures test (a measure of spatial visualization). In contrast, the Gurungs of Nepal have a more egalitarian approach to the socialization of girls and boys, and the same test produces no significant gender difference in Gurung children (Shrestha & Mishra, 1996). Other studies, however, have yielded consistent gender differences in spatial performance across countries that may be presumed to differ in gender socialization, such as Japan, Canada, and the United States (Mann, Sasanuma, Sakuma, & Masaki, 1990; Silverman, Phillips, & Silverman, 1996), Ghana and Norway (Amponsah, 2000), and Serbia and the United States (Jovanovic & Lerner, 1994).

Levine, Vasilyeva, Lourenco, Newcombe, and Huttenlocher (2005) adopted a different approach to the examination of experiential effects on the development of spatial abilities by comparing gender differences across socioeconomic groups within the United States. The researchers assumed

that disparities in spatial opportunities for boys and girls would be more likely in upper socioeconomic groups, who can afford to provide such opportunities, than in lower socioeconomic groups. Consistent with this idea, boys in middle and upper socioeconomic groups performed better than girls on a mental rotation test and a map task, but no gender difference was found in the lower socioeconomic group. This finding cannot rule out the possibility that boys have a predisposition to seek out spatial activities when they are available, but the absence of a gender difference in the lower socioeconomic group indicates that inherent differences alone are not sufficient to produce gender differences in spatial abilities.

Stereotype Threat

In keeping with the idea that social factors may impact gender differences in spatial abilities, spatial performance appears to be subject to stereotype threat, or disruption in performance due to awareness of negative stereotypes concerning the aptitude of members of one's group (e.g., Steele & Aronson, 1995). A cultural assumption that men possess superior spatial skills (or at least believe that they do) is indicated by jokes and cartoons that make fun of men who do not display a "sense of direction." Men report higher expectations than do women for success on spatial perception tasks (Meehan & Overton, 1986), and both women and men believe that men are superior in remembering directions and finding a previously visited place (Crawford, Herrmann, Holdsworth, Randall, & Robbins, 1989). For both men and women, high masculine self-concept relative to feminine self-concept correlates positively with spatial performance (Signorella & Jamison, 1986; Signorella, Jamison, & Krupa, 1989), and girls who endorse masculine-idealized intellectual interests at age 11 show higher spatial ability at age 16 (Newcombe & Dubas, 1992).

Gender stereotypes affect recall of spatial information; men recall more items from a list of route directions than do women, whereas the reverse is true for recall of items from a grocery list (Herrmann, Crawford, & Holdsworth, 1992). In a classic series of studies, Sharps, Welton, and Price (1993) and Sharps, Price, and Williams (1994) demonstrated that the size of gender effects on spatial tasks is influenced by manipulations that emphasize relevance to masculine or feminine interests. Women, but not men, perform worse on an object location memory test when the stimulus array is presented as a "map" (stereotypically masculine) rather than as a "model." Men's performance on a mental rotation test is significantly lower when task instructions mention relevance to feminine occupations (handicrafts, interior design) as opposed to masculine occupations (flying of military aircraft, engineering of aircraft and propulsion systems). Simply telling participants that women (or men) score higher on a spatial task can increase performance of that gender (Wraga, Duncan, Jacobs, Helt, & Church, 2006), and priming participants to think about their gender improves spatial performance only in men (McGlone & Aronson, 2006). Moreover, women with feminine gender-role beliefs perform better when a spatial visualization test is said to be a test of empathetic ability (stereotypically feminine), whereas women with masculine gender-role beliefs perform better when it is said to be a test of spatial ability (Massa, Mayer, & Bohon, 2005). Taken together, these findings suggest that stereotypes do play a role in gender differences on spatial tests, although it is not clear whether the effect of emphasizing the masculine nature of the test operates more through suppression of women's performance or enhancement of men's performance.

Training Effects

Most spatial training procedures benefit men and women equivalently (see the meta-analyses by Baenninger & Newcombe, 1989; Hand, Uttal, Marulis, Newcombe, Warren, & Lewis, under review),

although performance may show steeper increases at different stages of training for women and men (Terlecki, Newcombe, & Little, 2008). Some procedures reduce or eliminate the gender gap entirely; typically these procedures involve repeated practice on the same skill or a skill similar to the one to be tested. A gender gap in two-dimensional mental rotations in children can be eliminated through practice with the videogame *Tetris* (De Lisi & Wolford, 2002), and gender gaps in real-world tasks that require mental rotations (e.g., estimating the angular degrees a ship is rotated from a reference, rotating objects using computer graphics) can be eliminated through practice on the tasks themselves (Kass, Ahlers, & Dugger, 1998; Rafi, Anuar, Samad, Hayati, & Mahadzir, 2005). The gender gap on the water-level task can be eliminated by giving progressively more specific feedback about responses (Parameswaran, 2003; Parameswaran & De Lisi, 1996) or by training with problems that become increasingly difficult (Vasta & Gaze, 1996).

The benefits of spatial training are often highly task specific; for example, training on the water-level task may not transfer to the plumb-line task (Barsky & Lachman, 1986; Vasta & Gaze, 1996), although transfer between these two tasks does occur under some training conditions (Parameswaran, 2003). Transfer also may occur between more distinct spatial tasks, such as mental rotation and paper folding (Wright, Thompson, Ganis, Newcombe, & Kosslyn, 2008). A recent study showed a reduction in the gender gap on a mental rotations task following training on a very dissimilar task that required detecting targets that appeared briefly over a wide area on a computer screen (Feng, Spence, & Pratt, 2007). This finding is notable because it shows that gender differences in spatial abilities can be reduced by providing experience with a basic attentional process, that is, presumed to underlie higher level spatial skills.

Wayfinding

Finding one's way in three-dimensional environments is a complex spatial behavior that correlates with small-scale spatial abilities such as mental rotations and spatial perception (Astur, Tropp, Sava, Constable, & Markus, 2004; Choi, McKillop, Ward, & L'Hirondelle, 2006; Saucier et al., 2002; Silverman et al., 2000); however, correlations are more pronounced for wayfinding in simulated than in real environments (Hegarty, Montello, Richardson, Ishikawa, & Lovelace, 2006). Gender differences occur in several aspects of wayfinding behavior. Men tend to be more efficient than women; they require shorter travel times and shorter route distances to find target locations both in real-world (Malinowski & Gillespie, 2001; Silverman et al., 2000) and virtual environments (Astur, Ortiz, & Sutherland, 1998; Astur et al., 2004; Cánovas, Espínola, Iribarne, & Cimadevilla, 2008; Cutmore, Hine, Maberly, Langford, & Hawgood, 2000; Devlin & Bernstein, 1995). This gender difference is more likely to be found in virtual environments that provide only distal reference points (similar to water mazes used in animal research); gender differences are not found in environments that also contain local features (similar to radial arm mazes; Rahman, Abrahams, & Jussab, 2005; Ross, Skelton, & Mueller, 2006). Women and men report different strategies for navigation; whereas women emphasize attention to landmarks and associated route turns, men are more likely to say that they orient to global cues (e.g., compass directions, position of the sun in the sky) and develop an overview perspective of the larger environment (Charleston, 2008; Lawton, 1994, 1996; Lawton & Kallai, 2002). These strategy differences are reflected in the way that the genders give and follow directions. In giving directions, women refer more often than do men to landmarks, and men more often than do women to cardinal directions and distances (Dabbs, Chang, Strong, & Milun, 1998; Lawton, 2001; MacFadden, Elias, & Saucier, 2003; Miller & Santoni, 1986; Ward, Newcombe, & Overton, 1986). In following directions, women navigate more efficiently when directions refer to landmarks and right-left turns rather

than to cardinal directions and distances; the reverse tendency is seen in men (Saucier et al., 2002). Also, women, but not men, show disrupted navigation when engaging in a concurrent articulation task, possibly due to interference with verbal encoding of landmarks (Saucier, Bowman, & Elias, 2003).

Gender differences in wayfinding behavior are also found in children. Among 8–10-year-olds, boys were faster than girls in finding a hidden platform in a virtual maze (Newhouse, Newhouse, & Astur, 2007), and they made fewer errors than did girls in relearning a maze in the absence of landmarks that had been present previously (Jansen-Osmann & Wiedenbauer, 2004). Boys refer more often than do girls to distances and cardinal directions by ages 9–11; girls refer more often than boys to landmarks and relative terms (right, left) at ages 12–14, about the same age as they begin to show higher scores on object location memory tests (Choi & Silverman, 2003; Silverman & Choi, 2006). It is interesting that object location memory predicts landmark preference for girls but not boys. Among 5- to 12-year-olds, girls are more accurate than boys in recalling the sequence of landmarks along a route (Kersker, Epley, & Wilson, 2003), although mixed effects occur for recall of correct locations of landmarks (boys are significantly better than girls at ages 6–8, but there is no gender difference at ages 10–12; Jansen-Osmann & Wiedenbauer, 2004). Also, boys as young as ages 4–5 score higher than girls on a simplified task that tests understanding of configurational relations between landmarks (Spetch & Parent, 2006).

Although landmarks are highly emphasized in women's navigational strategies, they also play a role in men's strategies. Tests of landmark memory sometimes show higher scores in women (Barkley & Gabriel, 2007; Galea & Kimura, 1993) and sometimes in men (Herman, Kail, & Siegel, 1979; Saucier et al., 2002), but measures of the geometric or Euclidean properties of landmarks consistently produce better performance in men. Men are more accurate in identifying exact locations of landmarks (Holding, 1992; Lövdén et al., 2007; Tlauka, Brolese, Pomeroy, & Hobbs, 2005) and in pointing in the direction of hidden targets (Bryant, 1982; Fields & Shelton, 2006; Hegarty et al., 2006; Holding & Holding, 1989; Lawton, 1996; Lawton & Morrin, 1999; Prestopnik & Roskos-Ewoldsen, 2000; Waller, Knapp, & Hunt, 2001). Men also are more accurate on measures of configural knowledge of the larger environment, including orientation to cardinal reference points (Sholl, Acacio, Makar, & Leon, 2000) and alignment of sketch maps with the cardinal directions (Harrell, Bowlby, & Hall-Hoffarth, 2000). Some of the clearest evidence for gender differences in navigational cues comes from experiments that systematically manipulate landmark and geometric information. Maze navigation is more disrupted in men than in women by changes in the geometric properties of a maze, whereas both men and women are affected by changes in landmark information (Sandstrom, Kaufman, & Huettel, 1998). After learning to locate hidden goals in pictures of three-dimensional environments, both women and men are successful in the presence of landmark cues alone, but only men are successful in the presence of geometric cues alone or with one distant landmark available for depth information (Kelly & Bischof, 2005). Another study showed that men's ability to recognize visual scenes is slowed by removal of either nearby or distal cues, whereas women are slowed by removal of nearby cues (Barkley & Gabriel, 2007). In addition, men are more likely than women to notice angular shifts in landmarks relative to their own viewpoint (Lambrey & Berthoz, 2007), more likely to be affected by continuous directional changes in the configuration of a path (Lövdén et al., 2007), and more likely to update/recalibrate directional bearings based on visual rather than vestibular feedback in a virtual room (Viaud-Delmon, Ivanenko, Berthoz, & Jouvent, 1998). Taken together, these findings are consistent with the idea that women use landmarks as positional cues or beacons, whereas men use both landmarks and geometric information to establish their bearings in the larger environment (see Jacobs & Schenk, 2003).

Maps are an important aid to navigation, and men are more successful than women on wayfinding tasks in which maps are used (Devlin & Bernstein, 1997; Malinowski & Gillespie, 2001;

Tlauka et al., 2005). Eighth-grade boys are more successful than girls in using information abstracted from a simulated environment to identify locations on a two-dimensional contour map (Park, Carter, Butler, Slykhuis, & Reid-Griffin, 2008), and men often are more accurate than women on tests of map reading skills (Allen, 2000; Chang & Antes, 1987; Coluccia, Bosco, & Brandimonte, 2007; Gilmartin, 1986; Henrie, Aron, Nelson, & Poole, 1997). Men also consistently obtain higher scores on tests of geographic knowledge (Beatty & Tröster, 1987, 1988; Becker & Pashler, 2002; Bein, 1990; Dabbs et al., 1998; Eve, Price, & Counts, 1994; Henrie et al., 1997; Snyder & Harris, 1996; Zinser, Palmer, & Miller, 2004). Of course, it is possible that these findings simply reflect men's greater interest in maps, geography, and other topics that provide exposure to geographic information, such as history, politics, and sports (see Zinser et al., 2004). Further research is needed to determine what role, if any, spatial abilities may play in gender differences in map reading and geographic knowledge.

Studies of sex steroid effects tend to support behavioral evidence of gender differences in navigational strategies (for a review of animal studies on hormones and maze performance, see the earlier section on hormonal influences). Mixed results have been obtained for a relationship between testosterone levels in men and configural knowledge of an environment, but high testosterone levels in women are associated with more accurate configural knowledge (Allen, Kirasic, Dobson, Long, & Beck, 1996; Burkitt, Widman, & Saucier, 2007). Conversely, estrogen levels across the menstrual cycle in women are negatively correlated with ability to use Euclidean information for navigation in a virtual maze (Chabanne, Péruch, & Thinus-Blanc, 2004). With respect to patterns of neural activation during navigation, many cortical areas are similarly activated in women and men, but, when differences are found, they include more activity in the left hippocampus in men (the hippocampus encodes precise location information) and more activity in the right parietal cortex (involved in body-centered cognition) and right prefrontal cortex (involved in working memory) in women (Grön, Wunderlich, Spitzer, Tomczak, & Riepe, 2000). Other studies show no gender differences in cortical activation during navigation (Blanch, Brennan, Condon, Santosh, & Hadley, 2004) or no gender differences after the researchers controlled for self-reported navigation ability (Ohnishi, Matsuda, Hirakata, & Ugawa, 2006).

Gender socialization is likely to be another factor in gender differences in wayfinding behavior, although the evidence is necessarily correlational. Boys are allowed more freedom than girls to travel far from home (Hart, 1979; Herman, Heins, & Cohen, 1987), and at about the age of 8, when boys' home ranges become larger, their sketch maps of areas surrounding their homes become more integrated, accurate, and richer in detail than those of girls (Matthews, 1986). Boys at this age also draw larger, more accurate, and more detailed maps of areas to which they are exposed for the first time (Webley & Whalley, 1987). Girls' environmental freedom may be restricted more than boys' due to parents' worries about their daughters' safety (Newson & Newson, 1987); indeed, women's concern for their own safety is associated with higher levels of anxiety about wayfinding (Lawton & Kallai, 2002). Women's higher wayfinding anxiety is also related to their lower tendency to use an orientation (Euclidean-based) wayfinding strategy (Lawton, 1994; Lawton & Kallai, 2002), which presumably would reduce chances of getting lost in areas without familiar landmarks. Even among adults, men are more likely to have a larger home range than are women (i.e., area of customary travel for work, leisure, shopping), and, especially for men, the home range is associated with small-scale spatial abilities such as mental rotation and object location memory (Ecuyer-Dab & Robert, 2004b).

Few researchers have attempted to examine training effects on gender differences in environmental learning. Practice on a given virtual maze tends to increase performance in both women and men (Ross et al., 2006). Kelly and Bishcoff (2005) demonstrated that both women and men can be trained to use geometric information to locate hidden goals in three-dimensional pictures of rooms

when the geometric information is presented by itself, although only men spontaneously encode geometric information when trained with featural cues. There is a need for more research on ways to increase use of Euclidean navigational strategies, which, unlike route-based strategies, are useful even in environments that lack distinctive landmarks.

Conclusions and Future Directions

Despite the variety of measures used to test spatial abilities and the fact that the abilities themselves do not represent a unitary construct, several consistent themes emerge from research on gender differences in spatial cognition. One common finding is that men's better performance on spatial tasks results from a tendency to use Euclidean-based strategies, which permit mental images to be rotated in a holistic manner, route-level views of environments to be integrated into cognitive maps, gravitational axes to be perceived in the face of distracting local cues, and moving objects to be judged according to a single set of metrics. Additional cognitive factors that may contribute to gender differences on specific tasks include a higher tendency for men to engage in continuous updating of self-orientation based on visual and vestibular feedback, and men's higher spatial working memory span and more widely distributed attention to spatial locations.

Strategies used by women on spatial tasks are less easy to classify, but are often described as analytic, relative, and focused on object identity. That is, women are more likely than men to make spatial judgments on the basis of relative positions (categorical relationships) among objects in arrays, between landmarks and the traveler on wayfinding tasks, and between a surrounding frame and lines judged to be vertical or horizontal on spatial perception tasks. There is some evidence that women may use verbal encoding on spatial tasks, but other evidence suggests that verbal encoding cannot fully describe women's strategies. It may be more accurate to conclude that women apply similar cognitive processes to both spatial and verbal tasks and that these processes are not strictly linguistic in nature. Women's strategies appear to be more helpful in learning characteristics of features in the immediate environment, whereas men's strategies are more helpful in learning characteristics of the larger spatial environment and in performing smooth and rapid mental transformations of objects.

Gender differences in spatial abilities may have evolutionary significance, as some researchers have suggested, but it is also plausible that they stem from more immediate sources, such as differences in socialization of girls' and boys' interests in geography or construction of objects. The findings reviewed in this chapter indicate that both biological and sociocultural factors contribute to gender differences in spatial abilities. The strongest evidence for biological factors involves the effects of prenatal or early postnatal sex steroids; in general, early exposure to moderate levels of testosterone or its metabolites is associated with better performance on tasks such as mental rotations and navigation. The evidence for effects of sex hormones at puberty or in adulthood is more mixed, and not consistent with findings of gender differences on mental rotations and wayfinding tasks prior to puberty. Gender differences in patterns of cortical activation during spatial processing are not entirely consistent, but there is a tendency for more right hemisphere involvement in men than in women. Biological effects on spatial cognition should not be considered immutable; there is strong evidence to show that both women's and men's spatial abilities can be increased through training and that the gender gap can sometimes be reduced or eliminated. Strong evidence also shows that spatial performance can be affected by the stereotype of spatial cognition as a masculine domain.

Several lines for further research on gender and spatial cognition may be suggested. The classic meta-analyses on gender differences in spatial abilities have been very helpful in identifying different

types of spatial abilities and associated gender differences in spatial strategies, but there is now a need to extend this work by including more recent findings on gender differences in wayfinding, dynamic spatial ability, and object location memory. There is also a need to clarify patterns of cortical activation during performance of specific spatial tasks so that further insight may be gained into gender differences in strategies on these tasks. Increased cross-cultural research with a standard set of spatial tasks (those identified by meta-analyses as showing the largest gender differences) would be helpful in identifying socialization factors that contribute to gender differences in spatial abilities.

With respect to practical applications, more research is needed on the specific spatial skills that contribute to success in fields such as engineering and architecture and the types of training that may best target those skills. Some studies of this type are already in the educational research literature. For example, Lajoie (2003) identified the need for mechanical engineers and architects to understand drawings that use orthographic projection (two-dimensional representation of three-dimensional objects) and designed a computer-based tutoring system that benefited women's performance on an orthographic projection task. Sorby and Baartmans (2000) developed a freshman engineering course to provide training on three-dimensional spatial visualization skills and found a positive impact on retention rate specifically for women. Also useful would be research on the relationships between spatial abilities, spatial self-efficacy, and interest in engineering and other careers that rely on spatial abilities. Finally, efforts should be made to incorporate spatial training into early education before gender-based stereotypes about spatial abilities have been learned (see Casey, Erkut, Ceder, & Young, 2008; Liben, 2006; Newcombe, Mathason, & Terlecki, 2002). Perhaps the greatest value of research on gender and spatial cognition is its potential to contribute to training methods that will enhance spatial abilities in both women and men.

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Chapter 17

Gender and Creativity

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Human cognition is a remarkable thing. Like so much in life, it has both pros and cons, benefits and costs. The human brain can retain information for decades, which is an enormous help to cognition, and it regularly supports adaptive, intelligent, and creative action. At the same time, cognition can be seriously biased and entirely unreliable. Of particular relevance to the topic of gender differences is the mind's tendency to categorize information quickly in ways that are sometimes effective, yet are at other times unintended and undesirable. This categorical process occurs nearly constantly in that all information that enters the sensory system is immediately identified as either worthwhile or unimportant. Only the former is retained for further processing. The latter is ignored, discarded, and forgotten. Other kinds of categorizations and selections occur throughout information processing.

The benefits and costs of such ongoing categorization are apparent whenever individuals reason about classes, groups, or similarities between objects and ideas. Recognition of the similarity of like objects or ideas allows quick and efficient thought. If two things are similar, we can make the assumption that what applies to one of them applies to the other, and no cognitive resources are wasted on examining both in detail. We examine one, assume that the other is the same, and move along without giving it much attention. This allows quick information processing, but it also leads to errors, the most common of which are errors of generalization. From time to time, we assume that everything that characterizes one object or idea (one exemplar of a category, to be precise) also applies to another similar case, but we then eventually discover that this is not true. The two objects or ideas may appear to be similar, but in fact are quite different, in which case our streamlined, efficient thinking process has led us to a faulty generalization. Awareness of this type of error is of great importance whenever judgments are to be made about gender, ethnicity, or similar groupings. This awareness can help us to search for the truth, yet avoid the pitfalls of bias and stereotypes. That is one objective of this chapter and our review of the research on gender differences in creativity. The potential problems of bias and stereotypes are mentioned upfront so that they can be avoided or at least minimized.

Several other potential issues must also be taken into account and should be mentioned before we turn to the empirical research. One concerns problems that arise whenever generalizations about individuals are drawn from averages. The other concerns a critical distinction between creative *potential* and creative *performance*. These are described immediately below. In a sense the three key issues (categorization, averages, and the distinction between potential and actual performance) are themes within this review. Immediately after they are outlined, we turn to the research, beginning with

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history and culture, and then discuss specific investigations and theories of gender differences in creativity.

Investigations of gender differences sometimes imply that men and women can be discussed as separate categories and purely distinct groups. Not only does this assume absolute differences between men and women but also ignores the fact that there is great variability within each of the groups. Certainly women and men can be assessed and the averages computed, but even if there are differences in those averages, they will not apply to every individual within each group. Imagine, for example, two distributions with distinctly different means. Those means might be far apart, but the variation (which represents individual differences) within each group may in fact cause the distributions to overlap significantly. This is true of normal distributions, but skewed distributions could have different means even though the majority of the individuals within each group overlap. Any conclusions based on the difference in means do not apply to individuals around the mean.

The overlap is well exemplified in even a cursory examination of gender differences through history and across cultures. For centuries, in many cultures, there was a clear bias against women. This bias reflected the belief that women were not as creative as men. In fact, most traditional performance indicators show that men were overly represented in virtually all creative endeavors and women were virtually absent (Galton, 1869). Without a doubt a major reason for this is that there were many opportunities for men and few for women. Note, however, that there were eminently creative women even in the worst of times. If we focus on averages, history has favored men, but if we recognize individual differences and variation around the mean, we can more realistically appreciate the highly creative women throughout history.

The role of opportunity in creative performances should be underscored (Boorstin, 1992). Men had advantages with career alternatives and plentiful resources for the creative activities that were socially recognized. Yet the problem is deeper than just opportunities and resources. There are, for example, expectations with parallel implications. If a woman is not expected to do creative things, will anyone notice and support her if she is in fact creative? In fact, women and men may hold different views of success and of how best to use their creative talents, so both inter- and intrapersonal expectations and judgments are relevant. If women are held to a masculine standard of creative success, many women's contributions will not be fully appreciated.

In addition, high-level creative achievement requires considerable investment of resources, both personal and social (Rubenson & Runco, 1992). A composer studies music; a painter practices with the medium. Hence a lack of opportunities may keep creative potentials from developing, in addition to making it difficult to perform a creative act well. This is why we claimed above that the distinctions between potential and performance is of critical importance for any study of gender differences (cf. Runco, 2007). Even if there are differences in actual performance, there may be no differences in potential. Once this distinction is appreciated, and historical differences in performance are extricated from human potential, equality in the future is much more likely, as is the potential of both men and women to be fulfilled.

Illustrative Cases of Creative Women

To illustrate some of these ideas, consider the sculptor Camille Claudel. At one point Mirabeau described her as “a revolt against nature. . . a woman of genius” (from a letter by Octave Mirabeau, 1895, as cited in Ayrál-Clause, 2002, pp. 124–125). This quotation has been used to illustrate men's historically negative view of creative, accomplished women, but Mirabeau was actually pleading against this prejudice in his praise of Claudel. The quotation was included in an imaginary

conversation that Mirabeau wrote in trying to convince the French Ministry of Art to support Claudel's work with a grant, even though women artists were not supported at that time. He imagined himself commenting to another person in front of one of her sculptures:

Do you know that we are in the presence of something unique, a revolt against nature: a woman of genius? . . . If she were a man, she would have great success. This young woman works with a tenacity, a volition, a passion about which you can hardly have an idea, but she's got to live, and she cannot live from her art. Discouragement is crushing her; she thinks of giving up her art (Mirabeau, quoted in Butler, 1996, p. 277).

Not only was Claudel limited by lack of financial support, but she was also disparaged, as were other female artists, for using male models and for behaving independently (Ayrat-Clause, 2002). As Claudel's life experience illustrates, women have often contended with lack of support to pursue work in certain creative fields. That lack can be emotional, social, financial, or even artistic support.

Another French woman, Amandine-Aurore-Lucile Dupin, changed her name to George Sand in order to publish her writing, and English woman Mary Ann Evans changed her name to George Eliot to increase the likelihood of being taken seriously. French philosopher Simone de Beauvoir noted that girls are expected to give up their power and independence in adolescence in order to fit into society. Then, their only power comes from becoming submissive adored objects. "Young girls slowly bury their childhood, put away their independent and imperious selves and submissively enter adult existence" (Pipher, 1994, p. 21). This is hardly the formula for creative productivity.

Consider also women who did not become submissive and give up their art and selves. Several were committed to asylums (e.g., Camille Claudel, Janet Frame, Zelda Fitzgerald), some (e.g., Sylvia Plath, Virginia Woolf) committed suicide, and others (e.g., Georgia O'Keefe, Berthe Morisot, Louisa May Alcott, Mary Cassatt) were forced to choose their careers over motherhood due to the lack of support for both. Such is the Faustian bargain many creative people have made (Cole & Zuckerman, 1987; Gardner, 1993).

Of course, there are similar examples of men who sacrificed sanity, family, and life to creativity (Ludwig, 1995). However, it would be difficult to make an argument that men were subjected to the same pressures as women to choose between family and career or that they suffered the disdain and discrimination that women faced, even from their own families (Cole & Zuckerman, 1987). As Simonton (1999, p. 220) observed, "women who win an entry in *Who's Who* are four times more likely than similarly illustrious men to be unmarried. Moreover, those successful women who somehow fit marriage into their lives are three times more likely to be childless in comparison to equally successful married men."

Of the creative women who have managed to succeed, many were associated with creative men. Claudel and Rodin, O'Keefe and Stieglitz, Plath and Hughes, Virginia and Leonard Woolf, Kahlo and Rivera, George Sand and Chopin, George Eliot and George Henry Lewes are just some of the famous creative couples. However, for the women in these couples, the relationship often became stifling or destructive as they found themselves supporting the work of their partner more than he supported theirs. Claudel was committed, O'Keefe moved on her own to the southern U.S. while her husband remained in New York City, Plath and Virginia Woolf committed suicide, Eliot and Lewes were ostracized from society, and Kahlo lived a tortured life. Thus, the ultimate benefit of such creative liaisons for the women is questionable. Perhaps the relationship with a creative man enabled these women to a point, but then, beyond that point, the women were unable both to become independent artists and to maintain the relationship. This idea of assistance up to a point is consistent with data on the benefits of education, general intelligence, and mentors, each of which indicates

that there is an optimal level, beyond which creativity suffers. In the case of mentors, for example, apparently it is useful to have a mentor who is similar to the student, but not too similar (Simonton, 1999; Zuckerman, 1977).

Gender inequality and lack of social support for creative women apply beyond the domain of artistic creativity. Perhaps the most famous scientific creative couple, the Curies, seem to have had a less tempestuous relationship than some of the artistic couples. Still, although Marie Curie won two Nobel prizes, she was not elected to the French Academy of Science until Pierre Curie died, and she was “allowed” to fill his place (Simonton, 1999).

Marie Curie is not alone. Historically, women have had a difficult time obtaining recognition for their creativity. They have been denied the resources, venues, and recognition that their creativity might otherwise merit (Piiro, 1991). Virginia Woolf (1929) speculated, “I would venture to guess that Anon, who wrote so many poems without signing them, was often a woman” (p. 49). Woolf further reflected, in the extended essay that became *A Room of One's Own*, on the many difficulties women must overcome to be productive, and she imagined the dire outcome for a sister of William Shakespeare with the same talent trying to make her way in the world. Woolf imagined that such a sister would not have had the same education, the family support, or the opportunities to develop and demonstrate her talent, and she would have had to run away from an early, arranged marriage, perhaps winding up despondent and suffering an early death.

Creativity Criteria

Helen Keller (1903, p. 21) wrote “I long to accomplish a great and noble task, but it is my chief duty and joy to accomplish humble tasks as though they were great and noble.” When Torrance (1995) designed a questionnaire to measure adult creative achievement for his longitudinal studies of the predictive validity of his well-known test of creative thinking, he included various areas of creative achievement, such as publications, performances in plays, paintings, entrepreneurial activities, and other creative productions. However, feedback from the participants indicated that many thought that they expressed their creativity in their lifestyles rather than simply through specific products. They had decorated homes, invented recipes, raised families, developed methods to balance career and children, and engaged in volunteer reforms and other creative endeavors. Most of these respondents were women who said that they had been creative, but not in traditionally recognized ways (Cramond, 1993; Torrance, 1995). In response, Torrance added creative style of life criterion measures. These are not focused on productivity or traditional achievement but instead include a wide range of processes and how individuals go about maintaining effectiveness and expressing themselves in the natural environment. Interpersonal and affiliative processes are included.

Maslow (1973) noted a similar gender difference when he described a woman he had observed who was poor, uneducated, and engaged in none of the traditional creative arts, yet kept a beautiful house, was a good cook, and a perfect hostess. He found her to be very creative in her realm. Maslow concluded that “a first-rate soup is more creative than a second-rate painting, and...generally, cooking or parenthood or making a home could be creative while poetry need not be; it could be uncreative” (p. 136).

These observations from Torrance (1995) and Maslow (1973) are indicative of a long-standing problem within creative studies, one that applies directly to studies of gender differences in creativity. Specific differences depend on the criteria used to identify creative persons or the criteria used to measure creative products. Shapiro (1970) called this the *criterion problem*, and it is clearly related to our rationale for distinguishing between potential and actual performance. In these terms, there

has been a tendency to emphasize creative products recognized by society as criteria of creativity, but many women have expressed their creativity daily in unrecognized ways that may not result in one manifest product or a product that garners public recognition. Is it any wonder that there would be fewer women represented in areas where they were not educated or allowed to produce, in ways that they may not value, and when doing so might exact such strong dire consequences? Indeed, one might wonder that so many women did accomplish so much in so many fields given the circumstances.

If the tone here sounds highly critical, it is because of the potentials lost or unfulfilled. Perhaps as sad are those who did use their potential but paid for it in ways that were unfair to the extreme. Chesler (1997, p. 6) put it this way: "Some say that Plath, Woolf, and Claudel were mad – geniuses who'd have ended up the same sad way even if they'd each been nourished in a woman-loving family and culture. How can such cynics be so sure?"

Empirical Studies of Culture and Gender

Creative potential is unlikely to blossom if creative achievement is not supported and encouraged for a particular child or social group. Ideally nurturance would occur in all contexts of a person's life, from family experiences to schooling. However, this is not necessarily the case. Depending on cultural traditions and historical trends, independent creative thinking has often been encouraged for some groups and discouraged for others. This is very clear in the research on gender differences in creative performances within particular cultures (Bharadwaj, 1985; Raina, 1982; Rajendran & Krishnan, 1992; Richardson, 1985; Sansanwal & Sharma, 1993; Simonton, 1992; Shukla & Sharma, 1986).

Simonton's (1992) examination of the creative contributions of women and men throughout 1,400 years of Japanese history suggested a few reasons why a gender gap rose and fell across the centuries. Although Japanese men had always been active creatively, Simonton found that women's participation in creative pursuits ebbed and flowed along with seemingly unrelated shifts in dominant religious ideologies throughout this time period. The levels of resources and support offered to women for creative achievement were most affected by changes in the status and acceptance of Confucian philosophy and Shinto traditionalism. Put simply, as changes in thinking regarding the proper roles of women took place, creative Japanese women found themselves in increasingly or decreasingly restrictive environments, and their opportunities for creative accomplishment were either held back or pushed onward as a result.

Parallel studies of the modern role of culture in nurturing creative potential have taken place around the world, and increased attention has been paid to the role that modernization plays in supporting the achievements of creative women. Two of the most intriguing examples of this work are those of Dhillon and Mehra's (1987) study of creative women in India and Mar'i and Karayanni's (1983) survey of creativity gender gaps in Middle Eastern nations. Dhillon and Mehra administered tests of creative potential to boys and girls of varied social class. They found that upper-class girls, who received a level of support and resources almost equal to those afforded to upper-class boys, demonstrated a more equitable ability than was found among lower class girls and their counterparts, as the latter group's cultural emphases tend to support education, encouraged only boys' achievement, and relegated girls' accomplishments to the second tier. Thus, not only did general cultural atmosphere play a major role in determining the extent of gender differences in creative production, but subcultures and economic pressures played a substantial role as well. These themes were echoed in Mar'i and Karayanni's investigation of gender differences in creativity in Middle Eastern nations.

They showed that gender differences were correlated to the host country's level of modernization and that increased gender equality was related to an increase in women's creative participation.

Three major arguments have been advanced to explain how cultural emphases might lead young women to abandon creative pursuits. The first of these was highlighted by Piirto (1991), who argued that, as young women graduate from high school and college, they begin to face expectations of marriage and family life that require significant time and dedication, which leads many to forsake their prior goals (also see Cole & Zuckerman, 1987). According to Piirto, young men, in contrast, are adequately supported and spurred on to professional advancement. This difference in social support is related to a second argument by Ruth and Birren (1985), who emphasized that cultural values and role expectations force women to modify their practice of, and appreciation for, creativity in action. Instead of focusing on products and results, Ruth and Birren argued that women place more emphasis on the importance of the creative process itself rather than the production of a tangible outcome. Although such a tendency may be personally pleasing to the creative individuals involved, society places its values squarely on production, which creates the faulty assumption that these women have simply ceased to be creative. Note that these writings reiterate the relevance of expectations and opportunities.

In occurrences where talented women do continue to produce creative products regardless of society's influences, an additional obstacle may present itself in the form of product evaluation. In fields that have been historically dominated by men, most of the experts and evaluators are themselves male. This creates a risk for aspiring female participants with which their male counterparts are simply not burdened. In a thought-provoking study, Harris (1989) presented evidence that men and women show strong preferences for different shape and color schemes and argued that such differences in preferred patterns are likely to lessen the odds that a female painter will receive a favorable review from a male critic. Each of these arguments recently discussed is in need of further examination and would benefit from a greater accumulation of data, but, collectively, they illustrate some of the major ways in which creativity, gender, and culture may interact to create and maintain a gender difference in creative achievement, even if no biological basis can be found to explain the gap.

A number of studies have focused on biological differences and processes in an attempt to explain gender differences in creativity (Harris, 1989; Hassler, 1992; Hassler, Nieschlag, & de la Motte, 1990), but it is extremely difficult to ascertain the degree to which biology contributes to actual differences. Consider in this regard the classic work of Sir Francis Galton, the nineteenth-century psychological theorist and cousin of Charles Darwin. Galton's (1869) studies of genius and achievement showed significant gender differences in terms of accomplishment, but neglected to explain these discrepancies in terms of expectations and nurturance, and instead attributed them to biological factors. Indeed, one of his most famous works was titled *Hereditary Genius*. It presented examples of genius being passed through well-known family lines from one generation to the next. Galton's sample of geniuses, who were selected for their prominence in the fields of law, medicine, and science, featured an obvious overrepresentation of men and led to the conclusion of men's superiority in these potentially creative domains. What can be overlooked is that such a sample does not imply that only men can perform at such high levels. Rather it may mean that women in certain samples, especially those who experienced the restrictive cultural gender expectations of nineteenth-century British society, tended not to fulfill their potentials. It is quite likely that expectations and socioeconomic status are passed from generation to generation, or "run in families," which would mean that the hereditary genius Galton uncovered was a result of nurture as well as (and perhaps more strongly than) nature. Of course, other investigators have examined non-genetic biological influences and potential contributions (e.g., Chrisler, 1991; Harris, 1989; Hassler, 1992).

Once again a key point in all of this may be that potentials, as well as actual performance and achievements, must be taken into account and studied, for potential is what our genetic makeup

provides. This line of thought is captured by the idea of a *range of reaction*; the crux is that genes set a range of possibilities, and experience determines the reaction or where within that range an individual will perform.

All children have creative potentials (Runco, 1996), even though not all adults fulfill their potential and behave in an unambiguously creative fashion. That may sound like an obvious point, but all too often creativity is defined in terms of actual achievement and performance alone, and the creative potential of individuals is overlooked. When this occurs, children of both genders are unlikely to be treated appropriately, supported, or nurtured in ways that help them to fulfill their creative potential. The fulfillment of potential is facilitated by methods for accurate identification and assessment. Fortunately, this is where empirical research is so helpful. A great deal of empirical research demonstrates that creative potential can be objectively assessed. This is often done with tests of divergent thinking, personality tests, or assessments of creative attitudes and styles. Each of these is reviewed below.

Gender Differences in Divergent Thinking

Many studies of the creative potential of women and men have relied on divergent thinking (e.g., Cronbach, 1968; Hargreaves, 1977; Lewis & Houtz, 1986). This may be in part because divergent thinking tests are designed specifically to assess potential. In addition, they allow an objective scoring of originality, and originality is central to creativity. Divergent thinking tests are best viewed as useful estimates of the potential for creative problem solving (Runco, 1999). They are not perfect measures of actual creative performances, just as an IQ score is not a perfect measure of ability to succeed in the real world.

Divergent thinking tests ask participants to respond to open-ended questions. Unlike many academic tests, more than one answer can be given. Indeed, the more, the better. The statistical infrequency of the generated responses is taken as an index of originality. For example, the Torrance Tests of Creative Thinking, the most commonly used divergent thinking tests, ask participants to complete a wide range of verbal and figural activities including picture completion, alternative titles, and optional uses for common objects (e.g., uses for a brick). Participants' answers are then scored for fluency (the number of ideas given), flexibility (the number of conceptual categories or themes in the ideas), originality (the number of unique or highly unusual ideas generated by any one person), and degree of elaboration (detail and depth in each response). Although divergent thinking represents only one aspect of creative potential, its perceived importance to the generation of new and useful ideas has led to steadily increasing use of measures based on it.

Previous reviewers (Baer, in press; Rejskind, Rapagna, & Gold, 1992) have uncovered over 80 studies conducted in the past five decades that included tests of divergent thinking to estimate creative potential and to examine gender differences. In contrast to traditional beliefs, not only have these studies found no statistically significant gender difference in creative potential, but, in one-third of the studies, girls' scores were higher than boys'. Representative of this overall trend is a large study by Rejskind et al., which summarized data from 41 prior studies on creative potential in children and reported findings from new data collected from 244 gifted youths. Rejskind et al. reported that no less than one-half of the studies that had been conducted with elementary school children indicated gender differences. Two-thirds of the studies showed that girls' scores were slightly higher on both figural and verbal tests of divergent thinking potential. Rejskind et al. also found, in the new data, that girls performed somewhat better than boys in divergent thinking.

Dudek, Strobel, and Runco (1993) examined the creative potential of 1,445 Canadian middle school children based on scores from both the verbal and the figural Torrance Tests of Creative Thinking. Four statistical comparisons were reported, based on different elements of the Torrance Tests (fluency, flexibility, originality, and elaboration), and the results indicated a statistically significant difference in three of the four comparisons. In each of these three cases, it was the girls who earned higher mean scores. Recall here our caution against generalizing from averages to individuals.

Although approximately one-third of the divergent thinking studies have shown higher scores for girls and women, it is crucial to note that no such difference has emerged from the data as a whole. A slight majority of the published studies has shown no significant gender difference (Baer, in press). A small number of studies have reported higher scores for boys or men. One such example of this is the work of Tegano and Moran (1989), who found boys' scores to be significantly higher than girls'. Tegano and Moran utilized the Multidimensional Stimulus Fluency Measure to quantify creative potential rather than the more widely applied Torrance Tests.

In sum, the body of data on gender differences in divergent thinking tasks remains mixed, and the most popular outcome is a lack of differences. Similarly mixed conclusions have been drawn by the few researchers to use alternate means of assessing creativity rather than divergent thinking tasks. These include Richardson's (1985) use of the Remote Associates Test (RAT) and Runco and Smith's (1992) study of the evaluative component of divergent thinking. As the name implies, the RAT assesses a person's associative capacity. It presents verbal stimuli and allows participants to generate associates. Participants who are good at finding appropriate associates, according to Mednick's theory, should also be good at creative thinking. The RAT is, however, often biased by verbal ability. The other approach, examination of the evaluative component of divergent thinking, assumes that true creativity requires more than just fluency or even original and flexible ideation. It also requires that solutions and ideas are appropriate, and, for that reason, it requires that individuals can evaluate options and accurately determine which are the creative solutions.

Unfortunately, no one seems to have taken test-wiseness or similar meta-cognitive skills into account. This might be important in much the same manner as it has found to be in studies of age differences. Such differences are often reported (Runco & Charles, 1997); individuals in later life often perform at the lowest levels. It could be that these individuals are the least accustomed to taking tests and are thus poorer in the meta-cognitive skills that constitute test-wiseness. Their low scores are not necessarily a reflection of loss of ability with age. Perhaps girls have often outperformed boys on certain tests of divergent thinking because of some similar extra-cognitive advantage. This brings us to personality and creativity.

Gender Differences in Personality Indicators

Creativity has long been known to correlate with a number of personality traits (Barron, 1995; Davis, 2003). These comprise an interesting mix of both positive and negative traits. On the positive side, highly creative individuals are often said to be original in thought and deed, independent, curious, open-minded, and willing to take risks. On the negative side, however, these same creative persons have sometimes been described as rebellious, uncooperative, questioning, argumentative, and temperamental. Several recent studies have been done to examine the personalities of highly creative men and women and to evaluate whether differences exist between the genders. Longitudinal studies are of course very useful in this regard (Cramond, 1993; Helson, 1996, 1999; Subotnik & Arnold, 1993).

Helson (1996, 1999) supervised the Mills Longitudinal Study of creativity in women from the Mills College classes of 1958 and 1960, who were recruited based on faculty nominations. Her research team periodically collects psychometric and career-related data from the participants. Helson (1996) administered both the California Psychological Inventory and the California Q-Sort test to the participants, and she argued that, although the notion of a distinct personality type for creative individuals is not supported by the data overall, some data do indicate that creative women “can be conceived quite generally as (a) organized around a symbolic interest pattern, (b) in the service of some kind of power motive, and (c) related to a social identity” such as art or science (p. 303). In addition, raters who evaluated the participants’ responses consistently described the women in five key ways: They valued intellectual matters, held high aspirations, valued their independence, possessed a high degree of intellect, and demonstrated an ability to be productive.

Helson’s (1999) study with the Mills’ alumnae explored participants’ personality characteristics more deeply; she looked for personality factors that had led some of the study’s participants to attain a higher level of creative achievement than was the case for others. This time she administered the California Psychological Inventory and the Minnesota Multiphasic Personality Inventory. Helson found that, although openness and unconventionality could be held as reliable markers of creative potential overall, it was the mixture of these traits with resilience and motivation that seemed to promote creative achievement in some women rather than others. Taken as a whole, Helson’s data do not point to a single creative personality, but they do provide strong evidence that certain personality factors enable creative women to achieve in some nonconventional ways. It is noteworthy that Helson’s conclusions are based on longitudinal investigation. Such studies offer insights that are not available via other methods (Subotnik & Arnold, 1993).

Several studies provide intriguing evidence that men and women enact their creativity in potentially disparate ways. In the first, Baer (1997) conducted an examination of the effects of impending external evaluation upon creative performance in girls and boys, and reported evidence that girls alter creative behaviors to meet the expectations of others to a higher degree than boys do. In this study, Baer asked schoolteachers to assign creative writing tasks to mixed-gender classrooms; one-half of the teachers announced that no evaluation of the work would be given, and one-half asked that the work be turned in for grading. After they examined the students’ products, Baer’s team of raters found that, whereas the different conditions had little impact upon boys, girls exhibited significantly lower creative production if they had been told that their work would be evaluated. This certainly is consistent with the idea that gender differences in creativity may, in part, reflect inter- and intrapersonal expectations.

This notion that women may downplay creativity in order to meet external expectations is further supported by recent work by Charyton and Snelbecker (2007). They found that, when presented with a list of adjectives, creative men are more likely to describe themselves with the word “clever,” whereas creative women are more likely to select “mannerly.”

This line of work is consistent with that on the differences in the amount of primary process thinking of men and women. Russ (2002), for example, concluded that “consistent gender differences in primary process thinking have been found, both in the amount of primary process expressed and in the relation between primary process and creativity. In general, primary process thinking has been found to relate to the creativity in males, but not in females” (p. 53). She referred to Freud’s theory that primary process is a primitive form of thought, “drive laden,” and not governed by logic, social rules, or even reality. She also reviewed more recent theories that tie primary process to aggression, oral tendencies, and libido. Russ (2002) cited her own work on children’s play, as well as the results of West, Martindale, and Sutton-Smith’s study (1985), which showed significant gender differences among children ages 2–11 years. West et al. examined spontaneous fantasies and found more primary process in the boys than the girls. Russ (2002) concluded that social relationships are more

important to girls than boys and quoted West et al. that girls “appear to become increasingly indoctrinated with cultural values, and hence establish greater impulse control. . .the greater importance of social relationships to girls could cause cognitive development to be more strongly shaped by social controls than for boys” (p. 73). This line of thought fits well with psychoanalytic theories of creativity, which suggest that access to the unconscious and uncensored material can supply individuals with original insights (Rothenberg, 1990). Certainly true creativity requires more than just wild thinking, originality, and libido. As noted above, it also requires evaluation and guidance (Arieti, 1976; Runco, 2003; Russ, 2002).

The results of these studies lend some support to the idea that personality and related extra-cognitive differences might exist between creative women and creative men, such that men perhaps display a higher percentage of the traditionally negatively perceived characteristics such as rebelliousness, although creative women may strive to a larger degree to fit in and meet social expectations.

Androgyny and Cognitive Styles

Recall here the point emphasized early in this chapter about how categorizations lead to expectations. That should be apparent in much of the research reviewed above, but it is especially clear in the research on psychological androgyny and creativity. In fact, this line of work undoubtedly offers the most realistic and balanced perspective on creativity and gender differences. It explains why, for example, both men and women can be creative under the right circumstances. It also suggests how parents and teachers might work with children in order to encourage flexible gender roles and creative performance.

Psychological androgyny can be understood as access to both stereotypically feminine and masculine characteristics. Androgynous individuals do not conform to expectations based on gender alone. The humanistic perspective is that they are *self-actualized*, which is an excellent way to describe authenticity and optimal resistance to stereotypes (Maslow, 1971; Rogers, 1954/1959). It is not surprising that self-actualization is strongly associated with creativity (Runco, Ebersole, & Mraz, 1991). This kind of authenticity and resistance to stereotypes allows individuals to consider a wide range of options. They do not conform to what is appropriate based on expectations alone (e.g., the “appropriate” response for a man or woman). Access to a wide range of options is very useful for creative thinking. It is easy to associate it with divergent thinking, for example, as wide options lead to ideational fluency, originality, and flexibility. Note also that androgynous persons do not conform to expectations. Conformity to gender roles, and all sorts of expectations and traditions, is antithetical to creative thinking.

Empirical support for the benefits of androgyny, specifically in terms of creative behavior, was presented by several authors (Chrisler, 1991; Harrington & Andersen, 1981; Keller, Lavish, & Brown, 2007). Keller and colleagues found that undergraduate students who scored high in androgyny on the Bem Sex-Role Inventory (BSRI) also scored in the upper levels on four subscales of the Creativity Styles Questionnaire-Revised (CSQ-R). Keller et al. believe that psychological androgyny is of particular help in the transition from creative potential to creative achievement because it supports self-esteem, increased achievement motivation, and higher life satisfaction. It may also be related to cognitive flexibility. This is another way of saying that it allows the individual to consider a wider range of options, but flexibility may also operate on a different level, as a cognitive style as well as a cognitive process, and, as such, it applies very generally to all problems and tasks encountered.

There is in fact support specifically for the benefits of cognitive flexibility. This was initially surprising because it had been predicted that some cognitive styles would support creativity, and others would inhibit it. Yet results demonstrated that there is not one style positively correlated with creativity. There are several beneficial styles and apparent different ways to be creative (Carlsson, 2002). In fact, cognitive flexibility, defined as the capacity to shift quickly from style to style and to resist entrenchment in one viewpoint, may be the most important factor in creative efforts. As a matter of fact, after they had administered a wide battery of cognitive preference, personality, and aptitude tests to a range of beginning design students, Meneely and Portillo (2005) concluded that, although neither a hemispheric dominance, single mode of thought, or traditional cognitive style served as a statistically significant predictor of creative design work, the flexibility demonstrated by certain individuals to switch quickly and fluidly from one manner of thinking to another did serve as such a predictor. The design students in their sample who exhibited the highest levels of creative thought tended to demonstrate flexibility among analytic thinking, affective thinking, global thinking, and local thinking, as quantified by the Herrmann Brain Dominance Instrument.

This view of creativity as flexibility fits well with previous work in the field, including both similar studies on cognitive shifts in thinking among highly creative individuals and work that has focused on the ability of creative people to avoid entrenchment in specific mental sets. Creativity may be easily stifled by entrenchment in one particular vantage point or understanding of a concept, and highly creative individuals may be more skilled at avoiding this impasse due to their cognitive flexibility and tendency to question what others take for granted, such as that it is “natural” and “appropriate” to conform to traditional gender roles. Surely both flexibility and androgyny should be encouraged by parents and teachers. It is very likely that there would be mutual benefit.

A growing body of literature on *stereotype threat* may contribute to our understanding of creativity and attitudes. Stereotype threat (Steele & Aronson, 1995) is a measurable effect upon a group’s performance that can best be explained by that group under- or over-achieving on a task in order to meet stereotypic beliefs and expectations. For example, recent work has shown that African-American students perform worse on mathematics exams if told that the tests measure intelligence rather than mathematics (Steele & Aronson, 1995); that White male golfers perform worse than equally skilled Black male golfers if told that the study measures “natural athletic ability” (Stone, 2002); and that female Asian math students perform better on exams if asked to participate in a study on “Asians and math” rather than one on “women and math” (Shih, Pittinsky, & Ambady, 1999). Although no such study has yet been conducted on the stereotype threat of gender and creativity, it is certainly reasonable to predict that such an effect might exist. If this is the case, the psychological attitudes of creative women may be dampened due to a perception that women are less creative than men, which could lead them to downplay creative potential and underperform in creative achievement, thereby perpetuating the cycle. This is not to say that all boys and men fulfill their creative potential. If some boys and men were to perceive creativity as primarily characteristic of stereotypically feminine activities, they might be likely to shy away from them and would not obtain the necessary experience.

Conclusions and Future Directions

For much of human history, women and men have been allowed very different levels of access to resources, education, and financial support that are necessary for creative performance. This has led to an expectation that men should blaze valuable new trails, but significantly less opportunity for women to do the same. As a result, marked differences in creative achievement have historically

existed in nearly all artistic and scientific fields; creative domains have gained reputations as appropriately masculine or feminine depending on the opportunities (or lack thereof) that they provide for creative people. Even today men can be said to dominate in terms of academic publishing (Feist & Runco, 1993), mechanical innovation, musical composition, painting artistry, and a wide range of other such categories, whereas women possess a similar achievement advantage in terms of literature, musical performance, dance, and dramatic theater (Baer, 1998a). In contrast to these stark accomplishment differences, however, over 80 studies have been conducted to investigate basic differences between the genders in creative potential, and little support for any differences has been reported. In fact, one-half of these studies indicated no meaningful difference in creative potential among men and women, and one-third of the studies indicated that women and girls actually score slightly higher on creativity indices than do men and boys. The question of why this gender similarity, or possible greater creativity of women, has not translated into women's equal or above-average creative achievement levels deserves more attention.

Much remains to be done empirically before gender differences in creativity are well understood. Given our discussion in this chapter about the fulfillment of potential, future researchers should further examine aspects that contribute to the fulfillment of potential and how these might vary by gender and other demographic categories (e.g., socioeconomic class, culture/ethnicity). Anticipated evaluation (Baer, 1997, 1998b), susceptibility (Bowers, 1971), mood (DeMoss, Milich, & DeMers, 1993), time pressure (Sajjadi-Bafghi, 1986), cognitive style (Kershner & Ledger, 1985; Saracho, 1992), and reaction to instructions and directions (Katz & Poag, 1979) have each been related to gender differences in creativity, and research on each implies that beneficial manipulations are possible. There is a moderate amount of research on gender differences in creativity within particular domains (Chusmir & Koberg, 1986; Cole & Zuckerman, 1987; Hassler, 1992; Shukla & Sharma, 1986), but there are other domains, including some new ones (e.g., technology), that should be examined in the future. And given recent research on the actual genes and alleles that are associated with creativity (Nobel, Runco, & Reiter-Palmon, 2009; Reuter, Roth, Holve, & Henning, 2006), biological contributions to creativity should receive further attention in future investigations.

Longitudinal investigations of gender differences could test the theory of an *androgyny shift* in middle- and late-life, given the significance of androgyny for creative performances (Harrington & Andersen, 1981; Keller et al., 2007). The androgyny shift reflects a de-emphasis on social conventions and expectations, which allows both men and women to behave in an androgynous fashion to an increasing degree, and to behave in a fashion that is consistent with gender roles and stereotypes to a decreasing degree, as they grow older. The personal dismissal of social constraint and expectations should translate to creative expression, as other kinds of unconventional, contrarian, and nonconforming actions do. Previous research has tied gender differences to expectations and social control, which can constrain thinking and undermine creativity (Russ, 2002; West et al., 1985). Recall here that Russ (2002) suggested that girls are more sensitive and reactive to social constraint than boys are, and, as such, they might be more likely to inhibit their originality.

These ideas need careful empirical testing because there is also a reason to predict something quite different, that is, that boys might be more likely to conform to stereotypes and, therefore, to constrain their thinking, especially if they believe that certain types of creative activities are effeminate. This point of view is supported by the social desirability of many masculine traits (e.g., autonomy; Bem, 1986) and the tendency of individuals to move toward desirable traits and away from undesirable ones. If masculine tendencies are more socially desirable, a boy will stick with them and avoid contrary traits, whereas a girl may feel good about engaging in non-stereotypical actions when they reflect change toward desirable characteristics (e.g., athletics). Although this view is controversial, it is consistent with the fact that girls often do not mind being called a "tomboy" or wearing traditional boys' clothing (e.g., jeans). Boys, on the other hand, have no acceptable analogue to

“tomboy.” Certainly, none of this is as it should be, and gender roles have evolved over the past 35 or so years.

Social desirability also played a role in the sociometric research of Lau and Li (1996). They identified five groups of children among their sample of 633 fifth grade Chinese students in Hong Kong. The groups were labeled controversial, rejected, neglected, popular, and average. The children’s creative potential was rated by both teachers and peers. The popular children were rated as most creative, followed by the children in the controversial group. There was some indication of gender differences in peer ratings, such that boys were rated more creative than girls.

Our review indicates that the key factors in this area include opportunities, expectations (and conformity or nonconformity to them), cognitive flexibility, and androgyny. More flexible, androgynous, and nonconforming individuals of both genders are the most likely to perform in a creative fashion. Practically speaking, these are useful educational and parenting targets. If flexibility, appropriate nonconformity, and androgyny are encouraged, for example, it is likely that individuals of both genders will be able to translate their creative potentials into actual creative achievements. And that will benefit both the individuals themselves and the greater culture and society.

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Part V
Communication

Chapter 18

Words Matter: The Language of Gender

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Language is a major component of culture. Specific words are needed to describe concepts that are important to people; without those words it is very difficult to think about, and nearly impossible to talk about, objects, ideas, and situations. Language is influenced by thought and, in turn, it influences thought. Hundreds of studies in psycholinguistics and cognitive psychology show that language affects not only to what people pay attention but how we think about what we notice, how we remember what we have noticed, and how we approach problem-solving tasks (Clark & Clark, 1977). Linguistic relativity (Rosch, 1974), derived from the Whorfian Hypothesis (Whorf, 1956), asserts “that languages are not simply a reflection of culture, or of the behaviors, cognition, or attitudes of their speakers, but instead actually help shape them by allowing or encouraging certain thoughts and discouraging others” (Hamilton, 1988, p. 795). In any culture, language is power.

Struggles for the “power to name” are continually played out in politics and the media; these struggles are taken very seriously by those in the know, and often trivialized by those who do not grasp their significance. Are those soldiers “warriors” or “peacekeepers”? Is that politician “anti-choice” or “pro-life”? Are the authors of this chapter “girls,” “chicks,” “ladies,” or “women”? The answers matter; they affect how readers think about the individuals in question. In the United States in recent years the right wing has been more attentive than the left wing to the power of naming, and thus, more successful in shaping popular discourse. Consider how quickly and completely the phrase “war on terror” (a grammatical abomination and an idea so vague as to encompass almost anything from violent crime to combat) was adopted internationally. One almost never sees the word “fetus” in U.S. newspapers and magazines anymore. It has been replaced consistently by terms favored by anti-abortion groups; today a fetus (and even an embryo) is routinely referred to as an “unborn,” or “preborn,” baby. What kind of monster would want to “harm” a “baby”?

The first step toward social progress is “naming the problem.” Betty Friedan (1963) referred to the dissatisfaction of college-educated women who spent their prime years at home engaged in housework and childrearing as “the problem that has no name.” Prior to the mobilization of the Gay Rights Movement, same-sex relationships were referred to as “the love that dare not speak its name.” Thus, in the early years of the Women’s Liberation Movement (aka the second wave of feminism), many new terms were devised to label the problems to be tackled. Date rape, sexual harassment, and domestic violence are among those experiences that, as Gloria Steinem (1983, as cited in Crawford, 2001) once put it, used to be thought of as just part of life. As a result of the naming of types of violence against women, the scope of the problem was revealed. People could discuss violence in

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public and in private, realize that their own experiences were widespread rather than idiosyncratic, and lobby for the establishment of legal definitions and criminal prosecution.

Not only does the existence of a name convey the importance of an experience but the absence of a name suggests that there is nothing about the experience that is worth discussing. For example, the English language has no term comparable to “virility” to describe women’s sexuality (Beatty, 1979). Prior to 1980 psychologists had a lot to say about “mothering,” but rarely used the term “fathering” (Lamb, 1976). Fathers were thought to do little for their children beyond bringing home a regular paycheck. “Coming out” and “outing” are relatively recent terms, as are “gay,” “straight,” “bisexual,” and “transgender” (Crawford, 2001). The ability to choose a name for one’s own group, rather than being named by others (e.g., lesbian – not female homosexual; African American – not Negro), is empowering, and, when others gradually adopt the name, their use conveys social respect.

Feminist researchers who use discourse analysis and metaphor analysis in their work have documented many incidents that illustrate how gender stereotypes and other cultural beliefs are conveyed in both technical and common language. For example, Emily Martin (1991) analyzed descriptions of reproduction in biology textbooks, and she found that the scientists’ beliefs about gender roles were clearly conveyed in their writing. The connection of masculinity with agency (i.e., active, aggressive) and femininity with communion (e.g., nurturance, passivity) was extended to gonadal cells, as sperm were described as swimming energetically toward the target, and ova were described as floating passively and awaiting contact. In a recent study Smith, Schmoll, Konik, and Oberlander (2007) documented that different words used to describe body size, words that are often assumed to be synonyms, yielded significantly different reactions to targets in personal ads who were described in the same way except for the weight-related term (e.g., obese, overweight, full-bodied); the more positively framed term “full-bodied” yielded more positive reactions to the target than did the more negatively charged, medical term “obese.” Lisa Cosgrove (2004) expressed concern about the possible effects of the medical term “spontaneous abortion” on women grieving after a miscarriage and of the label “habitual aborters,” which is given by physicians to women who have suffered several miscarriages. Similarly, Phyllis Mansfield (1988) noted that the medical term “elderly primigravida” for women who are pregnant for the first time in mid-life clearly conveys the attitude that childbearing is only appropriate for younger women. Thus, researchers and writers should be very careful in choosing their words, as there is ample evidence that those words shape, and bias, participants’ and readers’ understanding. This can happen in both subtle (e.g., Can women scientists/writers ever produce “seminal” work?) and blatant (e.g., “the opposite sex”) ways. The use of the familiar phrase “opposite sexes” is a particular problem, given that hundreds of psychological studies (detailed in other chapters of this handbook) show the myriad ways that men and women are more similar than they are different (e.g., Hyde, 2005). The phrases “other sex” or “cross-sex” will always be more appropriate.

In addition to inventing new terminology to name women’s experiences, feminist activists of the 1970s focused on reforming sexist and androcentric aspects of language use. For example, typical patterns in American English sometimes omit one gender (usually women; e.g., the use of the masculine generic) and trivialize or denigrate people who do not meet gender role expectations (Crawford, 2001). Examples of trivializing women include the use of “cute” endings for words that otherwise suggest a serious endeavor (e.g., sculptress, poetess, suffragette). Examples of denigration include the many negative terms for lesbians and gay men, as well as the many negative terms for women’s bodies and sexuality. Sometimes people express their surprise that their gender role expectations were violated by inserting a gender marker before a common noun (e.g., male nurse, lady lawyer). Although trivialization and denigration are not often seen in psychological literature these days, they once were prevalent, and they remain a problem in popular culture.

There is no gender-neutral singular pronoun in the English language, which forces speakers who wish to describe an individual to choose a gender (i.e., he or she). Grammar books have traditionally advised writers to choose “he” when the gender of the individual is unknown. This (and the use of “man” or “mankind” to describe people in general) is known as “the masculine generic.” Feminists argued that the masculine generic omits women from the conversation; indicates that men are the “standard” and women are “the other”; and suggests that women cannot, should not, or do not engage in activities labeled with compound terms that include the generic “man” (e.g., chairman, policeman, businessman). Psycholinguistic research indicates that the masculine generic shapes the thoughts of those who hear and read it, sometimes below the level of awareness. For example, although we all have learned that “he” and “man” can stand for all people, it is not necessarily clear when a speaker or writer intends the generic use of a term and when the intention is clearly to refer to male persons.

Regardless of the speaker/writer’s intention, the listeners/readers think about male persons when masculine words are used, and that imagery can affect their comprehension, interest, and memory. For example, an early study showed that when college students read an essay on “The Psychologist and His Work,” men recalled more about the essay than women did, and women recalled less about the essay than did other women who read a gender-inclusive version of the same essay titled “The Psychologist and His or Her Work” (Crawford & English, 1984). In a clever study Mykol Hamilton (1988) prompted participants to complete sentence fragments (e.g., “If an employee wants a raise. . .”) with either the masculine generic (i.e., “use formal, traditional language”) or gender-inclusive wording (i.e., “use modern, relaxed language”). Participants were then asked to write a brief description of the image they had in mind as they completed the fragments and to give the imagined person a name (e.g., Mary, John). Results indicate that the tendency to imagine a man was more common in both female and male participants when the masculine generic was used. Other studies have shown that people asked to illustrate a story (or its title) written in the masculine generic produce drawing of boys and men almost exclusively (Harrison & Passero, 1975; Schneider & Hacker, 1973), that people who read legal documents written in the masculine generic think that the law refers only to male persons (Hamilton, Hunter, & Stuart-Smith, 1992), and that women have less interest or inclination to apply for a job if the advertisement is written in the masculine generic (Bem & Bem, 1973; Stericker, 1981). The studies mentioned here (and others like them) were important in convincing authors of publication guidelines (including the American Psychological Association) to recommend the use of gender-inclusive language. Nevertheless, the masculine generic still can be found occasionally in scientific reports and frequently in the popular press. We urge authors to avoid it. Sentences can almost always be written in a plural format that avoids the wordiness to which some writers object (e.g., Each person should buy his or her own lunch; People should buy their own lunches).

Precision is the hallmark of scientific study; researchers set forth a clear set of procedures and rules for their studies (both quantitative and qualitative) and follow them to the letter. The same precision should extend to the report of the project and its results so that readers can understand exactly what was done and why and so that other researchers could undertake a replication. Precise use of language is essential to a clearly written report, yet researchers often misuse common terms in gender research. In the sections that follow we set forth a guide to the current, most correct usage of these important terms.

Sex or Gender? What’s the Difference?

Psychology has a history of examining “sex differences.” Stephanie Shields (1975) critiqued this history and argued that sex difference research has been used to perpetuate beliefs in men’s superiority

and thus to justify the status quo. The controversy over the usefulness of sex difference research is a continuing one (McHugh & Cosgrove, 2002).

One aspect of the sex difference model that is problematic is the use of the term "sex." As Rhoda Unger (1998) noted, "It is by no means clear what is meant by the term sex" (p. 110). For example, it can be used to refer to the expected "sexual dimorphism" of the human body (i.e., male or female people), to sexual behavior, to traits linked to the sex chromosomes, or to behaviors or conditions linked to sex hormones or other physiological differences (Gentile, 1993). When used as an independent variable, as it is in sex difference research, it implies that any differences found are physiologically based, that is, that they are built into the organisms (Unger, 1998). Unger (1979) proposed using the term "gender" to refer to those non-physiological components that are regarded as culturally appropriate to women and men. Gender, a term borrowed from grammar, is a social label by which we distinguish two groups of people (i.e., boys/men, girls/women). It also refers to the traits and behaviors considered characteristic of and appropriate to members of each category. The use of the term gender to refer to psychosocial aspects related to sex serves to eliminate the confusion about which meaning of the word "sex" is at issue, and it also reduces or exposes the assumption of parallels between physiological and psychological aspects of behavior associated with women and men (Unger, 1979).

At present, the convention among gender researchers is to use sex to refer to the dichotomous category system of male and female based on biology and physiology. It is always appropriate to use sex, and the labels female and male, when describing work with non-human species, which are not subject to the kinds of cultural expectations dictated by gender roles. Gender refers to being a boy/man or a girl/woman in a cultural context, and it is the appropriate label for humans in most psychological research. Gender should be used in discussions of individuals as enacting the rules and expectations for femininity and masculinity. "Gender role" refers to the characteristics, behaviors, demeanor, preferences, attitudes, and cognitions associated with being a woman or a man. "Gender identity" is individuals' own sense of themselves as a boy/man or as a girl/woman. "Gender attribution" is the process by which we assign others we observe to the categories of woman or man. Gender is sometimes used as a dichotomous category system, but is increasingly viewed as more dimensional and complex than a simple dichotomy. Sandra Bem (1993), who once called for less gender, now calls for more of it, and some transgender activists (e.g., Wilchins, 1997) believe that they are "beyond gender" and call for the end of it (Chrisler, 2007). Increasingly it has been argued that sex as a two category biological system is not accurate; the dichotomy between maleness and femaleness may not be as distinct as was once believed (Golden, 2004; Kessler, 1998).

The distinction between sex and gender is at best a fuzzy one (Lips, 2006). Researchers (Deaux, 1993; Gentile, 1993; Morawski, 1987; Unger & Crawford, 1993) are divided over the terms for speaking about sex-related phenomena, and their use of the terms sex and gender may be a better indication of the researchers' own ideology than of the phenomena they are studying. Some scientists believe that most observed differences between how women and men act are biologically based (i.e., rooted in the biological differences between the sexes); as a result, they prefer to refer to such differences as "sex differences." For example some believe that women are more nurturing than men as a result of women's procreative potential and/or the functioning of their reproductive system. Other researchers refer to any demonstrated differences in nurturance as a gender difference, based on their conception of nurturance as a cultural norm for girls and women that is not required of (or even actively discouraged in) boys and men. The relation between sociocultural expectations regarding gender and actual biological sex differences is not always clear. We may not have the ability to distinguish clearly between which aspects of behavior are due to sex (biology) and which are due to gender (i.e., societal norms or cultural constructions). For example, are boys and men really more aggressive than girls and women? And if they are, is that difference a sex difference (e.g., related

to hormones) or a matter of gender (e.g., created by a greater cultural acceptance of aggression by men than by women)? Although it is a good idea to use the term sex when referring to the biological categories of male and female, and gender when referring to the cultural categories of women and men, it may not always be possible to distinguish the basis of any differences we observe between the groups. Biology, culture, and environment work in interaction to produce human behavior; it is difficult, or even impossible, to label most differences between men and women as purely biological or purely sociocultural. Some theorists (e.g., Deaux, 1993) advocate the use of the term “sex-related” or “sex-correlated” when the origin or cause of the observed difference between girls/women and boys/men is not fully determined. Most others (e.g., Lips, 2006; authors in this volume) use “gender differences” as an inclusive term to discuss differences between men and women that may be caused by a combination or interaction of biology and culture.

Despite the convention identified above, psychologists continue to employ the terms sex and gender in non-standardized and inconsistent ways (Gentile, 1993; Pryzgoda & Chrisler, 2000; Unger & Crawford, 1993). An ironic embodiment of this inconsistency is the feminist journal *Sex Roles*, which, for well over a decade, has had an editorial policy that its authors must use the term “gender roles,” but has not changed its name to reflect its own policy (Chrisler, 2007). Furthermore, one can often hear conference speakers, and even occasionally read journal article authors (e.g., Devaud, Fritschy, & Morrow, 1998; Serhsen, Hashim, & Lajtha, 1998), discussing their results in terms of the gender of the rats, as though their experimental subjects, like cartoon animals, differed in their mode of dress and preferred either feminine or masculine toys and hobbies (Chrisler, 2007). Nevertheless, a recent study of millions of journal article titles listed in natural science, social science, and humanities databases indicates that, since 1980, the use of the word “gender” in titles has increased steeply, whereas the use of the word “sex” has remained relatively flat with only a modest increase (Haig, 2004).

Pryzgoda and Chrisler (2000) examined non-psychologists’ beliefs about and definitions of the terms sex and gender. The results indicate that participants held a variety of understandings and beliefs about gender. A common response was to equate gender with sex and to see the terms as synonymous. Less common were responses that gender refers to women or to masculinity and femininity or to roles, characteristics, and behaviors, or to society. The authors concluded that, although “some people hold simple and straightforward views of gender, . . . others see it as a complex part of the human experience” (p. 566). Capdevila (2007) recently reported that, when she asked students at her British university about the distinction between sex and gender, they were puzzled by the question. They thought of sex as an old-fashioned word for gender. Thus psychologists cannot assume that their audience shares their understanding of “gender,” and so we ought to be more careful and precise in our use of these terms.

Masculinity and Femininity

Psychologists have traditionally viewed femininity and masculinity as an essential and enduring disposition of an individual. Further, femininity in girls and women and masculinity in boys and men were seen as desirable and normal. Masculine women and feminine men were viewed as having a (diagnosable) “problem” (see Volume II, Chapter 4). Psychologists have developed measures of masculinity and femininity, often referred to as M–F tests. A good example of an early M–F measure is that developed by Terman and Miles (1936), who published the Attitude Interest Analysis Test, a 910-item test designed to detect femininity and masculinity at a “deep level.” According to Terman and Miles, masculinity and femininity have behavioral correlates, but these are not readily assessed by casual observation. The measure was used to reveal inconsistencies between one’s

biological and one's psychological sex, which were interpreted as sexual inversion or homosexuality. Additional M–F tests were constructed, and they became an accepted method for the assessment of masculinity and femininity or gender. According to Morawski (1987), all of the M–F measures shared certain assumptions. Gender was not readily perceptible. Psychological gender was a deep-seated and enduring disposition. Individuals differed in the degree to which they were masculine or feminine, but one's own degree of femininity or masculinity remained stable across situations and across the lifespan. Masculinity and femininity were constructed within these measures as bipolar opposites. On these traditional M–F tests, an individual could score more feminine only by scoring less masculine and vice versa. Gender was thought to be related to an individual's mental health. When a woman scored high on masculinity, and especially when a man scored high on femininity, it was a sign of psychological problems, possibly homosexuality (Lewin, 1984). Typically M–F scales are based on items that previous male and female research participants have answered differently. Feminine items then include stereotypic notions of how women are expected to be and to act. A perusal of the items on these scales indicates that masculinity and femininity were defined in a particular socio-historical context. Preferences for a bath over a shower, or for fishing over flower arranging, do not seem to contemporary psychologists to be adequate measures of the essential qualities of gender.

Feminist critiques of these measures and the underlying theories of gender roles were articulated in the 1970s. Weisstein (1971) challenged psychology as both constructing and devaluing feminine qualities, and Constantinople (1973) challenged the uni-dimensional nature and bipolarity of masculinity and femininity. Sandra Bem (1974) articulated a new theory of gender in which masculinity and femininity were viewed as separate and unique dimensions; individuals could vary independently on each dimension. Thus, an individual could possess attributes associated with both femininity and masculinity. Individuals with approximately equal levels of masculinity and femininity were labeled as androgynous in Bem's theory and subsequent research. Furthermore, Bem viewed the attributes associated with being feminine or masculine as demonstrated to different degrees depending on the social context: Any given individual may be a leader (in some contexts) and a follower (in other contexts). She developed the Bem Sex Role Inventory (BSRI) based on her theory. A similar theory of androgyny and a corresponding measure, the Personal Attributes Questionnaire (PAQ), were developed by Spence and Helmreich (1978). Androgyny measures were widely used in psychological research and continue to be used today as measures of masculinity and femininity.

The introduction of androgyny changed the way that psychologists conceptualized masculinity and femininity. Today femininity and masculinity are likely to be seen as separate constructs, and their relation to mental health has been challenged. Gender remains an area for extensive research, and psychologists have developed more multidimensional and context-based conceptions of gender. However, there are few recently developed scales or measures designed to measure masculinity and femininity as they are currently conceptualized (see Chapter 7).

Research indicates that the rules and expectations regarding what is feminine and masculine differ depending on the region of the world and its local culture and social norms; this suggests that gender-related roles and masculinity and femininity are socially constructed. Within any culture or society people make up rules to define what it means to be a woman or a man, and people within that society behave in culturally endorsed ways or risk the censure of other members of the society (Lips, 2006). Tests designed to measure masculinity and femininity generally cannot be transferred from one culture to another in a meaningful way; androgyny measures are also conceptualized within a cultural context, and they are unlikely to work well in cross-cultural research (Lips, 2006).

Not only are the expectations regarding gender different for different regions and cultures, but the way that lay people use the terms femininity and masculinity may differ from the conceptualizations of psychologists, who tend to think of femininity as personality traits and behavioral tendencies based on communality and expressiveness and masculinity as personality traits and

behavioral tendencies based on agency and instrumentality (see Volume II, Chapter 2). McHugh (2000) reported on a classroom exercise in which students generate a class composite for the terms masculinity and femininity by offering descriptions of a person they know whom they would describe as very feminine and a person they know whom they believe is very masculine. Her college students from a mid-sized public institution in the northeastern US consistently generate a concept of femininity that emphasizes attractiveness in terms of makeup, grooming, fashion, accessories, and hair styling. Femininity is also associated with demeanor and subordination (e.g., speaking softly, smiling, and being poised). The personal attributes, opinions, preferences, or activities of feminine persons are typically de-emphasized except for shopping. This conception of femininity is consistent with the analysis of commodified femininity promoted by popular culture (Ussher, 2006) and with the social construction approach that argues that femininity is not an aspect of the individual, but rather what the individual enacts or how the person performs gender in interaction with others (West & Zimmerman, 1991). Masculinity is not described by McHugh's students as the opposite of femininity. Rather, masculinity is related to hobbies, activities, and preferences (e.g., beer, fishing, cars, sports); this again resonates with the theory of gender as enacted. Masculinity is also associated with attributes (e.g., strong, independent, protective). Unlike feminine individuals, masculine individuals are not identified by their physical appearance, grooming, or clothing choices, except that they are expected to be strong and/or muscular. This classroom exercise suggests that college-aged women and men conceptualize masculinity and femininity as separate constructs, and they do not use the term femininity to explain inherent essentialist characteristics of women, but rather to indicate compliance with cultural and fashion norms. Most important, McHugh's (2000) analysis indicates that the terms femininity and masculinity may not mean the same thing to psychologists and non-psychologists.

Language and Sexual Minorities

Although the field of psychology has increasingly recognized and incorporated the diverse experiences of people who are not heterosexual, the field has yet to develop consistent terminology for these persons. In an attempt to set an appropriate precedent, the American Psychological Association's (APA) Committee on Lesbian and Gay Concerns (1991, p. 973) provided the following guidance: "The terms *lesbian sexual orientation*, *heterosexual sexual orientation*, *gay male sexual orientation*, and *bisexual sexual orientation* are preferable to *lesbianism*, *heterosexuality*, *homosexuality*, and *bisexuality*. The former focus on people, and some of the latter terms have in the past been associated with pathology." In addition, the Committee suggested that the phrase "lesbians and gay men" is preferable to "homosexuals."

A number of authors have discussed the meaning of the terms "sexual orientation" and "sexual preference." For example, Milton Diamond (1994, p. 199) wrote that "sexual orientation refers to the sex of the erotic/love/affectional partners" a person chooses. John Money (1987) has written that the term "sexual preference" implies voluntary choice of sexual partners, which can be problematic politically because, if individuals choose to be gay or lesbian, then they can also choose to be – or be forced to be – heterosexual. However, Barbaree, Bogaert, and Seto (1995) suggested that the terms are similar or synonymous in that they refer to whomever evokes an individual's arousal, affection, or desire; the persons or objects toward whom sexual activity is directed; and the persons or objects about whom an individual thinks or fantasizes. We agree with the APA that sexual orientation is the better choice.

The APA's language guidelines were issued almost two decades ago. Since then the thinking and research on gender, sexuality, and identity has evolved considerably. Indeed, as a reflection of the

changes, the APA's committee has been renamed the Committee on Lesbian, Gay, Bisexual, and Transgender Concerns.

The term "sexual minority" is increasingly being used in the psychological literature to refer to individuals whose romantic attachments or sexual behavior is other than heterosexual (Vergara, 1983–1984). This term first appeared in the literature in the 1970s (Kando, 1974). The term "sexual minority" may be seen as similar, or parallel, to the term "queer," which is often used to describe non-heterosexual identities. However, "sexual minority" is much more commonly used in psychology, whereas "queer" is more commonly used in the humanities and in feminist and sexuality studies. Both "queer" and "sexual minority" have been used by some researchers and theorists to provide a single, more encompassing term that is less cumbersome to use than the various acronyms of LGBTQ (i.e., lesbian, gay, bisexual, transgender, questioning). Within the humanities, queer theory, an area of study that emerged from gender studies and feminist theory, includes the work of scholars such as Michel Foucault and Judith Butler (Edwards, 1998). It should be noted, however, that the term "queer" is somewhat controversial. It has negative associations for some who see it as derogatory, whereas others see its use as an empowering way to reclaim a term that was used previously to stigmatize (Armstrong, 1997). Young people, who have less experience of having the word "queer" used against them, might be more willing to embrace the term. "Sexual minorities," with its parallel to the commonly used terms ethnic and racial minorities, might be more appropriate for use in gender research in psychology.

Although the American Psychological Association has provided terminology guidelines for psychologists to use in published work, there is a large, diverse set of labels for self and others within the sexual minority communities. For example, in an online survey of lesbians, Small, Davis, and Smith (2005) found more than 50 different self-identifying descriptors, including boi, femme, and futch (a combination of the words femme and butch). Thus, how a group may refer to itself and how individual group members might label themselves are constantly evolving (McClive, 2000).

In research on sexual minorities, the terms "gender identity" and "sexual identity" have been used interchangeably, albeit inaccurately (Diamond, 2002). Gender identity is one's awareness and acceptance of oneself as either a woman or a man (this includes knowledge of attributions made about the self by others; Unger, 1979), whereas sexual identity refers to whom one is attracted romantically and sexually (Diamond, 2000). Thus, sexual identity is based on attraction to others, and gender identity is based on one's sense of self and one's gender performance.

Transgendered or transsexual? The APA recently issued a policy statement to outline its broad support for non-discrimination policies for transgendered and gender-variant individuals (American Psychological Association, 2008a). The APA (2008a) defined a transgendered person as "anyone whose identity, appearance, or behavior falls outside of conventional gender norms."

Transsexuals have generally been defined as people who feel that they are "in the wrong body" and who seek to bring their psychological gender in line with their biological sex through surgical or hormonal modifications (Diamond & Butterworth, 2008). Until recently, transsexual was a more common term than transgender (Golden, 2004). However, because we now understand that individuals may present themselves in a variety of ways along the gender spectrum, and because many individuals who "do gender" in unusual ways do not engage in hormonal or surgical procedures that produce bodily changes, the terms "transgender" and "gender variant" are better representations of the diversity of experiences. As Diamond and Butterworth (2008) pointed out, identification as transgender may not be the result of feeling that one is in the "wrong body." Instead, the label or identity may be chosen because an individual is resistant to adherence to traditional behavioral norms or gender identity statuses. Indeed, the editors (Pfaefflin & Coleman, 1997, p. 1) of the online publication *International Journal of Transgenderism* wrote that "We chose the term transgenderism as an umbrella term for various aspects and expressions of gender identity. Older terms like

transsexualism, gender dysphoria, transvestism, and cross-dressing have been found to be limiting in their understanding of gender expressions and identity. . . Transgender is a new term which transcends the restricting and extant categories of gender identity, is more neutral regarding etiology, and encompasses the vast complexity of gender manifestations and identities.”

Within the categories of transgenderism or gender variance are individuals who identify as “genderqueer,” “gender fluid,” “gender-flexible,” and a myriad of other personal labels. Terms such as these suggest that gender is not stable and/or that gender expression can be chosen. Use of these terms is intended to challenge traditional notions of gender as stable and bipolar (Factor & Rothblum, 2008). In addition, the term “transpeople” has been introduced recently as an encompassing term (e.g., Golden, 2004; Winter, Webster, & Cheung, 2008), and its use is becoming more common. Our best advice for researchers who work with this population is to ask participants how they identify themselves and how they would like their group to be described.

Although there is increased recognition of the complexity of gender variation, the use of pronouns can be a perplexing choice when the person to whom they would refer does not identify with a gender category. The term “ze” instead of “she or he” and the term “hir” instead of “him or her” have been presented as alternatives (Bornstein, 1997), but they are not in wide use. Although, as we discuss in the following section, the APA (2001) does specify that psychologists’ language must not be gender biased, the issue of genderless pronouns has yet to be addressed. Indeed, the APA style manual does not even mention transgendered or transsexual people, let alone address the subject of pronouns. We can say, however, that when transpeople do present themselves as a man or a woman, regardless of their biological sex, the pronoun used should match their enacted gender.

Advice from the APA Style Manual on Gender, Sexuality, and Ethnicity

An important resource for researchers who publish in psychology journals is the *Publication Manual of the American Psychological Association*. This reference, playfully regarded by Walsh-Bowers (1999) as the *Bible* of psychologists, is primarily a guide for formatting and writing manuscripts; it was first published as a book in 1957. In the 1970s, feminist psychologists negotiated for the opportunity to include information in the manual that would shape researchers’ treatment of gender and the language they used to describe their participants and the results related to gender. The outcome of these negotiations was a set of guidelines for avoiding sexist language in published research, which were first included in the third edition of the manual in 1983. The fifth edition of the manual (American Psychological Association, 2001) includes suggestions for avoiding language that is biased with respect to racial and ethnic identity, sexual orientation, disabilities, and age. The APA style manual is also used by authors writing in fields outside of psychology, such as nursing, sociology, and education. Other professional associations (e.g., American Speech-Language-Hearing Association) have likewise developed suggestions for avoiding sexist language that are virtually identical to those in the APA’s manual. What follows is a brief overview of the history of the revisions to the manual that are specific to avoidance of biased language, a description of the guidelines themselves, and a review of research that was designed to evaluate whether authors and journal editors adhere to the guidelines.

Historical Overview of Revisions

In 1975, members of the APA Task Force on Issues of Sexual [sic] Bias in Graduate Education conducted a content analysis of 13 graduate-level textbooks in psychology to examine problematic

representations of women and men (e.g., content, citations, generalizations, “sex” differences). Of most concern to members of the task force was the finding that authors often used language with a “clear bias toward the masculine” (p. 682), such as masculine generic pronouns. An important outcome of this task force was a set of literary guidelines for nonsexist writing entitled *Guidelines for Nonsexist Use of Language* (APA Task Force on Issues of Sexual Bias in Graduate Education, 1975; referred to as the First Change Sheet), which the authors suggested be incorporated into the APA style manual. These guidelines, which included both stylistic and substantive suggestions, were specific to textbooks as opposed to journal articles, but they served as the foundation for the Second Change Sheet, which was entitled *Guidelines for Nonsexist Language in APA Journals* (APA Publication Manual Task Force, 1977). These guidelines were “intended to help authors recognize and change instances where word choices may be inaccurate, misleading, or discriminatory” (p. 488). In the Second Change Sheet, guidelines are separated into suggestions to address problems of designation and evaluation, both of which are further divided into two subcategories: ambiguity of referent and stereotyping. These guidelines were incorporated into the third edition of the APA manual, which was published in 1983. Feminist efforts to identify and eliminate gender-biased language in psychological research and publications were extended to an examination of editorial appointments and policies via the APA’s ad hoc Committee on Underrepresented Groups in the Publication Process, which was formed in 1982 (Russo, 1999). Revisions to the APA style regarding sexist language are insufficient without editors and editorial policies that insist on the use of the guidelines.

The following statement from the current edition of the manual is a reflection of the aforementioned feminist initiatives: “As an organization, APA is committed both to science and to the fair treatment of individuals and groups, and this policy requires authors of APA publications to avoid perpetuating demeaning attitudes and biased assumptions about people in their writing” (American Psychological Association, 2001, p. 61). Therefore the guidelines for avoiding sexist language were expanded over time to include suggestions for avoiding bias with respect to racial and ethnic identity, sexual orientation, and disability. For example, the *Guidelines for Avoiding Racial/Ethnic Bias in Language* (American Psychological Association, 2008b) were produced by the Board of Ethnic Minority Affairs and an ad hoc committee of the Publications and Communications Board. The *Guidelines for Avoiding Heterosexual Bias in Language*, developed by the Committee on Lesbian and Gay Concerns (1991), were approved by the APA Board of Social and Ethical Responsibility in Psychology. Finally, the Committee on Disability Issues in Psychology (American Psychological Association, 2008c) established the *Guidelines for Non-Handicapping Language in APA Journals*. The fourth edition of the manual (1994) was the first to include a summary of all of the above sets of guidelines.

Given the widespread use of the Internet as a tool for conducting research of all kinds, we must consider the extent to which writers, particularly students, are using sources other than the APA manual itself as their reference for style and format. There are many web sites designed to provide authors with “crib sheets” to the APA style, many of which do not include information on how to avoid biased language. Furthermore, the American Psychological Association maintains a web-page specific to APA style formatting (<http://www.apastyle.org/>). The page includes links to guidelines for avoiding bias in describing racial and ethnic identity, sexual orientation, and disabilities that are much more detailed than those in the manual itself. The omission of a link¹ to the guidelines for avoiding sexist bias suggests an assumption that, given how long they have been in place, authors

¹There was no link when we checked the website in October 2008 during the preparation of this chapter. However, we have brought the omission to the attention of officials who work in the APA Public Interest Directorate. We hope that the omission will have been corrected by the time this handbook is published.

are unlikely to use sexist language and therefore do not need quick access to this set of guidelines. If authors are increasingly turning to the web as their reference for the APA style, it seems important, especially for the APA web-page, to include links to guidelines for avoiding all forms of biased language that are discussed in the manual itself.

The need to consider carefully the language we use in research on gender was reinforced with the publication of two *American Psychologist* articles in the late 1980s. The first, by McHugh, Koeske, and Frieze (1986), reviewed many different methodological issues central to conducting nonsexist research. Of most relevance to the language of gender are the sections in which the authors articulated the myriad ways that language used to describe participants' gender can reflect sexist biases. Examples of bias the authors discussed include the use of negative terms to describe behavior that violates traditional gender roles and reinforces the conceptualization of the genders as bipolar opposites (e.g., emotionality vs. rationality). An appendix to the article includes a thorough set of guidelines for "Sex-Fair Research" (p. 888), many of which are relevant to language use in gender research. In a later article Denmark, Russo, Frieze, and Sechzer (1988) published "Guidelines for Avoiding Sexism in Psychological Research." These suggestions were written by members of the ad hoc Committee on Nonsexist Research, which was formed by the APA Board of Social and Ethical Responsibility for Psychology. The guidelines in that document were written to draw attention to and rectify sexist biases in all phases of research design, such as question formulation, methodology, analysis and interpretation of data, and conclusions. Several of their suggestions are specific to language. For example, Denmark et al. (1988) pointed out that behavior that violates traditional gender role norms should not be given labels with negative connotations (e.g., "fatherless homes" vs. "one-parent families"). Likewise, the authors of the guidelines suggested that researchers use neutral language when they draw conclusions from research on gender differences such that men's behavior is not regarded as the standard (e.g., men were aggressive) and women's behavior aberrant (e.g., women were unaggressive).

Description of Guidelines to Reduce Bias in Language

In the fifth edition of the APA style manual, there are three overarching guidelines, which are followed by suggestions specific to language regarding gender and other social groups. The first guideline is to *Describe at the Appropriate Level of Specificity*. Language is biased when researchers refer to their participants in aggregate or general terms such as man, people over 65, homosexuals, and Hispanics. More specific language is both more sensitive and more helpful to readers of research reports. For example, authors should refer to men and women (rather than "man") and avoid terms that imply one gender (e.g., policemen). Lesbians, gay men, and bisexuals are more specific and respectful ways of describing individuals than is the term "homosexuals." Labels that designate ethnic groups by region of origin (e.g., Latin American, European American) are preferred over such broad and inaccurate terms as "Hispanic" and "Caucasian." In this section, authors are also reminded that the term "sex" refers to biological characteristics or distinctions and that "gender" is to be used for discussion of women and men as members of social groups. Authors should avoid the use of the terms "male" and "female" as nouns for people, although their use as adjectives (e.g., female participant, male target) is appropriate. Although the style manual allows authors to use "males and females" if the age range is ambiguous, we prefer the use of "boys/men" and "girls/women," which is in keeping with the guideline that gender (rather than sex) terms be used for social groups. General reference to single vs. married participants or language such as "marital status" ignores other kinds of committed relationships, and this is especially important given that there are few nations/states where gay men and lesbians are currently allowed to marry their partners. The description of committed partners as "single" obviously misrepresents them and distorts readers' understanding of who

made up the sample in question. Furthermore, authors are encouraged to refer to group differences only when relevant to the research problem at hand, to avoid comparing European Americans to “non-White” people, and to avoid language that unnecessarily specifies sex/gender (e.g., male nurse or woman driver).

The second guideline in the APA Manual, *Be Sensitive to Labels*, notes that authors can avoid bias by categorizing groups with labels that individual group members prefer; these preferences might change with time. The examples provided above for specificity apply here as well. Another way for authors to be sensitive to labels is to capitalize words that represent race (e.g., Black, White) and to avoid using language that erases individuality, such as “the disabled” or “the elderly” as opposed to a “persons with a disability” or “older people.” Of most relevance to research regarding gender and other social categories is the suggestion that researchers avoid group comparisons that establish one group as a standard against which other groups should be evaluated. This may be especially likely if the two groups being compared have different levels of status and power. Thus authors may have a tendency to assume that a member of a powerful group is the default group or the typical or normative case and that members of less powerful groups are atypical, aberrant, deviant, or deficient. When the research design is comparative, authors might then attribute the differences between powerful groups (e.g., men or European Americans) and groups with less power (e.g., women or African Americans) to the less powerful group (Hegarty & Buechel, 2006). Another example of this form of bias is the use of language that is not parallel, such as man and wife, men and females, lesbians and normal women, Asian Americans and Whites.

The third guideline is *Acknowledge Participation*. Authors are encouraged to avoid language that exaggerates power differentials between researchers and the “subjects” of study. Human subjects are to be referred to as “participants,” and authors are instructed to avoid use of passive voice that implies that participants were “acted on instead of being actors” (p. 65). This guideline reflects values inherent in feminist research.

Evaluation of Compliance with Guidelines

Do authors routinely comply with these guidelines? Several studies have been conducted to answer this question with respect to avoidance of sexist language. For example, Linda Gannon and her colleagues (Gannon, Luchetta, Rgodes, Paradie, & Segrist, 1992) conducted a sizeable content analysis of articles that appeared in eight psychology journals, four of which are published by the APA, to determine whether authors adhered to the various guidelines for avoiding gender bias in psychological research. They analyzed almost 5,000 articles that were published during 5-year increments between 1970 and 1990, and they coded variables such as sex of first author, sex of participants, use of sexist language (e.g., use of the masculine generic), and generalization of results that showed gender differences. Of relevance to this chapter was their finding of a steady decrease in the use of sexist language across the two decades such that, by 1990, sexist language was virtually nonexistent in articles published in all eight journals. This finding may be attributed to authors’ adherence to APA’s guidelines for avoiding biased language and/or to the journals’ editorial policies. Gannon et al. (1992) noted that, by the year 1990, at least four of the eight journals had explicit policies regarding the need to edit manuscripts for sexist language. It is thus possible that the editors of some journals rejected, or insisted on the revision of, articles that included the masculine generic. As mentioned earlier, editorial policies can play a crucial role in the avoidance of biased language. It would be worthwhile to examine the editorial policies of all major psychology journals to determine whether authors are reminded of the importance of avoiding biased language in their work.

Hegarty and Buechel (2006) conducted a thorough content analysis of articles that reported gender differences and were published between 1965 and 2004 in four APA journals. The purpose of the study was to determine if the articles that reported gender differences reflected androcentric thinking, which Hegarty and Buechel operationalized as use of the masculine generic, attributions of gender differences to women, and the positioning of tables and figures to place data on men to the left or above data on women. Although the authors did not find masculine generic pronouns in articles published after 1985, they did find substantial evidence of the other types of androcentric thinking. Both female and male psychologists, in articles published throughout all four decades, tended to describe and explain gender differences by referring to girls' and women's attributes significantly more often than to boys' and men's, except in the case of research on parenting where men were considered to be the atypical case and women the standard for comparison. Graphs and tables that depict gender comparative results routinely were positioned in a way that reinforced the assumption of men as normative; that is, data from men and boys were placed first, and this placement reflects the way that speakers of English read and encode spatial information, thus signifying the importance of whatever (or whoever) comes first. (See Chapter 10 for further discussion of androcentrism in psychological research and writing.)

Future Directions

Although the American Psychological Association has been a leader in the development of guidelines for unbiased language, those guidelines could be more up-to-date. The fact that there are, as yet, no guidelines on language to describe transgendered populations is a problem that needs to be rectified. Furthermore, the APA's suggestions concern word choice in the English language. Psychological associations in countries whose languages contain more gendered nouns than English does may not have made as much progress in this regard.

The studies by Gannon et al. (1992) and Hegarty and Buechel (2006) provide evidence of the decline of the use of the masculine generic in the psychological literature, but they indicate that other sexist bias remains embedded in journal articles. It would be interesting to expand their work to journals not published by the APA to see whether the editors of those journals are as careful to follow the APA style manual's guidelines. Similar research to see whether the guidelines for language use with regard to sexual orientation, race/ethnicity, and disability are followed would be useful, and, as we noted earlier, a study of what the journals themselves include about unbiased language in their "instructions to authors" would be instructive.

It is interesting that gender-neutral pronouns have been suggested by feminist and transgender activists over the years, but have not caught the public's attention. The research methodologies employed by Hamilton (1988) and Pryzgodna and Chrisler (2000) might be usefully adapted to study college students' and the general public's attitudes toward and understanding of "ze," "hir," and other such neologisms. Also, just as Smith et al. (2007) found that their participants reacted differently to targets described with what are typically thought to be weight-related synonyms, it may be that people form different opinions of persons described as "transgender" or "queer." Results of empirical research can provide guidance to authors about which terms are the most sensitive, respectful, and unbiased.

Biased language in the popular press is another area that is in need of investigation. We believe that this is especially important because we have noticed what appears to be an increased use of the masculine generic in the past decade. Perhaps journalists believe that it is not necessary to worry about such things in the "post feminist" world they write about so often. Furthermore, journalists like to overgeneralize the results of research on gender differences, and they tend to attribute any

differences to genetics. Evolutionary psychology seems to be at least as popular with journalists as it is with social psychologists. Bias in the media should be taken very seriously, as researchers have shown that women given genetic explanations for math-related performance obtained lower scores on a math test than did women given environmental/experiential explanations (Dar-Nimrod & Heine, 2006). In another study (Eccles & Jacobs, 1986), mothers who had read media accounts of research that attributed math and spatial performance to genetics reported lower expectations for their daughters' performance in math classes. This is especially bad news because the researchers had previously shown daughters' grades to be associated with mothers' expectations.

Finally, because gender and other stereotypes frequently operate below the level of consciousness, it is important to conduct more discourse analytic studies to examine the way that gender stereotypes operate in both popular and professional/technical discourses (e.g., slang, jargon, conversation). Martin's (1991) analysis of the description of reproduction in biological and medical textbooks can serve as a model for researchers who are interested in doing this work, and Todd and Harrison (2008) recently provided some guidance on the use of metaphor analysis in social science research. (See Chapter 6 for a discussion of the usefulness of qualitative approaches to the study of gender.)

In conclusion, we cannot emphasize strongly enough how much words matter. Our choice of language affects our own thinking about our work as well the thoughts of our participants, our readers, journalists who translate our work for the public, and the impressions of lay people who hear about our work in the media. It is every scientist's responsibility to be precise in both methodology and writing. Furthermore, language is power. The careful choice of unbiased language can promote, rather than undermine, social justice.

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Chapter 19

She Said, He Said: Gender, Language, and Power

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Do men and women speak differently? In her best selling books, Deborah Tannen (1990) argued that they do and that women and men “just don’t understand” each other. John Gray (1992) has sold millions of books that tell the public that women and men have communication problems because of their origins on “different planets.” Although many social scientists reject the evidence provided in these popular books, scientists, like the pop “experts” and the general public, remain wedded to the difference model and are interested in differences in the ways men and women communicate. Research on gender and language is in its fourth decade, and there is still disagreement on the nature of gender differences. And, despite extensive criticism of the difference model, difference remains a dominant framework for understanding gender in general and women’s and men’s communication patterns in particular. This chapter provides a critical perspective on research and theory about the question of whether men and women speak differently.

Best selling authors, talk show experts, and social scientists use language to provide frameworks for our understanding of gender, language, and the speech styles of women and men. Language shapes the way we see (and respond to) the world, and the models presented by experts and theorists influence our understanding of our own and others’ communication. Do women make persistent requests or are they nags? Do women do most of the conversational work or do they undermine their authority when they invite disagreement? Are men direct and clear in their communications or are they terse and uninterested in others’ point of view? Are women chatty or trivial in their use of small talk or are they building rapport and disguising oppression? Theorists such as Tannen (1990) view men and women as having been socialized in different subcultures and the miscommunication that occurs between them as a form of cross-cultural communication. Others view the language of women and men as support for the status quo of sexual inequality. A discourse analysis approach argues that we should critically examine the ways in which men and women speak, and we should critique the methods used in the study of gender and language, but we should also critique the frameworks others have provided for understanding gender and language. In this chapter we follow that approach.

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Difference as Deficit

Women's Style of Speaking

In her classic book *Language and Women's Place*, Lakoff (1975) raised the question of gender differences in speech; her work stimulated decades of research on language and gender. Lakoff identified her objective as understanding what language use can tell us about sexual inequities. She viewed women as having been taught to use language in ways that relegate them to subservient status in society. Her theory was based on media analysis, self-reflection, and unsystematic observations. Based on these informal methods, Lakoff elaborated a series of hypotheses for further study: Women use more descriptive adjectives and fewer profane words than men do; women use more polite forms; women use more intensifiers, hedges, hesitations, and hypercorrect grammar; women are more indirect in making requests and expressing opinions; women use more questioning and polite forms than men do. In her analysis, women were seen as hesitant to express their opinions and likely to use hedges, intonational patterns, and tag question formations to appear tentative and to avoid confrontations with others. Many of her hypothesized gender differences in speech later were studied empirically by other researchers.

Lakoff (1975) provided a difference model of gender and language. She viewed women's speech as deficient, as conveying weakness, uncertainty, and unimportance, in contrast to the standard or neutral language spoken by men. She asserted that their language contributes to women's inferior status. By not writing about men's language, Lakoff conveyed her perspective that men's speech is the standard, and women's speech is less acceptable. Although she assumed a men as normative and women as deficient approach, Lakoff realized that women could not easily solve their problems simply by adopting the speech style of men. According to Lakoff, women who speak like men are criticized for not being feminine, and women who use women's style of speaking are "ridiculed as unable to think clearly, unable to take part in a serious discussion. . . as less than fully human" (p. 13).

Research on Lakoff's Model

Lakoff's work was criticized for its lack of empirical data. Subsequent research has provided very limited support for Lakoff's hypotheses. For example, Carli (1990) reported that intensifiers (e.g., "very," "really") were used by women, as predicted. Other research also has confirmed that women use more intensifiers than men do (Aries, 1996; Mulac, 2006). Lakoff also observed that women were more likely than men to use hedges. A hedge is a word or a phrase (e.g., "I believe," "I think," "kind of," "sort of," "you know"), which, when attached to an assertion appears to be apologetic, uncertain, and/or undermining. In one study, women used more hedges than men did in mixed-gender groups, but not when talking to other women (Carli, 1990). Thus, gender differences in usage of tentative speech are not consistently found and are dependent on the context.

Contradictory results have been reported regarding the proposition that tag questions are used more by women than by men. A tag question is a short phrase at the end of a declarative sentence that makes the declaration into a question (e.g., Nice day, isn't it?). According to Lakoff, tag question formations make women's speech appear to be uncertain or tentative. Studies have shown that women use more tag question formations in married couples' conversations (Fishman, 1980) and in college students' problem-solving groups (McMillan, Clifton, McGrath, & Gale, 1977), whereas men use tag questions more often in corporate settings (Johnson, 1980) and at academic conferences (Dubois

& Crouch, 1975). In an analysis of natural speech, Holmes (1984) found that women produced 57% of the tag questions, and men produced 43%. Holmes (1984) also noted multiple potential meanings of tag questions, including uncertainty, solidarity, and politeness. Similarly, Cameron and her colleagues (Cameron, McAlinden, & O'Leary, 1988) demonstrated that the communication function of a linguistic form, such as the tag question, is complex. In an extensive review of the literature on gender and usage of tag questions, Aries (1996) concluded that the gender differences tended to be both inconsistent and small; the use and interpretation of the tag question formation depends on the context. Early theorists, such as Lakoff, did not appreciate the potential for linguistic features to have multiple functions.

Thorne and her colleagues (Thorne, Kramarae, & Henley, 1983) criticized research on isolated variables as oversimplified, and they demonstrated the necessity of considering other factors, such as setting, topics, and roles. Crawford (1995) explained how features of language, such as hedges or polite forms, may have multiple meanings and functions in different interactions. In a review of the early research, Kramarae (1981) concluded that gender stereotypes about women's and men's use of speech are much stronger than actual speech differences are. Other scholars have commented on the inconsistent findings and methodological weaknesses of the early studies (Crawford, 1995; Simkins-Bullock & Wildman, 1991).

O'Barr and Atkins (2008) studied gender differences in language use in the context of a U.S. courtroom. Based on recordings of 150 hours of trial testimony in a state superior criminal court, they reported some instances of women who spoke in the feminine way described by Lakoff (1975). The authors also confirmed Lakoff's ideas in that more women were found to exhibit high levels of features of women's language, whereas more men tended to exhibit low levels of women's language. However, they noted a considerable degree of variation in how much women exhibited the characteristics described by Lakoff. Further, they found some men who exhibited characteristics of women's language in their courtroom testimony. They concluded that women's language as described by Lakoff is not characteristic of all women, nor is it limited to women. They argued that the tendency for more women and fewer men to speak powerless language is related to men's and women's positions in the power hierarchy. In their research on courtroom testimony, women from higher status backgrounds were unlikely to employ features of women's language.

Critique of Lakoff's Model

Lakoff's model of gender and language has been extensively critiqued. Like other approaches to gender and language discussed here, Lakoff adopted a difference model in which differences are viewed as more important and more defining than similarities in the ways that men and women speak. Such difference models exaggerate differences between the sexes, and they stereotype both women's and men's speech. Difference research may lead to discrimination against women by distributing "findings" that inevitably view women as "other" and conflate difference with deficiency (Cosgrove & McHugh, 2002; Epstein, 1988; Hare-Mustin & Marecek, 1994). Shields (1975) argued that psychological research conducted on sex differences has never been value free or neutral; historically it has been used to justify the exclusion and subordination of women.

Researchers and others interested in sex or gender differences often demonstrate the confirmatory bias, that is, they only attend to examples or data that confirm the alleged differences and fail to attend to or to publish data that are disconfirming (Epstein, 1988; McHugh, Koeske, & Frieze, 1986). However, disconfirming data, even when published, rarely change gender stereotypes (Unger, 1998). Thus, the degree of overlap in speech patterns of men and women is minimized, and the variations

in speech among groups of men or women are not addressed. Women and men are each seen as a homogenous group, and important differences within gender groups, such as class, race, ethnicity, region, status, and occupation, are rendered invisible or unimportant. Furthermore, difference models frequently oversimplify patterns of speech and ignore the context of verbal behavior. (For a more thorough critique of difference models regarding gender see Epstein, 1988; Cosgrove & McHugh, 2002; Hare-Mustin & Maracek, 1994; Kitzinger, 1994; McHugh & Cosgrove, 2002.)

Lakoff's approach may also be viewed as problematic in that her model reflects an androcentric bias. Androcentrism, as explained by Bem (1996), refers to the tendency to view men and men's experiences and behaviors as central, as normative, as prototypically human, and/or as valued. Androcentrism is one form of the multiple biases that can occur in the interpretation of difference research. Research and theory often include implicit value judgments about the importance and meaning of any differences found. Lakoff's (1975) analysis is androcentric in that men's use of language is viewed as neutral and preferred in relation to women's linguistic style, which is viewed as deficient. In their critique, Henley and Kramarae (1991, 2008) argued that men's as well as women's patterns of language need to be critically examined, studied, and explained. Men's speech forms should be examined as distinctive cultural forms, just as women's are. As we discuss below, Henley and Kramarae emphasized the necessity of viewing women's and men's language in relation to their situation in the social structure and, in particular, in relation to status hierarchies connected to gender. The speech of one group should not be labeled as normative or as deviant. Henley and Kramarae and others (e.g., Crawford, 1995; Fodor, 1985; Lott, 1990) have objected to perspectives that place pressure on women to use men's language, that is, to switch from women's language to "neutral" language.

Remediating Women's Deficits

Assertiveness Training

Like Lakoff's model, assertiveness training is founded on the premise of women's deficient communication skills. Women's communication is often depicted as unassertive in self-help books and magazine articles (Crawford, 1995), and women are stereotyped as passive, passive aggressive, indirect, manipulative, and/or silent. Assertiveness involves requesting what one wants, refusing what one does not want, and directly and clearly expressing positive and negative messages to others (Booraem & Flowers, 1978). Although it is primarily a communications approach, assertiveness training was developed by psychologists, and psychotherapists were trained in how to assess assertiveness and to offer interventions at the individual and group level (Crawford, 1995).

Crawford (1995) explicated the implicit assumptions inherent in the assertiveness training movement. It accepts the direct assertion of one's own desires and requests as the preferred mode of communication and implicitly endorses individualism. Assertiveness training promises women that, with skill development, they can get what they want and/or compete on an equal basis with men. In short, this approach blames the gender inequities experienced by women on their own communication deficits. Crawford (1995) pointed out that there is no empirical evidence to support the claim of gender differences in assertiveness, and there is also no evidence to validate assertion as a superior or mentally healthier behavior. Fodor (1985; Fodor & Epstein, 1983) similarly challenged the assumptions that underlie assertiveness training: that effective communications can be easily prescribed; that women as a group have a communication skills deficit; and that women would accrue positive outcomes and benefits if they became more assertive. Henley (1980) criticized assertiveness training as

a woman-blaming approach that held women responsible for gender inequality and discrimination. Furthermore, assertiveness training holds individual women responsible for the solution to gender inequities at the individual level. Henley also argued that assertiveness training did not adequately consider the context and dynamics of the situation.

Research on Assertiveness Training

Crawford (1995) found that assertive responses were evaluated differently depending on the sex of the target actor and the sex of the respondent. For example, older men disliked assertive women, whereas older women liked assertive women. However, such gender effects were not found for ratings of competence, and the likeability of male targets was not influenced by their assertiveness. Similarly, Kelly and her colleagues (Kelly, Kern, Kirkley, Patterson, & Keane, 1980) reported that assertiveness was evaluated differently depending on the sex of the model and the sex of the participant; assertive women were rated as competent, but they were disliked. In a study of male and female speakers who employed either helplessness or assertiveness, Falbo and her colleagues (Falbo, Hazen, & Linimon, 1982) found that assertive women and helpless men were evaluated as less likeable, less competent, and less qualified than helpless women and assertive men. Similarly, negative reactions to passive men and assertive or aggressive women have been reported for small group discussions, professor–student interactions, and therapist–patient interactions (Costrich, Feinstein, Kidder, Maracek, & Pascale, 1975). These findings are consistent with the psychological research on role expectations and evaluations of those who violate expectations. If a style of speaking is expected from a person in a low-status social role, then failure to speak in that style is evaluated differently than the same language from a high-status individual. Research by Sterling and Owen (1982) involved female and male police officers who interacted with a drunken student in either a demanding or a reasoning style. Demanding female officers were seen as less feminine than reasoning female officers, but speech style did not impact evaluations of male officers. Female officers were seen as assertive and tenacious regardless of their speech style. Furthermore, challenging a female police officer was seen as more legitimate than challenging a male officer.

Gender-based evaluations of speech style continue to demonstrate that use of “masculine” speech is sometimes less effective for women than for men. Carli (1990) found that both men and women judged a woman who spoke tentatively as less competent and knowledgeable than a woman who spoke assertively, but speech style did not impact the competence ratings of male speakers. Female participants were less influenced by the woman who spoke tentatively than by the one who was assertive, whereas male participants were influenced more by the tentative than the assertive female speaker. Research indicates that at least some women may be aware of this double bind; Carli (1990) found that women spoke more tentatively when interacting with men than with women. Crawford (1995) concluded that assertion in some real-life situations may result in negative reactions and that non-assertion may be an effective strategy for women. Lakoff (1975) also reflected on this double bind for women. She wrote that when women use direct language they are accused of being unfeminine, but when they use a feminine style of speaking, they risk being ignored, criticized, or labeled as incoherent.

Negotiation: Another Deficit in Women’s Communication?

Negotiation is another area in which women’s communication skills have been viewed as deficient. Babcock and Laschever (2003) maintained that women’s lower status in the business world is due to their failure to negotiate salary and job conditions. In one study, Babcock and Laschever found

that men were two to three times more likely than women to initiate a negotiation or ask for what they wanted. They asserted that this gender difference in negotiation can lead to significant gender differences in salary. A difference of \$5,000 that results from an initial negotiation at age 22 for the same job opportunity may widen to a \$15,000 difference in pay when those male and female job candidates are 60 years old. Therefore, the initial negotiation of salary has enduring and substantial effects for many women because men are more willing to negotiate.

In Babcock and Laschever's (2003) view, many women simply do not ask or negotiate for improved salary or benefits because they perceive the offer to be finite; they assume that they must accept it or pass up the job or promotion entirely. Babcock and Laschever argued that women believe that other people and external circumstances determine their work situation, whereas men believe that they can always better their situation. These gender differences develop from early childhood experiences of what women and men can and cannot accomplish. In a masculine world, it is hard to convey to children that men and women are equal when gender cues indicate that men usually hold power and women are usually subservient. Furthermore, Babcock and Laschever's (2003) interviews indicated that, whereas boys are actively taught by their fathers how to negotiate, girls do not receive such training, and so they have to acquire this skill indirectly via observational learning.

In her more recent research, Babcock (2009) demonstrated a double bind for women similar to those demonstrated for women who assert themselves. Students watched videotapes of a hiring interview in which the (male or female) candidate did or did not negotiate salary. The woman who did not negotiate was preferred by both male and female students, and the woman who did negotiate was disliked and rated as unlikely to be hired. The hiring and likeability of the male candidate was the same regardless of whether or not he negotiated.

Critique of Negotiations Deficit

Although Babcock (2009) indicated that the gender difference in negotiation may be changing, the assertion that women do not negotiate remains contested, and research findings have been inconsistent (Small, Babcock, Gelfand, & Gettman, 2007). Small and colleagues (Small et al., 2007) considered the inconsistencies to be related to status differences. Differences that were previously attributed to gender may, in fact, be concealed status differences. Historically, men have maintained a higher social status than women, and, although women are now in the workplace in many previously male-dominated fields, there is still a significant gender disparity in rank. If women are, or are perceived to be, in a lower status position, then they are unlikely to assert themselves over an individual with perceived high status, regardless of that person's gender. In Small and her colleagues' (2007) view, polite speech is utilized more by lower status individuals in an attempt to lessen an imposition upon the higher status individual. They argue that status, not gender, is the underlying mitigating factor in deciding who is more likely to negotiate and when. Further, Small and colleagues (2007) reported that the word "negotiate" itself is problematic because it is not a gender-neutral construct. In their study, women and men were cued either to negotiate or to ask for an increase in pay during an experimental simulation. Gender differences were found when students were asked to negotiate; however, these differences disappeared when participants were cued to ask. Asking is a more socially acceptable approach for low-status individuals; negotiation can be viewed as a more aggressive act. Furthermore, Small and colleagues (Small et al., 2007) believed that asking rather than negotiating acknowledges the power differential and limits the perception of imposing upon the higher status individual.

Negotiation, like assertiveness training, may be viewed as a woman-blaming approach that holds women responsible for both the problem of the gender gap in pay and for resolving gender discrimination. Negotiation remediation training, as offered by Babcock and her associates, similarly suggests that effective negotiations can be easily prescribed, that women as a group have a negotiations skills deficit, and that women would accrue positive outcomes and benefits if they engaged in negotiations. However, as Babcock's own research suggests, women on the job market may be in a double bind. They may be less liked and less likely to be hired if they negotiate, and they may be underpaid if they do not.

The Two Cultures Approach

Miscommunication

Other approaches to gender and language are based on the difference model, but do not interpret gender differences in terms of deficit. Some of these models posit that women and men have different sociolinguistic subcultures with different rules for engaging and interpreting communication patterns. For example, Maltz and Borker (2008) delineated features of language that are used differently by men and women. Their analysis is based on observations of childhood interactions of girls and boys in same-sex groups where linguistic styles are learned. Based on their studies of children's interaction in same-sex play groups, these theorists conclude that girls are invested in establishing and maintaining close relationships and, thus, their communication is based on equality and cooperation; girls learn to criticize others in acceptable ways and to interpret others' messages accurately. Boys' play, on the other hand, emphasizes competition and zero-sum games. Boys learn to assert their position of dominance, to gain and maintain an audience, and to resist dominance by others. Gender differences in language use based in childhood are viewed as leading to difficulties in communication between adults. This perspective specifically states that power has little to do with communication between social equals.

These patterns of gender differences in children's speech have been demonstrated (Ekert, 2008; Goodwin, 2008; Johnson & Aries, 1983; Tannen, 1990) and confirmed in studies of children and adolescents talking to same-sex friends (Ekert, 2008; Goodwin, 2008). Adult studies of women talking to female friends (Aries & Johnson, 1983; Coates, 1989; 1996) similarly support the position that women's talk is interactional, relational, participatory, and collaborative (Treichler & Kramarae, 1983).

Women and men engaged in conversation are seen as a form of cross-sex, cross-cultural communication. Men and women are viewed as having frequent miscommunication problems, especially in the context of intimate relationships. For example, when Maltz and Borker (2008) reviewed research that demonstrates gender differences in speech, they found that women often use tag questions to engage a conversational partner and minimal responses (e.g., "uh-huh," "Really?") to indicate active listening. Women frequently use the pronouns "we" and "you" to acknowledge the partner. Men interrupt the speech of others and challenge conversational partners' statements. Men make more direct statements of facts than women do, and they attempt to control the topic of conversations. Men are more likely than women to ignore, or not respond to, comments by other speakers.

One important criticism of the cross-communication approach is that children do not learn to communicate solely in single-sex groups. Children also are expected to acquire rules for interaction in the family and in other mixed-gender contexts (Uchida, 2008). As in other cross-cultural communications, people are likely to adjust and modify their styles in response to each other, and most would be able to take the other's perspective.

You Just Don't Understand

According to Gray (1992), men and women need assistance in understanding and communicating with each other. The popularity of Gray's books attests to the difficulty women and men experience in their heterosexual relationships and to the current popularity of the difference model. A feminist social psychological response to Gray's observation is that a focus on the differences between women and men does more to create gender antagonism than to resolve conflict in cross-sex relations.

Tannen (1990) similarly sees men and women as having different ways of speaking. In her popular book *You Just Don't Understand*, Tannen (1990) suggested that, in intimate relationships, women and men often experience communication difficulties. In her view, gender differences in communication are rooted in the different worldviews of women and men: Men view interactions in terms of competition, whereas women's use of language is more relational. In Tannen's analysis, women are concerned with creating and maintaining community because they have a cooperative worldview. Men, on the other hand, are concerned with agency and with maintaining their own status in a competitive, hierarchical world. For women, a conversation is a chance to make connections; for men, each interaction can result in a winner or a loser. Tannen referred to women as engaging in "rapport talk," whereas men engage in "report talk." In her writings for a popular audience, Tannen uses anecdotes and examples to demonstrate how and why women and men have different perspectives on the same situation. Men do not ask for help or directions because to ask undermines agency and is a form of helplessness. In the same vein, men do not share their problems, express their vulnerability, or ask for advice. Women, however, do share their problems, ask for help, make small talk, and connect through conversation. Tannen over-generalizes from her observations of some men and women to all women and men. Not all women ask for help, and some men do. Although she presented men's and women's worldviews and styles of communicating as equally valid, Tannen (1990) recognized that men's talk is valued more and that women's talk is devalued and labeled negatively.

Not all research confirms these differences. For example, the results reported by Nelson and colleagues (Nelson, Larson, Sheikh, & Starks, 2006) cannot be explained by the two cultures communication approach. They found that women and men utilized similar language with the same frequency. However, although the gender of the speaker did not impact the language used, the gender of the recipient did. In particular, men used significantly more rule-oriented language when they addressed women than they did when they addressed other men.

Critique of the Miscommunication Models

Miscommunication models such as those of Tannen (1990) and Maltz and Borker (2008) subscribe to the difference model. Differences are enumerated and viewed as barriers to heterosexual relationships, and similarities in the communication patterns of men and women are not addressed. Further, these models suggest that women and men are inept at understanding their partner's or coworkers' communication attempts. Similarly the models universalize the experiences of a few couples and ignore other factors, such as race/ethnicity, social class, region, and context, that also impact communication styles and patterns. The models homogenize men and women, and they oversimplify complex patterns of communication.

The miscommunication models deliberately ignore or minimize any aspects of gender inequality or power differences. Uchida (2008) argued that, because their models are based on observations of same-sex communication, miscommunication theorists are unlikely to recognize the existence of

patterns of inequality and dominance in communications between the sexes. Further, Uchida contended that miscommunication models only view dominance as something that is *misinterpreted* as existing in the interaction. If the speaker did not intend to dominate, then his conversational partner has *misinterpreted* the communication as dominating. Uchida (2008, p. 124) asked, "If miscommunication is no one's fault, and is something that can be analyzed as mutual misunderstanding of well meant behavior, why is it that the casualties are more often heavier on women than on men?"

Difference as Dominance

Gender and Inequality

A more contextualized approach to understanding gender difference is to recognize the connection between gender and power (Hare-Mustin & Marecek, 1994). The difference as dominance approach argues that apparent gender differences are really power or status differences; the behavior attributed to women is frequently the behavior of a person in a subordinated position. This view was expressed by theorists (e.g., Carli, 1990; Lakoff, 1975) who view women's linguistic style as reflecting a powerlessness or low-status position. In O'Barr and Atkins' (2008) research on court testimony, women with high social status were less likely than women with low social status to use linguistic forms associated with women's language. Similarly, in her study of women in business, Kantor (1977) concluded that much of what is considered feminine language use results from women's low-status position. Cameron (2008) argued that gender is an example of unequal social relations sustained through language use, and MacKinnon (1990, p. 213) discussed the problem of gender differences in relation to power and status: "Differences are inequality's post hoc excuse. Inequality comes first. Differences come after. . . . To the extent this is true, a discourse of gender difference serves as ideology to neutralize, rationalize and cover up disparities of power."

Henley and Kramarae (2008) argued that gender differences in verbal behavior should be examined in the context of sexual inequality. For example, they questioned whether men's style of speaking can be interpreted as neutral. Rather, it could be labeled as uncooperative, disruptive, self-centered, and privileged. They concluded that there is a clear pattern for language styles associated with men to be the language of power and dominance and for styles associated with women's to be the language of powerlessness and submissiveness. They argued that, in order to understand issues of gender and language, a consideration of dominance hierarchies is necessary because hierarchies determine whose version of the communication situation will prevail; "whose speech will be seen as normal; who will be required to learn the communication style and interpret the meaning of the other; whose language will be seen as deviant, irrational and inferior; and who will be required to imitate the other's style in order to fit into society" (p. 134).

Some research confirms the interpretation that masculine speech styles convey dominance, and feminine speech styles convey submissiveness. For example, study of dominance in heterosexual couples required participants to evaluate dominant and submissive responses given by a husband or wife in audiotapes of spousal interactions (Cowan & Koziej, 1979). Dominant behavior performed by the wife was rated as masculine and attributed to internal causes, such as mood. However, dominant behavior performed by the husband was not attributed to mood, and submissive behavior performed by the husband was not seen as feminine.

Fishman (1978) studied the verbal interactions of three heterosexual couples by collecting tape-recorded interactions of the pair at home. The results show multiple ways in which men controlled

the communication and even the study itself. For example, the men in the couples turned on and off the tape recorder. One male participant specifically disregarded the researcher's instructions and turned off the tape recorder when he did not want the interaction taped. The men in the dyads also demonstrated conversational control. They determined whether there would be a conversation, the topic of that conversation, and under what terms an interaction would occur. Men also attempted to control the researcher's interpretation of the tapes. Crawford (1995) and Henley and Kramarae (2008) interpreted the existing research as both indicating and reinforcing male dominance. In particular they noted that men tend to talk more in a variety of settings, to interrupt women, to make abrupt topic changes to control conversations, and to withhold expressive feedback.

Talking Time

Despite the cultural stereotype of the talkative woman, research on talking time has demonstrated that, in many contexts, men talk more than women do (James & Drakich, 1993). Further, men's greater turn taking and talking time has been interpreted as an indication of their dominance.

Research focused on male dominance in educational settings indicates that girls are at a disadvantage (Sadker & Sadker, 1985; Spender, 1988; Swann, 1992), as boys dominate most of the classroom time (Basow, 2004; Litosseliti, 2006; Swann, 2003). A series of observations of classrooms at different levels of education demonstrate that boys and men speak more often and for longer periods of time than girls and women do (Kelly, 1988; Spender, 1988; Swann, 1992). Both female and male teachers have been shown to call on male students a disproportionate number of times, and they are more likely to prompt or encourage male than female students to answer (Kelly, 1988; Sadker & Sadker, 1985; Spender, 1988; Swann, 1992). Even in classrooms where girls outnumber boys, boys take more speaking turns (Pavlidou, 2001). The pattern is also complicated by the fact that male students are more likely to call out their comments without raising their hands, and they are less likely than girls are to be reprimanded for doing so (Kelly, 1988). In the majority of studies of talking in a college classroom, men talked more, but there is considerable variation in the results (James & Drakich, 1993). For example, men are more likely to talk more than women when the instructor is male (James & Drakich, 1993)

In a review of research on gender and talking time, James and Drakich (1993) reported that, in 43% of the studies, researchers found that men talk more than women do; in only 2 of 56 studies did women talk more than men did. Other researchers concluded that men talked more than women in some contexts, and several studies showed no gender differences in amount of talk (James & Drakich, 1993). Thus, there is considerable evidence that men talk more, but there are also many inconsistencies in the literature, which may be partly a measurement problem. Researchers have counted words, minutes of talking time, turn taking, and length of turns; different measures produce different findings (James & Drakich, 1993). For example, in one of the few studies to show that women talked more than men did in formal task settings, Aries (1982) counted the number of speech acts, not the length of time or number of words spoken. In that study, women's speech acts included agreeing (e.g., "Me too") and indications of listening and interest (e.g., "Uh-huh" or "I see") Similarly, Craig and Pitts (1990) found that male and female tutors used the same number of speech acts, but male tutors took up more time talking. Other research supports the conclusion that women and men produce the same number of utterances, but that men talk longer (Duncan & Fiske, 1977; Edelsky, 1993).

More important, the context and the relation of the speakers impact the talk of men and women. As Tannen (1990) pointed out, the relation between volume of words (or talking time) and power

is not the same in all contexts or cultures. Tannen (1990) observed that men talk more in public situations which often involve status differences and people who are not necessarily familiar to each other. Women might talk more in private situations with familiar others as a way of maintaining relationships. Similarly, James and Drakich (1993) reported that men are especially likely to talk more than women in formal task-oriented interactions.

Some theorists have viewed the demonstrated gender differences as arising from the different perspectives and speech strategies of men and women. Maltz and Borker (2008) and Tannen (1990) viewed men as wanting to assert themselves and exercise leadership, whereas, in their theory, women want to establish and maintain harmonious relations. James and Drakich (1993) argued that differences in how much men and women talk in different contexts is related to cultural expectations about men's and women's competencies and areas of expertise. People who are perceived to have status or expertise in certain contexts talk more in that context. Thus, contexts or topics in which one gender is expected to have more expertise result in a gender difference in amount of talking observed. James and Drakich (1993) contended that, in formal task groups, men are perceived to have high status, and frequently, but not always, men talk more. Many studies have shown that men give more directions, information, and opinions than women do in mixed sex groups (Fishman, 1978; James & Drakich, 1993; Wood & Karten, 1986). In groups making decisions about a masculine topic (e.g., cars) or a neutral topic (e.g., travel), Kelly, Wildman, and Urey (1982) found that men talked more than women did on both tasks, but the gender difference was significantly greater for the masculine task. This pattern of results was confirmed in a similar study by Davidio and his colleagues (Davidio, Brown, Heltman, Ellyson, & Keating, 1988). James and Drakich (1993) concluded that the amount of talk of women and men is more likely to be equal in informal contexts, whereas men often talk more than women do in formal task-oriented contexts. However, even in informal and non-task-oriented groups, one-third of studies show that men talked more (James & Drakich, 1993).

Men's dominance in public forums or in task groups may involve men "holding the floor." However, the idea that there is a single "floor" held in turn by different speakers has been challenged by Edelsky (1993), who analyzed audiotapes of five committee meetings within an academic department. The committee of seven women and four men constituted a stable, collegial group. In order to make transcriptions, Edelsky developed the distinction between singly held floors (e.g., turn taking, report giving) and collaborative floors (e.g., free for all, joking, overlaps, shared ideas). Her analysis indicates that, in singly developed floors, the men held forth, took more and longer turns, and dominated the construction of the floor by the amount of time they spent talking. However, in collaborative floors, men participated less, sometimes even less than the women did. Men's turns were one to four times longer than women's turns in single floor episodes, but, in collaborative floor episodes, turns for both men and women were brief and about equal. In collaborative floors women maintained the conversational flow by joking, arguing, directing, and soliciting comments. Edelsky suggested that questions of dominance and gender in language require a more complex discourse analysis than simply counting turns or talking time. She argued that we should focus on the question: "Under what conditions do men and women interact more or less as equals and under what conditions do they not?" (p. 221)

Interruptions

Interruption is defined as a violation of the cultural practice of speakers' turns at talk (West & Zimmerman, 1977). Early studies showed that men interrupt more frequently than women do and that women were interrupted more often than men were (Holmes, 2008; West & Zimmerman, 1983). Men were seen as presuming that they have the right to take the floor from a woman. For

example, Eakins and Eakins (1978) reported that, at departmental faculty meetings, male faculty contributed more interruptions. Further, the pattern of interruptions fell along status lines, as the low-status woman was interrupted the most, and the male department chair was interrupted the least. In observed naturalistic interactions among familiar and intimate partners, Zimmerman and West (1975) found that interruptions rarely occurred in same-sex conversations and were asymmetrical in cross-sex interactions, where men initiated 98% of the observed interruptions. Zimmerman and West concluded that women and men are not equal-status conversational partners. In a subsequent experimental study of students' conversations with unacquainted peers, West and Zimmerman (1983) reproduced the asymmetrical interruptions patterns. Of the 28 interruptions observed, 75% were committed by men, and men interrupted women more than other men in each of the five conversations. Similar results were reported by McMillan and colleagues (McMillan et al., 1977), who found that women interrupted women about as often as men interrupted men, but women seldom interrupted men, whereas men frequently interrupted women.

Interruption both signals status difference and serves to maintain it (West & Zimmerman, 1983). Kollock and colleagues (Kollock, Blumstein, & Schwartz, 1985) concluded that interruption in conversation is a means of maintaining and expressing power. They studied interruption in conversations among gay, lesbian, and heterosexual couples. They found that power was more important than gender in predicting interruptions. Smith-Lovin and Brody (1989) reported that gender of speaker alone does not predict interruptions, but men interrupted more often when they were talking to women.

However, subsequent reviews suggest that patterns of interruption are more complicated. For example, James and Clarke (1993) did not find a clear pattern of men interrupting women. The majority of studies they reviewed did not show gender differences, and only one-third of the studies showed that men interrupted more often than women did. Turn-taking norms are not the same across all regions, ethnic groups, or situations, and there may be multiple forms and meanings of interruptions. The assumption that interruptions serve to dominate and control conversation may be too simplistic (James & Clarke, 1993). Simultaneous talk may also build rapport or indicate agreement or interest (Coates, 1996; Edelsky, 1993; Kalcik, 1975; Tannen, 1990). For example, Coates (1989) found simultaneous talk to be common in conversations among female friends. A friend might ask a question, or make a comment during the speaker's turn to indicate active listening or agreement, or might complete the speaker's sentence or thought. It may be difficult to discriminate such overlaps from interruptions where the interruption disturbs the speaker or changes the focus of the conversation. Studies that show no gender differences, or that women interrupt more than men do, may not distinguish interruptions from overlaps. For example, Samar and Alibakhshi (2007) reported that women were much more likely to interrupt each other in conversation than they were to be interrupted by men, and the interruption rate was higher for women talking to other women than for men talking to other men. However, Samar and Alibakhshi did not distinguish between interruptions and overlaps. To understand whether the speech is an overlap or an interruption, one must consider the context (Tannen, 1990), the speakers, and the interaction. James and Clarke (1993) concluded that interruptions that are dominance-related may be higher in formal task situations and in interactions that involve competition and conflict. Tannen suggested that, when one speaker repeatedly overlaps/interrupts and the other repeatedly gives way, the communication is asymmetrical and the effect is domination. Dominance and conversational control are accomplished by more complicated and varied means in conversations with familiars than with strangers (Eckert & McConnell-Ginet, 2008).

Interruption frequency also may have to do with an individual's status level. Samar and Alibakhshi (2007, p. 68) demonstrated in their research on cross-sex discussions that "the more educated and experienced interlocutors interrupted the other speakers regardless of their gender. Therefore, education can be claimed as an influential factor." The higher the educational level, or status, the more

likely a person is to speak longer and to interrupt others. Thus, previous researchers who did not control for education or other forms of status may have misinterpreted status effects as gender effects.

Resisting and Derogating Women's Requests

Men also may dominate women in conversation partly by ignoring or invalidating women's speech. One example is when male conversational partners label women's speech as "nagging." When does requesting become nagging? The answer to that question seems to depend on who labels the speech act. Nagging, or the continued persistence with a request, is more often associated with women than with men. Tannen (1990) argued that labeling women's requests as nagging is one of the ways that we have devalued women's speech. The stereotype of the nagging wife comes to mind, but there is little cultural acknowledgment of the nagging husband. This presumed gender disparity may result from the difference in status between men and women. Men with higher status may be in a position to label the requests of lower status women as nagging, which then justifies their refusal to comply with the request. The power differential can be examined further by looking at specific instances when women are considered to be nags.

The derogatory term "nagging" may be an indication of a power play between a man and a woman. This dynamic is exemplified in the relationship between batterers and battered spouses. Male batterers are often dominating individuals who seek to control all aspects of behavior in their significant others (Frieze & McHugh, 1992; McHugh, Livingston, & Frieze, 2007). In a study of communications between batterers and their partners, Galibois (2006) found that, in instances in which the female partners tried to assert themselves and be heard by their partners, the male batterers labeled their actions as nagging. The batterers (all men in that study) were in a higher status position, which enabled them to label negatively, and then disregard, women's communication; thus, the batterers remained in control and did not have to acquiesce to the requests. The women in these episodes were in a lower status position and did not challenge their partner's derogation of them. One batterer in the Galibois study explained his stance in such a situation: "I do help out when she doesn't nag about it. I don't have no problem with doin' it. But if she's gonna nag about it, it's like, 'You do it yourself if you're gonna nag about it . . . Just ask the right way'" (Galibois, 2006, p. 9). In that instance, if the batterer had complied with the initial request, it meant that he would have given some of his power to his wife. Evidence for this underlying dynamic lies in the fact that some of these batterers retaliated by inflicting violence when the women refused to remain silent. The use of violence indicates how important it was to these men to halt the threat to their power, and some men believed that the physical violence was a justifiable reaction to that threat.

Although she does not subscribe to a dominance model, Tannen (1990) similarly argued that men do not acquiesce to women's requests in order not to be seen as compliant to a woman. The male partner may wish to comply with his partner's request, but he prefers to wait so that his behavior appears to be of his own initiative. As women "do not understand" a man's need to save face, women often repeat their request, which is then seen as nagging. Men do not want to be seen as complying with nagging, so they wait even longer to meet the woman's request.

Profanity

Men swear more in public than women do (Jay, 1992, 2009; McEnery, 2006; Mehl & Pennebaker, 2003; Thelwall, 2008), and they use more and stronger coarse language than women do in general

(Ginsburg, Ogletree, & Silakowski, 2003). Gender differences in the use of profanity have been demonstrated across cultures (Gregersen, 1979) and over time. Although the gap between women's and men's use of swear words has narrowed, men continue to utter more offensive words more frequently than women do (Jay, 2009). Women are more likely to use milder words and phrases; for example, they say "Oh, my god!" much more frequently than men do (Jay, 2009). In a study of self-reported use of profanity (Selnow, 1985), women reported less profanity usage than men did. Further, both male and female undergraduates indicated that their fathers used more profanity at home than their mothers did, although women reported a higher level of profanity use by their mothers than was reported by male students. Staley (1978) reported that men underestimated women's reported use of swear words, whereas women overestimated men's reported use. Differences in estimations of profanity use by men and women might reflect gender norms and stereotypes and also may reflect profanity usage by women primarily in same-sex contexts.

Both women and men swear more frequently in same-sex groups than in mixed-sex groups. Based on the study of the use of coarse language by Canadian fishermen, Menzie (1991) concluded that coarse language can reinforce a culture of gender inequality. The fisherman used many derogatory and lewd references to women to strengthen their in-group solidarity. Other research confirms that men are more likely to use terms that refer to women's anatomy in ways that are considered lewd by women (Jay, 2009), and men produce and use more slang terms for female genitalia than women do (Braun & Kittzinger, 2001; Stapleton, 2003).

Haas (1979) challenged the conclusion that men use more vulgar language than women. She argued that women and men are more similar than different in their use of vulgarity, and, in fact, some research has not confirmed a gender difference at all. Bayard and Krishnayya (2001) analyzed actual conversations of university students and did not find a significant gender difference in the use of expletives. Similarly, Staley (1978) observed no gender differences in the use of swear words reported by men and women. However, Jay (1980) reviewed a variety of studies that demonstrated gender differences in swearing and use of profane terms, which showed that, as in other areas, men and women demonstrate both similarities and differences in their use of obscenities. Furthermore, norms regarding women's use of profanity may be changing, in which case the age or cohort of the men and women studied may be an important factor. Recent studies have suggested that the relation between gender and swearing is more complex and context specific than previously acknowledged (Stapleton, 2003). In a study of swearing within a group of undergraduate Irish drinking friends, male and female group members reported habitually deploying strong language, but there were some gender differences in which words were used. Also, for the women, but not the men, swearing was seen as a strategy for intimacy and for group solidarity. Stapleton concluded that the Irish drinking women employed strategic use of obscenities to construct a community and to present a contextual form of femininity.

Does a gender difference in the use of vulgar or coarse words matter? One argument is that women's reluctance to use swear words limits their ability to express certain feelings, especially anger. Profanity generally is seen as a means of expressing oneself, as a way to communicate feelings (Fine & Johnson, 1984); both men and women have reported anger expression as a motivation for swearing. Further, the use of swear words may be functional or effective in certain contexts. Scherer and Sagarin (2006) demonstrated that including an obscenity at the beginning or the end of a persuasive speech increased the persuasiveness of that speech. However, earlier research indicates that men were effective in their use of profanity in persuasive speech, whereas women were seen as violating a norm when they choose such a strategy (Burgoon, Dillard, & Doran, 1985; Burgoon & Stewart, 1975). In another study, women who used non-standard speech and swear words were judged to be of lower socioeconomic status and of lower moral status than women who did not swear (Gordon, 1997). In other contexts, however, swearing is a liability for both men and women. For

example, students evaluated a professor's lecture more poorly when profanity was included (Phillips & Kassino, 1987).

Verbal Harassment as Dominance

Men's control of speech, and their use of interruptions and profanity, may be interpreted as ways of maintaining dominance and perpetuating gender inequality. Another form of communication that has received minimal attention is street harassment (i.e., unsolicited comments from strangers in public places). These remarks are initiated almost entirely by men (Gardner, 1995; Kissling, 1991; Kissling & Kramarae, 1991). The remarks, and the asymmetry of the situation, suggest that street harassment reinforces gender inequality (Kissling, 1991). Women are taught in many cultures to ignore or trivialize such interactions (Gardner, 1995), but research indicates that these experiences can have a negative impact on women (Swim, Hyers, Cohen, & Ferguson, 2001). Our failure to acknowledge and study street harassment suggests that male privilege and dominance are accepted and often left unexamined.

Obscene phone calls also typically are made by men. More than 80% of women report having received obscene calls (Herold, Mantle, & Zemitis, 1979; Smith & Morra, 1994), which may be the most common offense perpetrated against women (Ginsburg et al., 2003). Although these are not typically reported to authorities, women who have received obscene phone calls have reported fear and other emotional reactions to the experience. Again, women are encouraged to dismiss these events as trivial and inconsequential. These examples suggest that which forms of verbal interactions researchers select for study is an important and a political question. Is it an accidental omission that researchers have neglected serious study of men's street and telephone harassment of women?

Women's Talk as Relational

Placing Value on Women's Talk

Tannen (1990) suggested that the negative labels attached to women's use of small talk, often referred to as chatter or chitchat, indicate a lack of respect for, or a negative attitude toward, women's speech. In response to the devaluation of women's speech, some feminist theorists and researchers have attempted to reclaim aspects of women's speech as feminine or as women's verbal culture. "Such attempts are useful in that they allow us to reconsider the value of many forms of female behavior which have traditionally been marginalized and trivialized by male theorists" (Johnson, 1994, p. 153).

Women's talk can be viewed as effective in terms of maintaining interpersonal relationships and attending to the socio-emotional needs of a dyad or group. Women contribute more positive socio-emotional talk, such as showing agreement or support, than men do (Aries, 1982; James & Drakich, 1993; Wood & Karten, 1986). Women also tend to work harder at keeping conversations going and at producing harmonious talk than men do (Fishman, 1978; McLaughlin et al., 1985). James and Drakich (1993) suggested that gendered cultural expectations lead women to use talk to establish and maintain personal relationships. For example, gossip, often viewed negatively as the idle talk of women, may perform an important function within relationships and groups. In this section we review research on the thesis that, to the extent that gender differences do exist, women demonstrate superior verbal and conversational skills.

In her analysis of the taped conversations of three heterosexual couples, Fishman (1978) concluded that women do most of the work in intimate interactions. The women were more actively engaged than their male partners in ensuring the couple's interactions. Women invited conversation by asking questions and prefacing statements with attention-getting devices (e.g., "This is interesting!", "Did you know...?"). Women also responded to men's talk with minimal responses as signs of active listening, whereas men's use of minimal responses suggested that they were not interested in women's speech. Women tried often to engage men in conversations, but succeeded less often than men did; men tried less often to initiate conversation, but seldom failed. Men typically made statements and expected their partner to respond, and they produced twice as many statements as women did. According to Fishman (1978), women do most of the routine conversational work, but do not control the interactions or benefit as much as men do from them.

Minimal Responses

Minimal responses are short words or sounds used to demonstrate listening in a conversation or discussion. In same-sex conversations, women have been shown to use frequent minimal responses, inclusive pronouns, and signs of attention (Aries & Johnson, 1983; James & Drakich, 1993). Women often acknowledge what has been said, and they make supportive comments more often than men do (Coates, 1989; Jones, 1980). Gray (1992) and Tannen (1990) have described men as not making minimal responses and have discussed women's frustration with their partners for not listening to them. West and Zimmerman (1977) concluded that there is a gender difference in the use and interpretation of the minimal response. Women use minimal responses to communicate active listening, but men interpret minimal responses as indications of agreement. Colley and Todo (2002) reported research on e-mails, which suggests that, even in this forum, communications from women contain more features associated with rapport and intimacy than men's do.

Small Talk

Women's talk has often been labeled as small talk, which implies that it is shallow, meaningless, and trivial. Small talk has been associated with women (Coupland, 2000) and with conversations in informal and private settings (Mullany, 2006; Tannen, 1990). Small talk has sometimes been identified as a form of politeness (Holmes, 2008), but often the politeness of small talk is implicit (Mullany, 2006). It has also been confounded with gossip, another form of speech stereotypically viewed as feminine. Holmes and Marra (2004) argued that small talk can be considered a relational practice, which refers to a wide range of "off line, backstage or collaborative work that people do" (p. 377), that is, largely unrecognized and rarely rewarded. Coupland (2000) contended that small talk plays an integral role in both private and public domains and argued against dichotomizing the speech styles of men and women and of public and private speech. She refuted the idea that public talk is powerful and masculine, whereas private talk is trivial and feminine. Although often viewed as dispensable or irrelevant, relational practices can advance the objectives of the neighborhood, the family, and workplace.

Small talk is commonly used to establish and maintain social relationships, and it serves to maintain collegiality within the workplace (Holmes, 2008). It also can be used effectively to do power (i.e., as a means of disguising oppressive acts) or to resist or challenge the directives or authority of others (Holmes, 2008). For example, a large retail chain might engage in systematic unfair labor

practices by having each manager develop friendly relations with employees through small talk, and then ask those employees to work overtime without pay “as a favor.” Recent research indicates that small talk is used in the workplace by both men and women (Tannen, 1990). Based on two ethnographic case studies of businesses in the UK, Mullany (2006) concluded that female managers used small talk strategically. Two senior female managers used small talk as a form of linguistic politeness within a general meeting to create collegiality. Women in the workplace also used small talk both to distance themselves from men in their professional setting and as an indication of in-group status (Mullany, 2006). Despite being stereotyped as feminine, small talk was not associated with powerlessness. Thus, it can be subverted and used effectively in the workplace in complex multifunctional ways.

The degree to which a group of people engage in small talk may be determined by the most powerful person in the group (Mullany, 2006). According to Mullany’s analysis, if the individual with the highest status does not initiate small talk, then the group will not engage in it. Conversely, if the boss endorses small talk, then the group will engage in it. The underlying power differential was also evidenced in the observed use of small talk by female managers, who used small talk as a device to create and maintain solidarity and collegiality amongst their department teams, whereas, when interacting with their peers, they did not use this strategy (Mullany, 2006).

Recent trends in management training suggest that the traditional masculine style of directness and authority is no longer preferred in corporate settings. According to Lazar (2007), contemporary approaches emphasize a relational style for managers, as opposed to the traditional authoritarian manager who commands employees. Holmes and her colleagues (Holmes & Marra, 2004; Holmes & Schnurr, 2005) examined the use of relational practice in the workplace. Relational practice is described as behavior oriented to the needs of others and aimed at consensus building and good working relations. Although such behaviors have been viewed as dispensable and irrelevant in the past, relational practice may help to advance the primary goals of the organization. This style values interpersonal communication skill and is often viewed as more characteristic of women. Thus, what was once held against women is now appreciated in some workplaces. The more “feminine” manager might be viewed as better at dealing with different personalities, and the “gentle” manipulations of the group dynamic may prevent possible disruptions in the workplace faster and more efficiently. Ironically, women who have been promoted to top management levels may need training in the use of small talk, invitational rhetoric, and indirect requests, as they might have been promoted based on their use of “masculine” or direct styles. Holmes and her colleagues (Holmes & Schnurr, 2005; Holmes & Stubbe, 2003) suggested that the use and effectiveness of a relational management style depends on the context.

Gossip

Gossip has traditionally been viewed as idle, and sometimes evil, talk about the affairs of others. Gossip has been strongly associated with women, and it has developed into a negative term synonymous with women (Rysman, 1977). Tannen (1990) suggested that labeling women’s talking as gossip and women as gossips reflects societal derogation of women’s speech. The negative framing of gossip serves to limit women’s solidarity with each other (Rysman, 1977). A feminist analysis suggests that the devaluation of women’s gossip represents an attempt by the dominant group members to protect themselves from the power of the gossip (Harding, 1975; Kolb & Putnam, 1992; McHugh & Tousignant, 1995; Rysman, 1977).

A common definition of gossip is informational or evaluative talk about someone who is not present (Eder & Enke, 1991). Noon and Delbridge (1993) defined gossip as the process of informally

communicating value-laden information about members of a social setting. Another definition of gossip is evaluative talk among people who are familiar with each other concerning the personal matters of a third person who is not present (Eder & Enke, 1991). Toth (1997) sarcastically observed that when people talk about the details of their daily lives it is gossip; when they write about them, it is literature; and when historians ask about these details, it is oral history.

Women's gossip has been trivialized and devalued in many cultures. For example, Harding (1975) described the verbal interactions of women in a small Spanish village. Gossip among women was not appreciated in this village; it was considered unhealthy and disruptive. According to Harding (1975), women's social roles in the village dictated that the talk and thoughts of women in the village focused on people and their personal lives, whereas men's roles and focus were primarily concerned with the land, the crops, and the weather. The men worked in the fields in isolation, separated by fences and walls. Part of women's role was to circulate information, to pass on news of conversations and events; their gossip involved the collection, circulation, and analysis of certain portions of the village story. "Without women talking to each other, there would be little to call village society" (p. 302). Yet, Harding described women's talk as derogated and disdained because it was a potential challenge to men's power and hierarchy. Harding proposed that gossip is strongly tied to women's ability to exercise power, to "their ability to have their voices heard, remembered and responded to by other women and men" (p. 306).

The functions of gossip. The stereotype of gossip as trivial and meaningless talk has been challenged, and gossip is increasingly viewed as a complex and multifaceted phenomenon. For example, Harding (1975) argued that gossip in a Spanish village performed the important function of creating and maintaining community. Similarly, Dunbar (1998) proposed that gossip is the human version of social grooming: essential to forging bonds and affirming relationships. Dunbar commented that humans have an insatiable appetite for gossip, and others (Wilson, Wilczynski, Wells, & Weiser, 2000) agree with his contention that gossip is at the core of human social relationships and makes society possible. Face-to-face talk is one of the most pervasive and central types of social organization, and more than one-half of adult conversations are about people who are not present (Levin & Arluke, 1985). Everyday talk about other persons grounds our ideas about people and about human nature. "Person talk" is the domain where our conceptions about people are formed and changed.

Gluckman (1963) argued that gossip is a process by which groups both maintain and perpetuate themselves. Gossip serves a normative function in groups, and it is a method of reinforcing the values of the group (Eggins & Slade, 1997). For example, gossip has been described as a strategy to expose and control individuals who violate group norms; negative gossip criticizes inappropriate behavior and communicates disapproval (Dunbar, 1998; Eckert, 1990; Gluckman, 1963; Kniffin & Wilson, 2005). In a study of online fan groups (Greenfield, 2005), gossip was viewed as helping fans to create the culture of fandom, to build common ground with other fans, and to discuss themselves through their talk about others. Male and female fans used gossip as a way to construct the unique norms and beliefs of the fan community; gossip both maintained and challenged the community norms.

Gossip often occurs between familiars and friends. It is a way to communicate to friends that they are trusted (Blumberg, 1972). Gossip expresses felt intimacy or group ties and strengthens the knowledge that group members share values and opinions. Gossip, secret sharing, and self-disclosure have been viewed as especially important for friendships among girls (Maccoby, 1998). For example, Goodwin (1982) described the gossip of urban Black girls in Philadelphia as an extended and complex form of argument. Campbell (1987) studied Puerto Rican girls in a New York gang and found that gossip was at the heart of the group. Their marginalized position in society resulted in gossip that rejected dominant perspectives of their status, and it served a self-identity function. "By vilifying their enemies, they, in turn, reveal a good deal about themselves" (Campbell, 1987, p. 464).

Similarly, Bosson (2006) demonstrated experimentally that negative gossip about a mutually known third party helped to cement a friendship in formation.

Ethnographic research (e.g., Merton, 1997) shows that gossip is used by girls to maintain or increase their own position in a social hierarchy. McDonald and her colleagues (McDonald, Putallaz, Grimes, Kupersmidt, & Coie, 2007) documented the role of gossip in the friendship patterns of diverse fourth grade girls. They reported that popular girls engaged in more evaluative gossip than rejected girls did, and gossip served to foster intimacy more for popular than for unpopular girls. Lansford and her colleagues (Lansford et al., 2006) also found that unpopular (rejected) fourth grade girls engaged in less (positive and negative) gossip than popular girls did. In Goodwin's (1982) research, Black adolescent girls instigated conflict with other girls through gossip. Campbell (2004) observed that women rarely physically fight; rather, girls and women in conflict are more likely to engage in reputation-damaging gossip about their enemies. Hess and Hagan (2006) observed that informational aggression can be a more effective way for women to attack their rivals, and an increase in the use of gossip to ostracize other adolescent girls has been demonstrated (Cairns, Cairns, Neckerman, Ferguson, & Garipey, 1989). However, other research has not confirmed that overt and social aggression by peers was related to the amount of gossip in which adolescent girls engaged (McDonald et al., 2007).

Gossip is one way to distribute information within an organization. According to Noon and Delbridge (1993), gossiping is a pervasive activity within organizations of all types, but it is rarely addressed in organizational behavior texts or courses. They described organizational gossip as an informal, comprehensive, often accurate, and swift method of disseminating information. Hess (2009) asked students to play the role of employees who were competing for a promotion. She assessed the respondents' willingness to repeat both positive and negative gossip about rivals for a promotion; both women and men were willing to repeat negative gossip about another employee to compete for a position. Hess (2009) suggested that women may be more likely than men to be in positions in which gossip is a competitive strategy. Similarly, Kolb and Putnam (1992) concluded that gossip often serves as an informal method for airing grievances and dispute resolution in organizations, especially when individuals do not have access to formal power. An informant described the gossip of nurses in a hospital to Wert and Salovey (2004); most of the nurses' negative gossip was about doctors and other nurses. The researchers attributed the nurses' gossip to the fact that they were oppressed and felt unappreciated. Gossip was viewed as an outlet for the nurses' frustration and as a forum for complaints about those in power. Thus, powerlessness is a trigger for (negative) gossip. Women, more often than men, may be in organizational positions in which they feel powerless to improve their work conditions.

Gender and gossip. Although it is associated with women, there is little research to confirm a gender difference in gossip. In one study of evaluative gossip among college students and their friends, Leaper and Holliday (1995) reported that negative gossip was more common than positive gossip, and female friends shared more negative gossip than male friends did. However, male and female college students engage in similar forms of gossip (Levin & Arluke, 1985), and other research has documented similarities in the ways that men and women gossip. The gossip of women and men has a similar form and function (Cameron, 1997; Evaldsson, 2002; Levin & Arluke, 1985; Johnson, 1994). Like the gossip of adolescent girls (Goodwin, 1982), the gossip of adolescent boys is about identity and solidarity with the group and the depiction of others as deviant (Evaldsson, 2002). However, boys use speech behaviors typically associated with them. For example, they used interruptions and conversational control and degraded their peers to create a dominance hierarchy (Evaldsson, 2002).

An empirical study of overheard conversations (Levin & Arluke, 1985) in a student lounge at a large northeastern university showed that women gossiped only slightly more than men did.

Conversations were identified as gossip if participants discussed a third party who was not present. The overheard female and male college students were both likely to gossip, and they talked about many of the same topics, including dating and sex. For both men and women, about one-quarter of the conversations involved negative evaluations, and about one-quarter of the comments were positive in tone; the remaining 50% were rated as neutral. However, there was a gender difference. Women were more likely to disclose information about themselves and others and to discuss close friends and family members. Men, on the other hand, talked about celebrities, sport figures, politicians, and acquaintances on campus. Thus, two common conceptions – that women gossip and that gossip is always negative – were disconfirmed. Gossip was demonstrated by both genders, and the overheard comments were generally neutral or positive in nature. However, women were more likely to talk about the details of intimate friends' lives, whereas men tended to avoid spheres of private and personal experience.

Tannen (1990) also observed that men tend to talk about impersonal topics and people they do not know rather than about personal relationships or intimate friends. Johnson and Finlay (1997) demonstrated that men's talk about other men is limited to unknown and famous individuals, and this same pattern was found in men's magazines as well (Benwell, 2001). Men's talk is, thus, not seen as gossip, but viewed as an entertaining and lighthearted exchange of news, information, and opinions (Harding, 1975). According to Tannen (1990), exchanging details about the lives of public figures or about news events (rather than private events) has the advantage of not making men vulnerable. Talking about celebrities may help an individual to connect with others, but this form of gossip does not perform all the functions that discussion of familiar others does. Johnson (1994) argued that men's bonding through discussions of football games and athletes is similar, but not identical, to women's gossip, because such talk is missing the element of personal disclosure and the details of individuals' private lives. Thus, men's gossip continues to "marginalize the subjective and emotional concerns of the private sphere" (Johnson, 1994, p. 152). Cameron (1997) found that, although men's gossip is similar to women's in form and function, men's gossip reflects traditionally masculine concerns about not being seen as feminine or as homosexual. Further, Benwell (2001) argued that men's gossip not only bonds them together but also affirms normative boundaries of masculinity and stigmatizes anything that is not masculine.

Romantic relations are the most gossiped about topic (Levin & Kimmel, 1977) by both men and women. Power (1998) argued that gossip is relevant to mating and that both women and men are interested in mating reputation gossip, which conveys important information used in making mating decisions and choices. According to Power (1998), men tend to gossip with other men about women's sexual behavior and attractiveness, whereas women gossip with other women about the status of men and about which men philander. De Backer and his colleagues (De Backer, Nelissen, & Fisher, 2007) examined men's and women's interest in gossip related to mating by using a recall task. Recall of details was measured as an indication of interest in the gossip. Their analysis indicated that both women and men are interested in (i.e., could recall) gossip about the reputation of others who represented possible mates (in this case, individuals of the other sex), regardless of the participants' own relationship status. Cues about attractiveness were recalled better for female targets, and cues about wealth were recalled better for male targets by both men and women. Women recalled more information about female targets (termed "rivals" by the researchers) than men recalled about male targets. McAndrew and his colleagues (McAndrew, Bell, & Garcia, 2007) concluded that women appeared to be particularly interested in the activities of other women: women were three times more likely than men to be as interested in gossip about same-sex others, and women were as interested in that as they were in gossip about their own lovers. Women reported that they were just as likely to share gossip with their female friends as to confide in their romantic partner; men were more likely to confide only in their partners. Both male and female college students demonstrated intense interest in scandalous news about the academic integrity of a rival.

The research on gossip indicates that cultural conceptions of gossip as idle and negative talk about others by women is not accurate. McAndrew (2008) concluded that gossip is a more complicated and socially important phenomenon than it was previously thought to be. Both men and women gossip, and their discussion of others is often neutral or positive. Further, gossip serves important positive functions in relationships, friendships, groups, organizations, and communities. "Gossip is a part of who we are, and an essential part of what makes groups function as well as they do" (McAndrew, 2008, p. 32). The forms and functions of gossip have been shown to differ by age, audience, ethnicity, group membership and status, and, only to a degree, by gender. Women have demonstrated a strong interest in the affairs of other women, and women have a somewhat different pattern of sharing gossip than men do (McAndrew, 2008). In some communities and contexts women create and maintain community through the sharing of details about people in the social organization. Gossip is thread used to create the social fabric of our lives.

Why then have women been derogated as gossips? Derogating women's talk as rumor or gossip may represent an attempt on the part of individuals to protect themselves as the targets of gossip. A feminist analysis argues that gossip may represent one of the only ways that women (or men) in lower status positions can influence others' interpretation and reaction to events or express direct disapproval of others perceived as behaving badly. Gossip may be a subversive form of power and a source of information for people who are not in formal positions of power (Rysman, 1977; McHugh & Tousignant, 1995; Wert & Salovey, 2004), and it may offer people in low-status positions some relief from oppression (Wert & Salovey, 2004). Attacks on gossip may represent the anxiety that dominant groups have about subordinates (Spacks, 1982). People, especially men in high-status positions, may attempt to limit the power of women and/or lower status individuals in the organization or community by prohibiting, chastising, or suppressing gossip (Harding, 1975; McHugh & Tousignant 1995; Rysman, 1977). However, McAndrew (2008) concluded that the goal of suppressing gossip to avoid its potentially harmful effects is misguided. He suggested that we think of gossip as a social skill rather than as a character flaw.

What About Men's Deficiencies?

The position that at least some women are skilled at communication and conversation may imply that at least some men have communication deficits. Linguists traditionally have not entertained the topic of men's speech deficiencies. Gender differences that could be considered deficiencies in men, however, might actually be functional for them. For example, in their critique of the two cultures approach to gender and language, Henley and Kamarae (2008) were especially concerned about the perspective that women must be bilingual, that is, able to speak competently in both men's and women's language, whereas men are not expected to learn women's language. Thus, men can continue to view women as indecipherable. Henley and Kamarae (1991) argued that women are taught, via the media, to learn to read the silences, the emotional inexpressiveness, and the angry expressions of men as benign. In reading romance novels, girls and women learn to reframe negative aspects of men's speech as indications of affection, and romance novels give women the message that they are responsible for their own and their partners' communication (Radway, 1984).

An example of men meeting their needs through their alleged inability to express themselves was described by Galibois (2006). Often, batterers are framed as being incapable of expressing themselves, and their physical violence is viewed as desperation derived from being emotionally repressed. Galibois argued that the supposed deficiencies seen in batterers actually mask their true abilities; male batterers are capable of expressing emotion and do it in precise ways to control their partners. In her analysis, male batterers' emotional tirades are actually planned and practiced to perfection. Batterers use facial and nonverbal expressions, as well as verbal abuse, to communicate their

message to their partners. “[I]t seems the ability to communicate (or lack thereof) is not innate or a skills deficit. . . . If we look beyond the meaning of the words used in verbal communication, we find a vast repertoire of gestures, expressions, and tones that dramatically increase and hone batterers’ ability to communicate to their victims. . . . [M] any women rely upon their batterer’s nonverbal communication to assess their own safety” (Galibois, 2006, p. 16.). Research on gender and language requires us to rethink our stereotypes about men’s and women’s use of language. Aspects of women’s speech that have been seen as deficits may actually be assets, and some men’s alleged inability to express themselves might actually serve a communicative function.

Directions for Future Research: Re-thinking Gender, Language, and Power

Researchers, like gossips, can, in their reports of observed events, influence others’ opinions and conclusions through the words and frameworks they use. Language is a form of power that can be used not only to describe our experiences but to shape public opinion and, ultimately, to construct reality. Language, then, has the power both to reflect and to shape our world. Language not only allows us to express our ideas but also shapes our ideas (Whorf, 1976; see also Chapter 18). Our perceptions and construction of reality is limited by language. The power to name, label, and interpret human behavior has been claimed by theorists and researchers.

The extensive research conducted on gender and language over the past 40 years has employed different approaches, frameworks, and methodologies. Starting with different assumptions or constructions of gender, and different conceptions of language, researchers have obtained inconsistent results, and theorists have made different claims about language and gender. Just as intimate partners might disagree about whether one partner has made persistent request, or has been nagging, linguists and other social scientists might disagree on whether the language of women and men reflects gender similarities or differences. Coworkers might disagree on whether an individual had the floor and was interrupted, and researchers might disagree on whether the data indicate evidence of difference, of deficits, or of dominance.

A postmodern perspective on the existing research challenges the contention that there is a single correct or best model that explains gender and language. Cosgrove and McHugh (2002) described postmodern theory as challenging the “realist” theory of language. The realist position is one that assumes that there is an objective, material reality “out there” and that language works in a straightforward way by naming or mirroring that reality; words represent/ mirror/label the objects to which they refer. Postmodernism, in contrast, is critical of this view, which is seen as simplistic and grounded in an epistemology of privilege (Cosgrove & McHugh, 2002, 2008). Who, after all, gets to name this reality? Language is seen as *constituting* rather than *revealing* reality. Language affects what we do (and do not) notice, what we do (and do not) experience. In a postmodern analysis, it is not just the language of the participants that is examined; the language (or discursive practices) of the theorists and researchers also requires analysis. In this chapter we emphasize the perspectives adopted by theorists; the construction of gender and language as difference, as deficit, as miscommunication, as dominance, and as relational practice was presented and critiqued. A postmodern perspective argues that research conducted within these varied frameworks is limited or flawed in some ways, but also that each perspective can contribute to our understanding of the phenomena of gender and language (Cosgrove & McHugh, 2008). A problem occurs, however, when we adopt or reify any of these positions as reality.

Importance of Context

Researchers and theorists have become increasingly critical of the methods used and are more sophisticated in their analyses of gender and language. It is apparent that the results of early studies of the cross-sex interactions of White speakers cannot be transferred or generalized without problems (Freed & Greenwood, 2008). Single linguistic variables cannot be studied or understood when separated from their context. Henley and Kramarae (1991) espoused an approach to communication that recognizes that talk is an active process that occurs in a specific context and involves speakers who have diverse and varied concerns and identities other than gender.

Similar concerns about the importance of context have arisen in other areas of gender research. The context in which gendered behavior is studied is critically important in producing and interpreting data. For example, Sherif (1979) critiqued psychology's use of contrived and carefully controlled laboratory contexts. Experimental (or laboratory) research strips behavior of context and, thus, distorts knowledge about gender differences (Parlee, 1979; Sherif, 1979). Findings from such research are not representative of daily life, and investigators frequently design the research situation to get the results they want or expect (McHugh et al., 1986). Similarly, experimental studies of gender and language usage may have limited applicability to talk in other contexts. In a demonstration of this point, Freed and Greenwood (2008) examined the conversations of eight dyads as they progressed through three phases of a research study: spontaneous talk, considered talk, and collaborative talk. Volunteers brought a friend to the study so that all dyads were familiar. After a waiting period (spontaneous talk), participants were asked to talk about nature of friendships between women and between men (considered talk) and then to complete questionnaires (collaborative talk). Researchers tracked the use of the phrase, "you know." Almost all of the instances of "you know" happened during the considered talk. The authors concluded that the outcome was strongly influenced by the type of talk, but not by the gender of the speaker.

Changing Conceptions of Gender

Early research on gender and language focused on the differences between women and men. The focus on gender differences has led to a failure to recognize similarities in the ways that men and women talk (Bing & Bergvall, 1998). An emphasis on differences often results in beliefs about exaggerated differences between the sexes, and it stereotypes both men's and women's speech. Language and gender research based on the difference model tends to reify and polarize gender categories. Theorists have increasingly challenged the conception of gender as polarized, binary, and dichotomized (Thorne, 1990). The sexually dimorphic view influences the way questions are raised, the methods of data collection, and the interpretation of the data (Epstein, 1988; McHugh & Cosgrove, 2002). The creation of bipolar constructs via the difference model also results in the essentializing of women's and men's qualities (Thorne, 1990). Essentialism refers to the tendency to believe that properties, qualities, or natures reside in particular groups of people. In terms of gender and language research, essentialism refers to viewing the use of tentative or dominant speech as trait-like styles that come naturally to women and men, respectively. Feminist theorists increasingly reject essentialist perspectives on gender, and they advocate a view of gender as a social construction (i.e., gender is produced or performed in a series of interactions and activities; Bohan, 1993; Lott, 1990). In other words, individuals do not "have" gender, they "do" gender (Bohan, 1993; West & Zimmerman, 1987). The realization that gender is continuously performed or is negotiated in interaction with others originated, in part, as a result of language research by West and Zimmerman

(1987). There has been a shift in thinking about gender and language. The prior view that we use language in certain ways because of who we are has shifted to the view that who we are is partly because of the way we use language (Litosseliti, 2006). Gender is one of the major construct that organizes our experience. Today social scientists are not just interested in women's language or in gender differences; instead, sociolinguists and feminist linguists have adopted a critical view of gender.

Gendered Language in Relation to Social Roles

If we fail to consider the context of gendered language, we may also fail to recognize that, in any society, men and women are differentially distributed across settings and roles. Many aspects of people's lives involve levels of sex segregation and stratification. Eagly (1987) argued that gender differences are the product of social roles that regulate behavior in adult life. As a result of differences in their social positions, women and men are systematically exposed to different expectations. Research has repeatedly demonstrated that status within hierarchical structures determines gender-typed behavior (see, for example, Henley, 1977; Unger, 1979), and researchers have repeatedly indicated that the impact of status differences on language use has often been misinterpreted as gender effects. Women and men who occupy the same role or status position within a hierarchy have had many of the same prior experiences in these organizations, and they may differ little in role-relevant attitudes and behaviors; thus, specific organizational roles can override gender roles. However, even when men and women share similar roles in a social context, they often arrive at these roles via different paths or sets of experiences. For example, the experience of a househusband may differ in marked ways from the experience of a housewife, just as the experience of female students in engineering programs may not be identical to that of their male classmates. Even social role approaches to gender and language may oversimplify the complex realities of gender in our lives.

Research on gender and language has become more complex as it moved to a consideration of language as a social practice. Language is increasingly recognized as dynamic, complex, and subject to change. Every time we use language we are making choices influenced by both the local and the broader regional, institutional, and cultural context. In early research on language and gender, women and men were each seen as homogenous categories distinct from each other, and variations within gender groups were not acknowledged. This can lead to a failure to recognize other dimensions of experience such as status, race, ethnicity, region, religion, age, and socioeconomic status. Research conducted with a single group of women (often middle-class, White women) was universalized as if the sample represented women as a group. More recently, language use is increasingly seen as both contextual and as tied to a specific community, referred to as a community of practice. Generalization from any sample of speakers is seen as problematic, and research on gender and language increasingly focuses on particular women and men in a particular setting (Litosseliti, 2006). Examples discussed here include the research on the use of profanity by a community of fishermen in Vancouver (Menzie, 1991) and Goodwin's (1982) study of Black girls in Philadelphia. Current research on language use is likely to focus on the way language is used within a community of practice, and results are not typically generalized to all men and/or all women.

Toward a Postmodern Perspective

According to Foucault (1980), power is the important organizing concept; it influences *what* we can say and do, as well as *how* we can say and do. Power is the capacity to promote change and to maintain the status quo. Postmodern theorists view power as exercised in interactions, rather than as

an attribute possessed by an individual or group. Hegemonic forms of power such as patriarchy rely on practices at the micro level. Analysis of language/discourse is one of the ways we can examine or expose the operation of power, and feminist discourse analysis can provide a critical perspective on inequality sustained through language use (Lazar, 2007). Through control and manipulation of discourses, the dominant group can recruit people as collaborators in the policing of their own lives (Foucault, 1980).

Research and theory concerning gender and language has moved increasingly to a postmodern position. Power, or the ability to influence others, is not innate to individuals or to words and phrases, but occurs in social interactions among people. One form of power shared by gossips and theorists is the ability to influence others' perceptions of events. This power is most effectively employed when the narrative of events/data appears to be neutral, rather than self-serving or "biased" in some way. However, just as an individual witness to a dramatic event in his or her own community, the theorist or researcher is never disinterested or completely detached from the data she/he collects and describes. This is a postmodern perspective: The starting assumptions and questions, and the methods employed, can and do impact the data that are collected and the interpretation of those data. Like the gossips, theorists and researchers attempt to persuade their audience to their interpretation of the events or their construction of reality.

Postmodernism is an approach to knowledge that reveals the socially constructed nature of reality and the varied interests that are served by particular constructions. For example, situating feminist research within the postmodern perspective encourages researchers to ask about whose interests are being served by the construction of gender as difference (Caplan & Caplan, 1994; Cosgrove & McHugh, 2002; Hare-Mustin & Marecek, 1994; Tavis, 1992) or whose interests are served by viewing gender differences as miscommunication rather than as related to sexual inequality or male dominance. There is an increasing emphasis on discourse analysis within contemporary research on gender and language. Discourses, or ways of seeing from a certain perspective, are manifested in text or language and serve to reflect, maintain, construct, and resist social practices (Litosseliti, 2006). Critical analysis of such discourses, or discourse analysis, exposes the (hidden) agenda and assumptions of the discourse (Litosseliti, 2006). Discourse analysis is an attempt to understand the social issues, including inequalities and ideologies that are expressed within the discourse. Discourse analysis is not necessarily neutral, but seeks to examine whose interests are served, and whose are not, by the discourse in question.

Toward a Feminist Postmodern Approach to Gender and Language

Feminist postmodernism recognizes that science, like other discourses, is *never* innocent (Lather, 1991), and methodology is inescapably political, thus epistemological issues are always at stake. Feminist linguists are interested in identifying, demystifying, and resisting the ways in which language is used, together with other social practices, to reflect, create, and sustain gender divisions and inequalities in society (Litosseliti, 2006). A feminist postmodern approach to gender and language might argue that we need to focus on the relationship between constructions of masculinity and femininity and language use and to extend our research beyond the study of White, heterosexual, middle-class people (Litosseliti, 2006). Today feminist linguists are concerned with diversity, multiplicity, performativity, and co-construction of gender and gender identities within specific contexts and communities of practice, and they are interested in the politics of power (Litosseliti, 2006). Research conducted from a feminist postmodern perspective might document gender-related linguistic phenomena and language use within specific communities of practice and tie these to observed and experienced gender inequalities. A feminist perspective acknowledges that language helps to

establish and maintain the social order and power relations, but language also can challenge routine practice and contribute to social change (Cosgrove & McHugh, 2008). From a postmodern position, linguistic change is an important aspect of social change. For example, viewing relational talk as an important asset in corporate settings and encouraging managers to develop relationships on the job through small talk can create important changes in work settings. Thus, the existing research on gender and language as reviewed here offers multiple perspectives on how to interpret our own experiences as well as varied directions for future research.

Directions for Future Research

The postmodern approach to research does not endorse or preclude any particular method. Rather, all methods of research are seen as contributing a partial perspective on phenomena such as gender and language. Multiple methods can be combined to provide a multi-dimensional understanding of the phenomena. Research on gender and language has progressed considerably from counting single speech forms as indications of difference or dominance; contemporary researchers view conversation and speech as complex interactions that occur in context.

Feminist researchers might continue to investigate the relation of gender inequalities to speech in particular contexts, such as school and workplace. For example, Koller (2004) examined female managers' response to the use of metaphors based on war and sports in business settings. Linguistic practices may contribute to the maintenance of the glass ceiling, and raising awareness of discourses that maintain male dominance may be important to social change (McConnell-Ginet, 2000). Researchers on gender and language might focus attention on discourses of specific speech communities in which women (or men) are underrepresented or discouraged from participating, and they might continue to examine the verbal interactions among men and women in same-sex speech communities. For example, are interactions among teammates different at all male (business-related) golf outings than when men and women associates play golf together? Are fathers who are primary child care providers fully integrated into the social and gossip networks of the Parent Teacher Organization or the Girl Scout troop? Longitudinal designs would allow researchers to examine the degree to which individuals modify their language usage as they become assimilated to new roles. For example, does the woman promoted to a managerial position use language differently over time, or does the stay-at-home father change his tone, style, or topic of conversation with others in his family? An important area for future research is to continue to demonstrate the existence of double binds for women (or men) by closely examining the expectations, perceptions, and evaluations of women and men speaking in a specific context. For example, researchers might continue to examine employees' reactions to authoritative female and male managers or to male and female managers who use small talk to disguise authority relations. More research on the double bind is needed before advising women to avoid tag questions, to assert themselves, or to negotiate. Feminist research is concerned with the construction of gender and with social practices, including language, that maintain or redress gender inequities. Future researchers are encouraged to consider carefully the questions and communities of practice that they investigate, the methods they employ, and the interpretation of the data they collect. Most important, they are urged to interrogate their interest in their research and to reflect on their own perspectives regarding gender, language, and power.

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Chapter 20

Gender, Power, and Nonverbal Behavior

Marianne Schmid Mast and Sabine Sczesny

Relatively stable and pronounced gender differences in nonverbal behavior have been well documented in the literature (Hall, 1984; Hall, Carter, & Horgan, 2000; LaFrance, Hecht, & Paluck, 2003; McClure, 2000; Vrugt & Kerkstra, 1984). Moreover, women are traditionally found in less powerful positions than men in most societies, a difference reflected in the unequal number of women and men who occupy top leadership positions (Carli, 2001; Eagly & Carli, 2007; Eagly & Karau, 1991; Eagly & Sczesny, 2008). These two facts have inspired much theorizing about the nature of these nonverbal gender differences and the role that status or power plays in it. The most famous theory is Henley's (1977) subordination hypothesis, which posits that the nonverbal behaviors exhibited more by women than by men are indicative of women's lower power. This theory has encouraged valuable and much needed research, and today we have an impressive body of research on power, gender, and nonverbal behavior to consider.

In the present chapter we review relevant empirical findings to gain more insights into the interaction of gender, power, and nonverbal behavior, that is, whether observed gender differences in nonverbal behavior correspond to power differences. We start with a definition of nonverbal behavior and highlight its importance for social interactions, especially the role of nonverbal behavior in accurate person perception. We then give an overview of existing empirical findings on gender differences in expressed and perceived nonverbal behavior; gender differences in nonverbal behavior are very well documented, and they are largely in line with existing gender stereotypes. We address the relation of power and nonverbal behavior. It is interesting that, although people use many different indicators of nonverbal behavior when judging the power or status of an interaction partner, only a few of these behaviors are systematically expressed by people who possess actual high or low power. Finally, we tackle the question of whether and for which nonverbal behaviors the aforementioned subordination hypothesis holds by comparing the gender differences in nonverbal behavior with the power differences in nonverbal behavior, and we discuss research that included measures of all three variables (i.e., gender, power, and nonverbal behavior) to examine their interplay. We illustrate how gender and power might interact in their relation to nonverbal behavior (i.e., how gender can moderate the relation between power and nonverbal behavior). Our review indicates the importance of treating gender and power as two distinct variables in empirical studies and of conducting the appropriate statistical analyses to examine whether power differences can explain gender differences in nonverbal behavior.

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Definition and Importance of Nonverbal Behavior

Nonverbal behavior is defined as communication without words (Knapp & Hall, 2002). The distinction between verbal and nonverbal communication, however, is not clear cut. Sign language, for instance, does not use words, yet the gestures stand for specific words. In verbal communication, each word has a specific meaning, and people can be held accountable for what they say. By contrast, most nonverbal communication is ambiguous with respect to meaning. Contextual and situational aspects such as the relationship between the conversation partners or the topic of discussion can influence the meaning of specific nonverbal cues. For instance, touching an interaction partner with whom we are friends conveys intimacy (Mehrabian, 1972), and thus is perceived as something positive. However, when a low status person touches a high status person, this behavior is usually seen in a negative light, as a role violation (Henley, 1977).

Nonverbal behaviors that are typically investigated include facial expressions (e.g., smiling), eye gaze, body movements (e.g., gestures), posture, touching behavior, and vocal behavior (e.g., tone of voice, speech modulation, speech duration). A useful distinction can be drawn between speech-related nonverbal behavior such as tone of voice or speaking time and speech-unrelated nonverbal behavior such as posture, gestures, or facial expression (Knapp & Hall, 2002).

Nonverbal behavior per se is equivocal; we can, for instance, smile at another person because we like him or her, because we want to ingratiate, or because we are happy and the other just happened to be nearby. Whether verbal or nonverbal behavior matters more as a source of information depends on the situation. In an ambiguous communication situation, nonverbal cues are often consulted as a source of information. People often turn to the nonverbal channel for information especially when the nonverbal cues contradict the words being spoken or when people doubt the honesty of a verbal communication. This is indeed a good strategy because lie detection seems to be more successful when people rely on nonverbal (and especially paralinguistic cues such as laughing or vocal pitch) as opposed to verbal cues (Anderson, DePaulo, Ansfield, Tickle, & Green, 1999).

Nonverbal cues are also important in the expression of emotions (Ekman, 1993), but their function should not be reduced solely to emotion expression. Nonverbal behavior is also used to signal attention, reflect physical states such as pain, coordinate turn-taking in conversations, reveal personality characteristics, and signal interpersonal orientations such as friendliness or dominance (Knapp & Hall, 2002).

Correctly reading and interpreting nonverbal cues emitted by our social interaction partners to infer motives and intentions underlying their actions is an important aspect of successful social interactions. In so called zero-acquaintance situations, when strangers meet for the first time, the impression they form about each other is mostly based on verbal, nonverbal, and appearance cues (Ambady, Hallahan, & Rosenthal, 1995; Borkenau & Liebler, 1992; Costanzo & Archer, 1989; Gifford, 1994; Hyde, 2005). Regardless of whether the formed impressions are correct or not, they affect what we think about our social interaction partners and how we behave toward them.

In sum, nonverbal behavior is not only used to express different states or traits but also in the interpretation of other people's behavior in social interactions and the assessment of others' states and traits. This latter aspect is detailed in the following section.

The Role of Nonverbal Behavior for Accurate Person Perception

Within a brief window of time we draw inferences about a person based on behavior, both verbal and nonverbal, and on the person's general appearance. Although we make some mistakes, we are quite good (and often at better than chance level) at decoding other people's states and traits (Ambady

et al., 1995; Borkenau & Liebler, 1992; Costanzo & Archer, 1989; Rosenthal, Hall, DiMatteo, Rogers, & Archer, 1979; Mast & Hall, 2004a). The ability to assess other people correctly is called interpersonal sensitivity or accuracy (Hall & Bernieri, 2001). The assessment we make of others encompasses a variety of different domains: person and personality characteristics, social relations, emotions, motives and intentions, cognition, behavior, and physical appearance (Mast, Murphy, & Hall, 2006).

Nonverbal behavior plays a key role for such social judgments because, in the absence of any knowledge about the social interaction partner, nonverbal cues become an important source of information. In a world characterized by increasing social and geographical mobility, we find ourselves very often in a situation where we meet a person for the first time. In order to decide how to interact with this person (e.g., whether to trust him/her), we heavily rely on the person's nonverbal behavior.

There are very pronounced individual differences in how well a person is able to assess different aspects of the social interaction or the social interaction partner, but, on average, people are very skilled in those assessments. When it comes, for instance, to judging personality traits such as extraversion or intelligence, people can be judged quite accurately on the basis of observations of slim slices of behavior (e.g., 30s of videotaped interaction) (Borkenau & Liebler, 1992; Murphy, Hall, & Colvin, 2003). These findings typically are based on asking people to watch different excerpts of short interpersonal interactions and to judge the targets' personality traits. These judgments are then compared to a criterion in order to gain information about the degree of accuracy of the judgment. The criterion for personality traits such as extraversion, usually consists of the scores on a self-report personality questionnaire concerning the specific trait and/or expert and/or peer judgments of that specific trait for each of the targets. When participants are asked to assess intelligence, for instance, the criterion can be measured objectively by an intelligence test score. The more the judgment corresponds to the criterion, the more accurate it is.

Nonverbal behavior not only allows us to infer others' personality traits but also provides information about the nature of social relationships. In general, people are able to assess correctly the social relations among interaction partners. For instance, who is the boss and who is the subordinate can be judged correctly from photographs featuring people of different power positions within a hierarchy (Mast & Hall, 2004a; Sternberg & Smith, 1985). Correctly reading nonverbal cues is important for emotion recognition, another aspect of interpersonal sensitivity. In general, women do a better job at reading others' emotions correctly than men do (Hall, 2006a), a finding that we discuss in more detail below. In social interactions, we also try to assess others' motives, intentions, and thoughts. People usually are better than chance in such assessments (Ickes, 1993; Rosenthal et al., 1979), except for lie detection, in which case the detection rate is basically at guessing level (DePaulo, Charlton, Cooper, Lindsay, & Muhlenbruck, 1997; Malone & DePaulo, 2001). Also, people are able to remember accurately another's verbal and nonverbal behavior exhibited during a social interaction as well as other people's features such as their style or clothes (Hall, Murphy, & Mast, 2006; Horgan, Mast, Hall, & Carter, 2004; Mast & Hall, 2006).

All of these skills heavily draw on the nonverbal behavior of our social interaction partners that we use to interpret or infer their actions, thoughts, intentions, and emotions or to gain information about the nature of the social interaction we observe or in which we are involved. Nonverbal behavior thus plays an important role – and often a more important role than verbal behavior – for accurate person perception. For example, Murphy et al. (2003) showed that participants who read transcripts of social interactions did not accurately perceive intelligence in targets, whereas those participants who viewed videotapes of the same interactions with auditory information present (but without being able to understand the words) were accurate at better than chance levels. It must be noted, however, that for some interpersonal sensitivity tasks, relying on verbal information rather than nonverbal

information is beneficial (Hall & Mast, 2007). For instance, when asked to infer the thoughts and feelings of a videotaped target person (empathic accuracy paradigm) (Ickes, 1993, 2001, 2003), verbal information contributed the most to accuracy (transcript condition), followed by vocal nonverbal cues (audio only condition). Visual nonverbal cues (silent video condition) contributed the least. Moreover, when asked to infer other people's feelings, perceivers appeared to shift attention toward visual nonverbal cues and away from verbal cues, and the reverse occurred when they were asked to infer thoughts.

Gender and Nonverbal Behavior

Based on several meta-analytic reviews (Hall, 1984, 2006b; Hall et al., 2000), we can summarize gender differences concerning nonverbal behavior in the following way: Women smile more than men, they gaze more at their interaction partners, show more nodding and forward lean, approach others at a closer distance, use more gestures, self-touch more often, have more expressive faces, and are more accurate at expressing their own emotions. Men, on the other hand, show more restless body movements (e.g., fidgeting) and more bodily expansiveness, have louder voices, and make more speech errors (e.g., repetitions, omissions, slips of the tongue, sentence corrections, sentence incompletions, stutters) and filled pauses (e.g., "ehm"). In terms of speaking time, a recent meta-analysis indicates that men are more talkative than women (Leaper & Ayres, 2007). Moreover, men are more likely than women to interrupt others' speech (Anderson & Leaper, 1998). Also, in cross-gender interactions, men show more visual dominance than women do (Dovidio, Ellyson, Keating, Heltman, & Brown, 1988). A high visual dominance ratio means that a person engages in relatively more looking at others while speaking to them than looking at others while listening to them.

Women are more accurate than men at judging others and especially so when inferring others' emotions (Hall, 1984, 2006b; Hall et al., 2000). Moreover, women are more accurate at remembering others' nonverbal behavior than men are (Hall et al., 2006). And, female perceivers are more accurate at recalling targets' appearance than male perceivers are (also, female targets' appearance is recalled better than male targets' appearance) (Horgan et al., 2004; Mast & Hall, 2006). Taken together, these findings indicate that women, in general, do a better job than men do at reading other people correctly (interpersonal accuracy). Nevertheless, the type of task also plays a role. For instance, women's advantage in interpersonal accuracy was smaller in masculine-stereotypic domains (e.g., performance recall) than in feminine-stereotypic domains (e.g., appearance recall) (Hall & Mast, 2008).

Gender differences in nonverbal expressions and in reading nonverbal cues of others are not only present in adults but also in adolescents and in children (Hall, 1984). For instance, gender differences in gazing, smiling, and backchannels (i.e., short responses like "uh-huh" uttered while the other is speaking, which indicate that the listener is attentive and serve to reassure the speaker to continue) became more frequent with increasing age in two samples of 9–15 year olds and a sample of 12–17 year olds (van Beek, van Dolderen, & Dubas, 2006).

Although decoding skills generally improve from childhood to adulthood (Nowicki & Duke, 1994), the gender gap remains stable at all ages: Girls outperform boys in the same way as women outperform men (Hall, 1984; McClure, 2000). McClure's meta-analysis shows that gender differences in nonverbal decoding are present in infants (effect size $d = 0.70$) and in children and adolescents (effect size $d = 0.18$). From infancy, the effect sizes decrease with age until the preschool years (about 4 years of age), then rise again slightly, and then level out, which means that the effect sizes remain fairly stable throughout childhood and adolescence.

Gender differences in nonverbal behavior are not only very well documented, they are also important in magnitude compared to gender differences found in other areas of psychology (Hall, 2006a). This conclusion was reached by meta-analytically comparing the magnitude of the nonverbal gender effects for smiling ($d = 0.66$) and nonverbal sensitivity ($d = 0.44$), as well as a wide array of other nonverbal behaviors (median effect size $d = 0.71$), to the magnitude of the gender differences found in meta-analyses of other psychological gender differences (e.g., median effect size of gender differences in the cognitive domain including, for example, verbal ability and math confidence: $d = 0.35$; median effect size of gender differences in personality traits: $d = 0.16$, median effect size of gender differences concerning behaviors and attitudes in small groups: $d = 0.20$) (Hall, 2006a).

Note also that people have, in general, very accurate knowledge about existing gender differences in various domains including nonverbal gender differences. Hall and Carter (1999) asked participants to rate gender differences on 77 behaviors and traits. Their ratings were correlated with the actual gender differences based on the results of meta-analyses. Results indicated that women were more accurate than men in their knowledge about nonverbal gender differences (e.g., that women smile more than men do).

The above-mentioned gender differences in nonverbal behavior are summarized in Table 20.1. As can be observed, these gender differences are largely in line with existing gender role stereotypes of women as more socially oriented and caring (i.e., communion) and men as more oriented toward power and self-promotion (i.e., agency) (Bakan, 1966; Eagly & Wood, 1999). To illustrate, women show more supportive interpersonal behavior (e.g., nodding, smiling) and more behavior that manifests other orientation, such as interest in and concern about the social interaction partner (e.g., facial expressiveness, interpersonal sensitivity, closer interpersonal distance). Men, on the other hand, show more behavior that is self-promoting, such as speaking and interrupting more, using a louder voice, and taking up more interpersonal space (i.e., body expansiveness). Whether these nonverbal gender differences correspond to power differences is a question that we address in more detail below.

Table 20.1 Gender and power differences in nonverbal behavior

Nonverbal behavior	Gender difference	Power difference
Smiling	F > M	Hi = Lo
Gazing	F > M	Hi = Lo
Nodding	F > M	Hi = Lo
Forward lean/facing orientation	F > M	Hi = Lo
Approach at close distance	F > M	Hi > Lo
Gesturing	F > M	Hi = Lo
Self-touch	F > M	Hi = Lo
Expressiveness (face)	F > M	Hi > Lo
Accurate emotion expression	F > M	Hi > Lo
Interpersonal accuracy	F > M	Hi > Lo
Body movements (e.g., fidgeting)	M > F	Hi = Lo
Bodily expansiveness	M > F	Hi > Lo
Loud voice	M > F	Hi > Lo
Speech errors	M > F	Hi = Lo
Filled pauses	M > F	Hi = Lo
Speaking time	M > F	Hi > Lo
Interruptions	M > F	Hi > Lo
Visual dominance	M > F	Hi > Lo

Note. F = women. M = men. The power differences are based on differences in actual power and not differences in perceived power. Hi = people with high power. Lo = people with low power.

Power and Nonverbal Behavior

Power has been defined in many different ways (Ellyson & Dovidio, 1985) and is used in the present chapter as an umbrella term synonymously with status, dominance, and “verticality” (the latter term was introduced by Hall, Coats, & LeBeau, 2005). We understand power as having or striving for privileged access to restricted resources (e.g., money, time) or as having or striving for influence or control over others.

How power is attained and expressed can vary quite a bit. French and Raven (1959) distinguished among referent power, expert power, reward power, coercive power, and legitimate power. Referent power means that a person identifies with a leader or high status individual and gains power by the mere association with the powerful person. Expert power describes a person’s specific competence or expertise in a given domain and entails admiration or respect from the others. Reward power is the power to allocate rewards to others, whereas coercive power is the power to punish others. Legitimate power refers to the fact that the power holder has a legitimate right to his or her high dominance position.

Depending on what kind of power an individual possesses, the expression of it and the perception of it might differ. For instance, a dictator can exert coercive power by torturing regime critics to maintain her or his high status, whereas a leader with legitimate power usually seeks approval from voters to secure her or his high status position. Moreover, there is an array of different operationalizations of power. Thus, contextual influences make it difficult to obtain a simple picture of behavioral – including nonverbal – correlates of actual power.

To study the link between power and nonverbal behavior, the Brunswikian lens model approach (Brunswik, 1956) represents a very useful framework for analyzing the expression of power in nonverbal behavior as well as the perception of power based on nonverbal behavior. From a Brunswikian lens model perspective, a target’s nonverbal behavior (together with the verbal behavior and appearance cues) forms the basis of perceivers’ judgments about the targets’ power. So if, for instance, a high-power person talks more than a low-power person, speaking time can be considered an indicator of *actual power*. A perceiver observes the exhibited behavior, for instance that one person talks more than another, and infers that the person who talks more has more power than the person who talks less. Thus, speaking time is used as a cue of elevated *perceived power*. If perceived power corresponds to actual power, the assessment is considered accurate.

Nonverbal Expression of Power

Studies of actual (as opposed to perceived) power as expressed in nonverbal behavior have used different definitions and operationalizations of power: personality dominance (e.g., assessed with a questionnaire), structural status (e.g., rank in an organization, socioeconomic status, emergent leadership within a group), or assigned status (e.g., in a laboratory experiment). A recent meta-analysis on the expression of power in nonverbal behavior showed that only a few cues were related to actual status (Hall et al., 2005). High-power people show more bodily openness (arms and legs), interact at a closer interpersonal distance, have louder voices, and interrupt others more often than do low-power individuals. Also, high-power people have more expressive faces and are better able to express emotions through nonverbal cues than low-power people are. In addition, high-power people talk more than low-power people (Mast, 2002), and high-power people have higher visual dominance than low-power people (Dovidio et al., 1988). All of these power differences are reported in Table 20.1.

Perception of Power Through Nonverbal Behavior

It is interesting that, although only relatively few nonverbal cues are actually indicative of high-power people, people hold clear expectation as to how specific nonverbal cues are related to power. For example, Carney, Hall, and LeBeau (2005) found that people believed there to be a difference between high and low-power individuals in 35 of 70 measured nonverbal behaviors. The perception of power has been measured with different research paradigms. For instance, target stimuli have been schematic faces, photographs of posed facial cues (e.g., smiling versus non-smiling, lowered versus raised eyebrows), candid photographs of naturalistic interactions, short video clips of people interacting, or face-to-face interactions. Meta-analytic results (Hall et al., 2005) show that perceivers rated targets higher in power if they showed more gazing, lowered eyebrows, a more expressive face, more nodding, less self-touch, more other-touch, more gestures, more bodily openness, more erect or tense posture, more body or leg shifts, smaller interpersonal distance, a more variable voice, a louder voice, more interruptions, less pausing, a faster speech rate, a lower voice pitch, and more vocal relaxation. Moreover, there is a strong positive relation between speaking time and perceived status (Mast, 2002), and observers use the visual dominance ratio defined above as an indicator of high status (Dovidio et al., 1988).

There are clearly fewer nonverbal behaviors that are characteristic of people with an actual high or low status than there are nonverbal behaviors perceived as indicators of status. In sum, all behaviors indicative of actual power are used by observers to assess power, but the list of power indicators assumed by observers is much longer than the data can support. As a consequence, the assessment of power in others might simply be a product of people's stereotypical beliefs about the relation between certain behaviors and power. For instance, if people believe that smiling often is related to low power, this can only result in an accurate power assessment if actual power is conveyed by low levels of smiling (which it is not) (Hall et al., 2005). Thus, perceivers seem to use nonverbal cues that are not necessarily diagnostic of the status dimension. If this is the case, are people accurate in judging another person's status?

Power and Interpersonal Accuracy

Although the findings are not unequivocal, it seems that status can be assessed at better than chance level. For instance, Barnes and Sternberg (1989) found better than chance accuracy when perceivers judged which of the two target people in a photograph was the other's boss. Other research has shown that people could assess the status of university employees based on photographs (Mast & Hall, 2004a), and observers were able to assess targets' assertiveness in videotaped interaction at better than chance level (Mast, Hall, Murphy, & Colvin, 2003).

It is surprising that, although people seem to use non-diagnostic cues to infer power, they are still able to infer correctly the power hierarchy among two individuals. Although this could be due to a methodological weakness, namely that any given study only measures a certain number of nonverbal cues, whereas the list of potentially diagnostic nonverbal indicators of power is endless. Perhaps the researchers have not measured the nonverbal cue – or the combination of specific nonverbal cues (e.g., frowning in combination with leaning forward) – that people rely on when assessing power. Moreover, people might change their strategy when assessing how powerful a person is depending on the nonverbal cues that seem most salient in a given situation. For example, in a work setting, perceivers might rely more on how formally somebody is dressed to assess his or her status, whereas in a peer group discussion, indicators such as speaking time or loud voice might be used to find out who is the most influential person in the group. Furthermore, the choice of the nonverbal behavior to assess, might also depend on gender, and we discuss examples of this below.

Note that the correct assessment of individuals' power might be made based on a combination of different cues, rather than on reliance on one specific cue, and is thus a Gestalt-like impression formation process. There is evidence to support this claim in that the relative importance accorded to each of the nonverbal cues used to assess another person's power corresponds to the relative diagnostic value of the cues to indicate actual power. To explain, neither erect posture nor self-touch were indicators of the actual status of male targets if considered individually (Mast & Hall, 2004a) but actual high status was expressed relatively more through erect posture than through self-touch (i.e., the effect size of the relation between erect posture and status was more pronounced than the effect size of the relation between self-touch and status), and this is also the relative weight perceivers attributed to these two behaviors when they assessed target status; they relied more on erect posture than on self-touch. In other words, there was a profile match between the actual and perceived power-nonverbal behavior relations (Hall et al., 2005), which can explain that, although each of the single cues might not be diagnostic of power, the correct weighting of all the nonverbal cues available might still result in accuracy.

One also should not forget that situational factors can greatly influence the assessment of another person's power. Imagine, for instance, a job candidate in an interview situation. We have seen that high-power people tend to talk more than low-power people and that people who talk more are perceived as more powerful (Mast, 2002). Although the job candidate speaks much more than the interviewer, the former is not the powerful one in the interaction, and an outside observer could reach an erroneous conclusion based on the simple heuristic of dominance as equal to speaking time.

In sum, people are accurate in assessing the power of others. However, another question in the realm of interpersonal accuracy and power is whether high or low-power people are better at accurate person perception (in general, not necessarily with respect to detecting interpersonal power). Some authors have posited that low-power people have more interpersonal accuracy than high-power people because high-power people can afford not to take an interest in their subordinates, whereas low-power people are motivated to be interpersonally sensitive to (e.g., detect signs of approval or disapproval) their superiors (Fiske & Dépret, 1996; Goodwin, Gubin, Fiske, & Yzerbyt, 2000). Another reason why low- more than high-power individuals should be interpersonally sensitive is that interpersonal accuracy (the opposite of stereotyping) requires a deliberate (as opposed to an automatic) information processing style (Devine, 1989; Fiske & Neuberg, 1990), and high-power people tend to use automatic processing (Smith, Wigboldus, & Dijksterhuis, 2008; Smith & Yrope, 2006). However, one can also argue that, for successful leadership, it is important to allocate the right task to the right person at the right time, and, to do so, a superior needs to be interpersonally sensitive. This is in line with research that points to the importance of individual consideration (Bass, Avolio, Jung, & Berson, 2003) and emotional intelligence (Caruso & Salovey, 2004) as aspects of successful leadership. Moreover, there is accumulating evidence that high-power people are more accurate at detecting others' emotions and thoughts than low-power people are (Mast, Jonas, & Hall, 2009). More research is needed to address this question.

Disentangling Gender and Power with Respect to Nonverbal Behavior

Henley (1977) claimed that gender differences in nonverbal behavior can be explained and understood by gender differences in power. Although there is certainly a kernel of truth to this subordination hypothesis, it needs empirical testing because the relation of power to nonverbal behavior is not necessarily a logical consequence of the above. To illustrate, consider the following: We observe that more men than women like boxing. We also observe that men are, on average,

taller than women. To conclude that more taller people than smaller ones like boxing is not a necessary logical consequence. It is possible that this relation exists, but it needs to be examined and cannot be assumed a priori.

To gain a refined understanding of whether differences in nonverbal communication between high and low-power individuals parallel gender differences and to account for some of the variance in those differences, we first need to compare the empirical findings we have reviewed in the preceding sections. As we have seen, there is a broad literature that documents gender differences in nonverbal behavior (Hall, 2006a; Hall et al., 2000; LaFrance et al., 2003; McClure, 2000; Vrugt & Kerkstra, 1984). Moreover, literature that shows that women have less power than men is also abundant (Carli, 2001; Eagly & Carli, 2007; Eagly & Karau, 1991; Eagly & Sczesny, 2008). Only relatively recently have we begun to get a clearer picture of the relation between power and nonverbal behavior (Hall et al., 2005; Mast, 2002). These latter results show that, for some nonverbal cues, the parallelism with gender differences holds, whereas, for others, it does not (see Table 20.1; see Hall, 2006b).

Behaviors that confirm the parallelism, that is, behaviors that men show more than women and that high-power individuals show more than low-power individuals, are bodily expansiveness, loud voice, speaking time, interruptions, and visual dominance (Hall, 2006b). However, there are a number of nonverbal behaviors for which the parallelism does not hold. Some nonverbal behaviors are indicative of high power but are expressed more by women than by men: closer interpersonal distance, facial expressiveness, emotion expression through nonverbal cues, and interpersonal accuracy. Also, for some nonverbal behaviors, high- and low-power individuals do not differ, whereas there is a gender difference associated with those behaviors. For instance, women smile more, nod more, gaze more, self-touch more, show more forward lean, and gesture more than men do, but these nonverbal cues do not differ between individuals of different levels of power (Hall, 2006b).

Moreover, even if parallelism exists (and it does for certain behaviors, as we have seen), we cannot conclude that there is a link between power and nonverbal gender differences. To prove such a connection, one would have to demonstrate that the gender difference is reduced or absent when power is controlled. To be able to perform the necessary analysis, one would have to include power, gender, and nonverbal behavior into one and the same study. We thus need to disentangle the effects of power on nonverbal behavior from gender differences in nonverbal behavior. This can be accomplished by research on the relation between power and nonverbal behavior separately for women and men. For example, Mast and Hall (2004b) found that smiling was elevated in women when they were in a low-power position and wanted to be there (as opposed to wanting to be in a high-power position), whereas this effect was not found among men. In the following section, we review studies that have followed this approach and have treated gender as a moderator of the power-nonverbal behavior relation.

Gender as a Moderator of the Relation Between Power and Nonverbal Behavior

As in the aforementioned example, we need to assess the relation between power and nonverbal behavior separately for women and men to gain a deeper understanding of how power, gender, and nonverbal behavior interplay. Moreover, there are many more potential moderators of the power-nonverbal behavior relation that we should not forget (e.g., personality dominance, the motivation for a high- or low-power position within a hierarchy). In other words, researchers should not only look at main effects of gender and nonverbal behavior or power and nonverbal behavior; instead the study of interactions among the three (or even more) variables has the potential to deepen our insight much more.

Moreover, the same nonverbal behavior exhibited by a woman or a man might be perceived and judged differently in terms of how powerful or influential he or she is. To illustrate, in a recent study, participants were asked to rate the status of each of two people in a photograph for a total of 47 target dyads (Mast & Hall, 2004a). Based on the photographs, the targets' nonverbal behavior and appearance were assessed, and each cue was correlated with perceived status for female and male targets separately. Results showed that perceivers relied on different nonverbal and appearance cues when they judged male or female targets' status. For instance, to assess female targets' status, perceivers used downward head tilt and lowered eyebrows significantly more than they did to assess male targets' status, whereas to assess male targets' status they relied significantly more on how formally dressed the male targets were. In the same vein, when asked to judge the assertiveness of male and female videotaped targets, the nonverbal cues used by participants differed (Mast et al., 2003). Results showed, for instance, that a *high* level of fidgeting was used as a sign of assertiveness in female targets, whereas, in male targets, a *low* level of fidgeting was used as an indicator of assertiveness. This example shows that gender can influence the meaning of specific nonverbal cues. Fidgeting, for example, is generally considered to be an indicator of social anxiety (Heerey & Kring, 2007). So maybe fidgeting is perceived as a sign of social anxiety in men and thus related to low perceived assertiveness, whereas in women fidgeting might be seen as a sign of agitation or effortful involvement in the interaction and thus related to high perceived assertiveness.

Gender role expectations also play an important role when it comes to evaluating the behavior of women and men in high-power or influential positions. For instance, women in leadership positions are generally evaluated more negatively than men in comparable positions and even more so if they adopt a masculine (e.g., directive) as compared to a feminine (e.g., democratic) leadership style (Eagly & Karau, 2002). Role congruity theory posits that this effect is due to the incongruity between the feminine gender role and the role of leader that exerts cross-pressures on the expected behavior for women but less so for men (Eagly & Karau, 2002). As a consequence, women who show behavior that is atypical for their gender might be evaluated less positively than when they show nonverbal gender role congruent behavior. There is some evidence that this assumption does not hold only for verbal (see above) but also for nonverbal behavior: Mast, Hall, Klöckner, and Choi (2008) examined which nonverbal behaviors of a female and a male physician were related to patient satisfaction. Patients were most satisfied with female physicians who behaved in line with the feminine gender role (e.g., more gazing, more forward lean, softer voice), whereas for male physicians, satisfaction was high for a broader range of behaviors only partly related to their gender role (e.g., louder voice, more distance from patient).

Moreover, Rudman (1998) identified self-promotion as a risk factor for women. In simulated job interviews, self-promoting targets spoke in a direct, self-confident manner, highlighted their past accomplishments, and also used more powerful nonverbal status cues such as direct eye contact than did the self-effacing targets. The results indicated that women, but not men, rated self-promoting women as less competent, less socially attractive, and, subsequently, less hireable than self-promoting men. Nevertheless, it remains an open question to what extent nonverbal behavior in relation to verbal behavior contributed to this finding.

All in all, these examples illustrate that there is much to be gained from future research aimed at disentangling gender and power in their relation to nonverbal behavior.

Summary and Future Directions

Women and men differ in their nonverbal behavior (Hall, 2006a; Hall et al., 2000; LaFrance et al., 2003; McClure, 2000; Vrugt & Kerkstra, 1984). This difference, however, cannot (or at least not fully) be explained by existing power differences between women and men because only some

of the gender differences in nonverbal behavior parallel differences in nonverbal behavior between high- and low-power individuals (Halberstadt & Saitta, 1987; Hall, 2006b). As can be seen, the list of nonverbal behaviors that show a gender difference only partially matches the list that show a power difference (see Table 20.1). To illustrate, many of the typically feminine nonverbal behaviors (e.g., smiling, gazing, nodding) are not behaviors that distinguish between high- and low-power individuals. Thus, the conclusion that women's nonverbal behaviors are indicative of submissiveness or low status does not hold true; rather women's nonverbal behaviors are indicative of sociability and caring. That interpersonal orientation is not simply the opposite of power but a dimension orthogonal to it has been demonstrated abundantly (e.g., Bakan, 1966; Bem, 1974; Helgeson, 1994; Moskowitz, 1993). However, it is interesting that many of men's typical nonverbal behaviors (e.g., speaking time, loud voice, interruptions) are indeed related to high power. Thus nonverbal behaviors exhibited more by men than by women are the ones characteristic for high-power individuals. In other words, the parallelism suggested by Henley (1977) seems to hold for some nonverbal behaviors, namely those predominantly exhibited by men, but not for others, namely those predominantly exhibited by women. This pattern of results is reminiscent of results reported by Coats and Feldman (1996), who showed that women were better at expressing happiness (e.g., smiling often) and that men were better at conveying anger (e.g., speaking in a loud voice) and that women's ability to display happiness and men's ability to display anger were both correlated with their respective sociometric status. As a consequence, feminine typical nonverbal behaviors are not expressions of low status but of sociability which, in women, is related to high status. Social role theory (Eagly, 1987; Eagly & Wood, 1999; Eagly, Wood, & Diekmann, 2000) offers an explanatory framework for understanding this difference. Following this approach, the contents of gender stereotypes are derived from observations of men and women in gender-typical domestic and occupational roles (e.g., bread-winner, homemaker). Due to this segregation by gender and the different requirements of women's and men's typical social roles, inferences of men as assertive and agentic and of women as nurturing and communal are favored (Bosak, Sczesny, & Eagly, 2008; Eagly & Steffen, 1984). Moreover, these stereotypical expectancies affect men's and women's self-perceptions and behavior (for an overview, see Sczesny, Bosak, Diekmann, & Twenge, 2007). Thus, nonverbal behaviors shown more by men than by women are related to the fact that men's social roles require the expression of agentic behavior, and nonverbal behaviors shown more by women than by men are related to women's social roles that require the expression of communal behavior.

Moreover, the parallelism that some nonverbal behaviors are shown more by men and high-power individuals than by women and low-power individuals is not enough to prove that men show them more often *because* men have relatively more power in our society. As we have discussed, this would only be a correct assumption if the gender difference diminishes or disappears when researchers control for power. To clarify the relations between power, gender, and nonverbal behavior, one needs to look at how power and gender – separately or jointly – affect nonverbal behavior. Thus, researchers should avoid equating gender with power at the outset of a study. By avoiding the confounding of gender and power, one opens avenues for much needed insight into the complex relations between power, gender, and nonverbal behavior. The advantages of investigating the relation between certain nonverbal behaviors and power for women and men separately are multifaceted. If we know, for instance, how different nonverbal behaviors of male leaders and female leaders are perceived and evaluated by others (e.g., the media or the subordinates) we can develop specific leadership training. As suggested by the role congruity theory of prejudice against female leaders (Eagly & Karau, 2002), female leaders who adopt a more stereotypically feminine interpersonal interaction style will be evaluated more positively than when they adopt a more stereotypically masculine interaction style. As a consequence, one would expect that female leaders who show feminine nonverbal behavior (e.g., smiling, gazing, reduced interpersonal distance) will be particularly successful in building trust with stockholders and especially efficient in leading teams and in motivating subordinates. As a matter of

fact, female leaders seem to adopt a more transformational leadership style, characterized by inspiring motivation in subordinates and intellectually stimulating them, as well as showing individual consideration for them (Eagly, Johannesen-Schmidt, & van Engen, 2003). And all of these leadership aspects have been found to be related to better leadership effectiveness. Maybe the nonverbal channel is particularly suited to adherence to gender congruent behavior for female leaders. To illustrate, negative performance feedback communicated by a female leader using feminine nonverbal behavior might be easier to accept and thus bring about the desired attitude change in the employee than it would if the feedback were accompanied by masculine nonverbal behavior.

Of course, feminine nonverbal behavior might also undermine the power aspirations of women and result in women being overlooked when it comes to promotions or to climbing the corporate ladder especially when we consider that the stereotypes people have about low-power individuals include many of the feminine nonverbal behaviors. Whether these assumptions withstand empirical testing remains to be seen. However, these examples illustrate the potentially crucial role of nonverbal behavior for male and female leaders.

Moreover, additional factors, such as personality dominance, power motivation, gender role orientation, and self-esteem, have to be taken into consideration in future research in terms of possible mediators or moderators in the interplay of gender, power, and nonverbal behavior. There is a lot of work to be done in this area, and results of studies of gender, power, and nonverbal behavior can have a practical impact on future leaders' success.

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Part VI
Emotion and Motivation

Chapter 21

Gender, Emotion, and Socialization

Leslie R. Brody and Judith A. Hall

The discussion of gender differences in emotional processes is complex for two reasons. First, there are multiple processes involved in emotional functioning, including verbal, facial, and behavioral expressiveness; emotional experiences and awareness; the ability to recognize or decode emotions in others; physiological arousal; and the ability to regulate emotional experiences and expressions. Gender differences have been documented for some, but not all of these processes. Further, gender differences in many of these processes have been found to be inconsistent across personality, social, cultural, and situational variables, as well as task characteristics and the quality and intensity of specific emotions such as anger and happiness.

This lack of consistency in gender differences is not surprising, considering the fact that emotions serve adaptive communicative and motivational functions. For example, expressing anger is functional in that it communicates, both to oneself as well as to others, that goals are not being met. It is also motivational in that it facilitates change on both interpersonal and intrapersonal levels. Because women and men are often socialized to have different roles, motives, goals, and self-schemas (care-taking roles, intimacy motives, and interdependent self-schemas for women; provider roles, control motives, and independent self-schemas for men; Cross & Madsen, 1997), gender differences should occur in emotional processes. However, gender differences should also fail to generalize broadly because motives and goals for individual women and men vary with the social context.

Moreover, both women and men need to adapt to power and status imbalances between the two genders, in which men typically have higher power and status than do women (see Brody, 1999). Higher power is theoretically associated with emotions such as pride, guilt, and anger, whereas lower power is associated with emotions such as fear and shame. Recent research has supported some of these ideas (Keltner, Gruenfeld, & Anderson, 2003), and indicates that power differentials, both in general as well in specific circumstances, may contribute to gender differences in emotional expressiveness.

Gender differences also vary across contexts because both women and men have multiple identities that consist not only of gender, but also of such factors as age, social class, race, ethnicity, status, religion, sexual orientation, and professional and interpersonal roles (e.g., professor and parent) (Stewart & McDermott, 2004). These identities may interact and become more or less salient depending on the individuals' values; the social setting, including the content and goals of the situation (e.g., political versus personal; Ethier & Deaux, 1994); and the multiple identities of the

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participants in a social interaction. Each identity may be associated with different patterns of emotional functioning because of different social expectations, display rules, functions, motives, and goals that correspond to each identity. Thus, different emotional processes may occur depending on the particular identity that is salient in a given context.

The focus of recent research has been on the complexities of when and how gender differences occur, as well as on within-gender variations in emotional processes. The theoretical framework is that both gender differences and within-gender variations in emotional functioning are mediated and/or moderated by sociocultural, cognitive, biological, behavioral, motivational, and personality variables as well as by interactions among these variables. In turn, the ways in which gender differences shift as a function of moderating variables, such as the sociocultural context, provide clues as to the etiology of gender differences.

In this chapter, we review gender differences in several emotional processes with an emphasis on contextual variations. We also present models relevant to the etiology of these gender differences that include both distal and proximal processes. Distal contributors include complex interactions among gender differences in biological temperament; gendered family and peer interactions; cultural and social stereotypes and display rules; the structure of the family; and power and status differences between the two genders. Proximal contributors include multiple feedback loops between the expression of emotion and its interpersonal and intrapersonal consequences, including the identity, goals, and expectations of individuals in specific social interactions. We draw on our previous work (Brody & Hall, 2008) in this area to expand on these models and present many new and updated ideas.

Stereotypes and Display Rules

Stereotypes about gender and emotion warrant a close analysis because they powerfully shape the reality of gender differences in several ways. First, in any given interaction, gender stereotypes can generate expectancies about our same- and other-gender partners, which become self-fulfilling prophecies that in turn influence and elicit particular behaviors and emotional expressions (Hall & Briton, 1993). A particular form that these self-fulfilling prophecies can take is stereotype threat, in which concern about confirming a negative stereotype about one's group (e.g., women are less competent at mathematics or are more emotionally reactive than are men) negatively affects performance on stereotype-related tasks (Steele & Aronson, 1995). Stereotype threat has been demonstrated in numerous aspects of cognitive and physical performance, such as for women in math performance; for minority groups in achievement tests; for White men in some sports; for men in the feminine-stereotypic domain of decoding interpersonal cues; and for women in negotiation skills (c.f. Koenig & Eagly, 2005). Recent work we discuss below suggests that stereotype threat itself, regardless of the domain in which it occurs, can have an emotional consequence in the form of increased anxiety.

Nature of Emotional Stereotypes

The stereotype that women are more emotional than men is pervasive across many different cultures (Timmers, Fischer, & Manstead, 2003). Among American samples, relative to men, women are believed to be more emotionally intense (Robinson & Johnson, 1997); more emotionally expressive (e.g., more likely to smile, laugh, cry); more skilled in the use of nonverbal cues related to

emotion (Briton & Hall, 1995); and more likely to use rumination (repeatedly thinking about negative emotional experiences) and less likely to use distraction (engaging in active behaviors, such as exercise) in regulating their emotions (Strauss, Muday, McNall, & Wong, 1997). Though the distinction between expression and experience is not always made, when it is, the results consistently show stereotypes to be stronger for emotional expression than for emotional experience (Plant, Hyde, Keltner, & Devine, 2000).

Stereotypes are also emotion-specific: Happiness, embarrassment, surprise, sadness, fear, shame, and guilt are believed to be expressed or experienced more by women and girls, whereas anger, contempt, disgust, and pride are believed to be expressed or experienced more by men and boys (e.g., Algoe, Buswell, & DeLamater, 2000; Hess et al., 2000; Plant et al., 2000; Parmley & Cunningham, 2008). Some of the stereotypes about specific emotions have also been found to vary with ethnicity. When European Americans' beliefs about gender-emotion stereotypes for their own ethnic group were compared to the beliefs of African Americans, Hispanic Americans, and Asian Americans, all ethnic groups reported that their respective groups believed that women expressed and experienced more fear, guilt, love, sadness, surprise, shame, and sympathy than men did. However, European Americans' beliefs showed greater gender differences than did the beliefs of other ethnic groups. European Americans reported the highest levels of gender stereotypic feelings for each gender (e.g., anger for men and love for women) when compared to other ethnic groups (Durik et al., 2006).

Gender stereotypes about the experience and/or expression of emotion are potent enough that they can override the expressions actually conveyed by men and women. Several studies have shown that identical or equivalent facial expressions of men and women produce biases in interpretation (Algoe et al., 2000; Hess, Adams, & Kleck, 2004; MacGregor & Davidson, 2000; Plant et al., 2000; Plant, Kling, & Smith, 2004). For example, Plant et al. (2004) altered the same faces to appear to be either male or female and gathered perceivers' emotion ratings of them. The "female" faces were judged to be sadder than the "male" faces. It is not clear in such studies whether the perceived gender of the face actually influences how the expression is processed (e.g., through selective attention to certain cues) or whether perceivers' judgments follow from their general, base-rate beliefs about men's and women's emotional experience/expression, irrespective of what the face is displaying.

The direction of bias does not always match stereotypes in a straightforward way. Though one might predict that, for example, a sad woman seems especially sad relative to a sad man (because stereotype and expression are mutually reinforcing), Hess, Adams, and Kleck (2004) found the opposite pattern. When the same faces were presented as either male or female, perceivers saw the counterstereotypic (i.e., angry) woman as especially angry and the counterstereotypic (i.e., happy) man as especially happy, which suggests that the contrast between stereotypic expectations and actual expressions led to attributions of more extreme emotional experience. It is as though the perceiver says, "Women don't usually show anger, so an angry-looking woman must be really angry."

Stereotypes have a strong implicit prescriptive aspect, taking the form of display rules, which are cultural norms that regulate how, when, and where emotions can be expressed by men and women in any particular culture. Across 48 countries, adults reported that happiness was more desirable for girls and that fearlessness and anger suppression were more desirable for boys (Diener & Lucas, 2004). Violating stereotypic display rules can lead to negative social consequences, such as social rejection (Brody, 1999). For example, depressed men are rated as "unmanly" and are evaluated more negatively than depressed women are (Brody, 1999). Videotaped actors portraying professional women who expressed anger were rated as having lower status and competence and were accorded lower wages than were actors portraying angry men, sad women, and unemotional women (Brescoll & Uhlmann, 2008). Moreover, even conforming to gender stereotypic emotional

expressions can have negative social consequences if the expressions are extreme or exaggerated. Hutson-Comeaux and Kelly (2002) found that both women and men who displayed extreme gender-stereotypic emotions (happiness for women and anger for men) were judged to be less sincere and appropriate than were members of the other gender displaying the same reactions.

Accuracy of Stereotypes

How well are gender stereotypes supported by self-reports and behavioral data? In general, rather well. Stereotypes about gender differences in expression tend to correspond with self-reports of expression (see below); stereotypes about gender differences in nonverbal behavior correspond well with experimentally observed gender differences for the same behaviors (Briton & Hall, 1995); and the belief that gender differences in expression are stronger than gender differences in experience is corroborated when researchers measure both simultaneously. For example, Kring and Gordon (1998), who measured responses to evocative films, found gender differences in facial expressions but not in self-reports of experience.

To find that stereotypes are often confirmed in self-reports or in actual behavior should be relatively unsurprising because most automatically encoded and retrievable memories are based on frequently occurring behaviors, which may form the basis for many stereotypes (Hasher & Zacks, 1984). Further, as we have pointed out, the stereotypes themselves serve as self-fulfilling prophecies.

Although gender and emotion stereotypes do reflect some aspects of reality, it is also important to realize that they are imprecise, overly general, and ignore the importance of the modality in which an emotion is expressed, as well as the situational and cultural context within which emotional expression occurs (Brody, 1997). For example, work by Strauss et al. (1997) shows that stereotypes about emotional regulation styles do not correspond to men's self-reports of their own experiences. Stereotype ratings underrepresent men's use of rumination and overrepresent their use of distraction. Because stereotypes ignore both the social context and individual differences, they also often lead to the erroneous assumption that gender differences are exclusively biological in origin or that they are larger than they actually are.

Emotion Regulation

Emotion regulation consists of behavioral, cognitive, emotional, attentional, and physiological strategies to eliminate, maintain, or change emotional experience and/or expression (Ochsner & Gross, 2005). People attempt to control emotional processes in accordance with gender-emotion stereotypes as discussed above, as well as in accordance with cultural pressures, power and status imbalances, and personality-related factors, including self-construals, motives, conflicts, and goals, with a primary goal of avoidance of painful affect (Cramer, 2002; Matsumoto, Takeuchi, Andayani, Kouznetsova, & Krupp, 1998).

Across four different cultures, women reported that they exert more control over anger, contempt, and disgust than men reported, and men reported that they exert more control over fear and surprise than women reported (Matsumoto et al., 1998). Thus, both men and women feel pressure to maintain control over the specific emotions stereotyped as inappropriate for them to express. For men, violating gender role expectations for emotional expression (e.g., expressing vulnerability) is theorized to be associated with shame and anxiety (Osherson & Krugman, 1990), whereas for

women, expressing anger is theorized to be a source of conflict and shame (Chrisler, 2008; see also Brody, 1999).

Shields (1987) has posited that women are placed in a double bind about their emotionality. On the one hand, women's stereotypic emotionality is negatively evaluated as an "overreaction," whereas, on the other hand, emotionality is expected of women, so that the lack of emotional expression is also negatively evaluated. Kelly and Hutson-Comeaux (2000) indeed found that both women's over- and underreactions to happiness were evaluated as less socially appropriate than the same reactions displayed by men, as mentioned above. However, their data expanded Shields' idea of a double bind for women's emotionality to include a double bind for men's emotionality as well, in that men's over- and underreactions to angry events were judged as less socially appropriate than women's reactions. These data are consistent with the idea that stereotype threat about gender and emotions may be pervasive and contribute to anxiety and shame about confirming negative gender-linked stereotypes concerning emotional expressiveness in both genders.

However, although both genders may be subject to double bind messages about expressing emotions stereotypically appropriate for their gender, it seems that women are more distressed by the consequences of these messages, as indicated by two studies. Johnson and Spector (2007) asked customer service employees to report on how much they engaged in "surface acting" (e.g., hiding their true feelings about a situation) and to complete measures of burnout and job-related well-being. Among women, more surface acting predicted more emotional exhaustion and less affective well-being, but this was not the case among men. Moreover, Simpson and Stroh (2004) asked human resources professionals to report on the extent to which they were required to cover up various emotions at work, as well as the extent to which they were required to pretend they had experienced various emotions. Women reported having to display positive emotions (e.g., contentment, calmness) and suppress negative emotions (e.g., anger) more than men did, whereas men reported having to display negative and suppress positive emotions more than women did. Only the women's pattern was significantly associated with feelings of inauthenticity at work, and women who adopted the men's pattern of responding were the least likely to report feelings of inauthenticity. Although the different job characteristics performed by men and women (e.g., working in human resources, administration, or strategic jobs) were found to account for some of these findings, even after job characteristics were controlled for, women reported more pressure than men did to display positive emotions they did not feel.

One of the processes that has been found to mediate the impaired performance associated with stereotype threat is increased anxiety on the part of the stereotyped group (Beilock, Rydell, & McConnell, 2007; Osborne, 2001), which has been found to take the form of negative, self-deprecating thoughts (Cadinu, Maass, Rosabianca, & Kiesner, 2005). Thus, it is possible that pervasive stereotype threat about emotionality may contribute to women's tendency to ruminate, or engage in repeated negative thinking, and, in the process, ironically increase women's emotionality in the form of heightened anxiety.

Recent research demonstrates that not only anxiety and hopelessness, but other emotions also, may ensue as a consequence of stereotype threat. Women placed in positions of leadership who were exposed to stereotype threat (i.e., were told that their performance would be diagnostic of their leadership abilities after they had identified their gender) reported experiencing lower pride and increased shyness relative to women not exposed to stereotype threat (Bullis, 2008).

Further, stereotype threat may be more or less evident depending on what aspect of identity is salient in a given context. For Asian American women, performance on a math test was enhanced when their Asian identity was made salient and was impaired when their female identity was made salient (Shih, Pittinsky, & Ambady, 1999). Similar processes may be at work in contributing to variations in emotional expression as a function of whether or not gender is a salient identity in that

context. For example, Palomares (2008) found that women referenced emotions significantly more often than men in email conversations when gender was primed, but when student status was primed, gender differences in references to emotion were reduced. Stereotype threat is just one explanation for these findings; other explanations include the idea that gender priming evokes gender-linked values and goals, which are then linked to behaviors.

Gender differences in emotion regulation strategies may also be moderated by personality factors and motives. Agreeableness (one of the Big Five personality factors), which consists of characteristics such as helpfulness and sympathy, is a stronger predictor of self-reported efforts to control emotions for women than for men (Tobin, Graziano, Vanman, & Tassinari, 2000). Women report regulating anger and sadness to protect others' feelings, whereas men report attempting to maintain control and to avoid non-supportive interpersonal reactions (Timmers, Fischer, & Manstead, 1998; Zeman & Shipman, 1998).

Self-reported Emotion and Expression

Self-reports, which serve as the basis of much of the available evidence about emotion and expression, are problematic in several ways. Stereotypes and social desirability motives may influence participants' self-concepts and, therefore, their self-descriptions (Grossman & Wood, 1993; Robinson & Clore, 2002). Moreover, self-report data often blur the important conceptual distinction between emotional experience and emotional expression. The items to which participants are asked to respond may not make the distinction; the commonly used term "emotional," for example, implies both experience and expression. Or, participants may have difficulty making this distinction even if asked to do so. Moreover, people may not associate the general term "emotional" with certain types of emotional expression that are more masculine stereotypic, such as ranting or cheering wildly at a sports match. Having noted these cautions, we now review studies that use self-reports.

Self-reports of General Emotional Experience and Expression

Many studies show that women rate themselves as more emotionally expressive than men report themselves to be (e.g., Simon & Nath, 2004); women also rate themselves as significantly higher than men do on positive expressivity, negative expressivity, and the intensity of emotional expression (Gross & John, 1998). Greater intensity is found both when women describe specific emotional experiences (Hess et al., 2000; Tobin et al., 2000) and when they complete global self-report measures such as the Affect Intensity Measure (AIM; Diener, Sandvik, & Larsen, 1985). Intensity must be distinguished from frequency, however. In the 1996 General Social Survey (GSS) of over 1,300 respondents, there was no gender difference in reports of overall frequency of emotional experience (Simon & Nath, 2004). Estimates of overall frequency may mask differences for specific emotions, however, as we demonstrate in the next section.

Women also report a higher likelihood than men do of "catching" the emotions of others (Doherty, 1997), known as emotional contagion. This self-reported difference is corroborated, for certain emotions, when facial muscle activity is recorded through electromyography (Dimberg & Lundquist, 1990; Thunberg & Dimberg, 2000).

Self-reports of Specific Emotions

The specific positive emotions consistently reported more intensely or more frequently by girls and women include joy, happiness, love, affection, warmth, and feelings of well-being (see Brody, 1993; Brebner, 2003; Chaplin, 2006; Chentsova-Dutton & Tsai, 2007; Fischer & Manstead, 2000). Women's higher reporting of positive emotions emerges most clearly in situations involving intimate interpersonal relationships. When interpersonal situations are not the focus, for example when asked about total frequency in the past week, women sometimes report significantly less positive affect than men do (Simon & Nath, 2004). Girls and women also generally report more empathy and sympathy than do boys and men, emotions that are hard to classify as either positive or negative (see Lennon & Eisenberg, 1987). Gender differences in empathy become smaller from ages 22 to 92 (Schieman & Van Gundy, 2000), which reflect either developmental or generational effects. Many negative emotions—including disgust; sadness; feelings of vulnerability, such as fear, anxiety, and hurt; and feelings of dysphoric self-consciousness, such as shame and embarrassment—are generally reported more by girls and women than by boys and men (see e.g., Brebner, 2003; Brody, 1999; Fischer, Mosquera, van Vianen, & Manstead, 2004; Hess et al., 2000; Simon & Nath, 2004), although gender differences in shame are inconsistent (Simon & Nath, 2004) and can vary depending on the gender-role relevance of the target situation (Ferguson, Eyre, & Ashbaker, 2000). Sadness, depression, and dysphoria are reported to be more intense and to last longer by women than by men (Scherer, Wallbott, & Summerfield, 1986).

Although men may express more anger through vocal, facial, and behavioral modalities than women do, the data on gender differences in anger from self-report questionnaires are inconsistent. This should not be surprising, given the social desirability pressures on both men and women respectively to enhance or hide their anger in specific settings (Simpson & Stroh, 2004). When asked general questions about how many days per week they get angry, men and women report no differences (Simon & Nath, 2004). However, when asked about the intensity of their anger, sometimes women report getting more intensely angry than men do (e.g., Simon & Nath, 2004; Chentsova-Dutton & Tsai, 2007), and sometimes there are no gender differences, as was shown across 37 different countries (Fischer et al., 2004). Reports of anger are heightened in women and girls sometimes, but not always, when a situational context is specified, especially one involving interpersonal relationships (e.g., Buntaine & Costenbader, 1997; Chaplin, Cole, & Zahn-Waxler, 2005; Kring, 2000). Compared to men, women also report more enduring experiences of anger (Simon & Nath, 2004), are more likely to report hurt or disappointment in response to anger-inducing situations (Brody, 1993), and are more likely to report feeling ashamed after expressing anger (Kring, 2000); at the same time, they are also more likely to view their anger as appropriate (Simon & Nath, 2004). Gender differences in experiences of sadness and anger are likely to be related to differences in social judgment, in that research has indicated that when people experience sadness, they perceive the situational context and not human action as responsible for ambiguous events, whereas when they are angry, they perceive human action to be responsible and/or blameworthy for ambiguous events (Keltner, Ellsworth, & Edwards, 1993).

Emotions that men sometimes report expressing, or are reported by others to express more frequently or intensely than women, are contempt, loneliness, pride, confidence, guilt, and excitement (Brebner, 2003; Brody, 1993, 1999; Simon & Nath, 2004). However, gender differences in contempt, guilt, and loneliness have been inconsistent across studies, depending on situational circumstances, the characteristics of the particular samples assessed, and methodological variables, including differences between scenario-based methods and trait measures of these emotions (Benetti-McQuoid & Bursik, 2005; Ferguson et al., 2000).

Gender differences shift depending on the particular situation. For example, when participants recorded their emotions in response to random beeps by pagers for a 1-week period, women reported more positive affect states (e.g., happy and friendly, as opposed to unhappy and angry) while at work than they did while at home. The opposite was true of men: They reported more positive affect states while at home (Larson, Richards, & Perry-Jenkins, 1994). That women might experience more negative states in marriage than men do is consistent with Stets' (1997) observational study of married couples in videotaped discussions. Women's verbal and nonverbal behavior was more negative than that of their husbands.

What Do Self-reports Measure?

Women's reports of higher affective intensity on global self-report measures such as the AIM may not accurately reflect gender differences in either the frequency or intensity of emotions actually experienced or expressed (see Brody & Hall, 2008, for a review). Significant discrepancies have been found between daily logs and retrospective or general self-reports (Barrett, Robin, Pietromonaco, & Eyssell, 1998; Robinson, Johnson, & Shields, 1998; Seidlitz & Diener, 1998). Robinson and Clore (2002) have argued that women may retrospectively report more intense or frequent emotion than men do because they have more sophisticated emotion concepts that can serve as retrieval cues or because they may encode emotional experiences in more detail than men do (Seidlitz & Diener, 1998). Alternative explanations for the discrepancy between global and specific measures include the ideas that, in the time elapsed since an event, women may cumulatively experience more emotion than men do—perhaps, for example, ruminating over the event, which retriggers emotional experiences. Furthermore, it is possible that, as the delay lengthens between the occurrence of an emotional event and later recall, detailed memories fade and self-reports of emotion increasingly rely on belief- and identity-consistent generalizations (Robinson & Clore, 2002). Thus, gender stereotypic beliefs and identity may contribute to gender differences in global self-report measures.

However, stereotypes, self-presentation biases, memory-encoding, or other cognitive differences between men and women are not the only explanations for the gender differences that appear on global self-report measures. The differences might, in fact, be real, which would be consistent with the gender differences that appear on other measures of expressiveness, including observed interactions, the verbalization of emotion, facial expressiveness, and nonverbal measures.

Emotions Expressed in Behavioral Contexts

Consistent with self-report data, women have been found to refer to both positive and negative emotions more often than men do in conversations and in writing samples. For example, after having listened to vignettes eliciting anger and fear and having described the feelings they would have had if they were the protagonists in the vignettes, 12–18-year-old Australian girls referred more to sadness and had a wider range of emotional responses to angry vignettes than did the boys. Although boys referred more to anger in response to angry vignettes than did girls, they also used more expressive behavioral terms (such as “felt like smashing her”) rather than internal feeling states to all vignettes than girls did (O’Kearney & Dadds, 2004). This latter finding has also been reported in other studies (Brody, 1999; Girdler, Turner, Sherwood, & Light, 1990). For example, female physicians talk about emotions more than male physicians do (Roter, Hall, & Aoki, 2002). Compared to male participants, female participants also tell autobiographical narratives that contain more references to

emotion and internal states as early as age 3 and throughout development (see Fivush & Buckner, 2003, for a review). It is important to note, however, that one study indicated that, in general, male and female college students did not differ in references to emotion when recounting narratives concerning achievement, and, in fact, men made more references to internal feeling states than did women when narrating experiences about feeling stressed out or tense (Fivush & Buckner, 2003), which is consistent with our argument that gender differences are contextually specific.

In both self-descriptions and observations of marital interactions, wives are more willing to tell their husbands when they are feeling tense; they are more apt to disclose their feelings; they are more apt to try to explain their feelings (Burke, Weir, & Harrison, 1976); and they are more apt to express distress, anger, and other nonhostile negative emotions than are husbands (Levenson, Carstensen, & Gottman, 1994; Mirgain & Cordova, 2007). Husbands have been found to withdraw from criticism and marital conflict by “stonewalling” more than their wives do; stonewalling involves inhibiting facial action and minimizing listening and eye contact (Levenson et al., 1994). A study of dating heterosexual couples indicates that gender differences in interactions are moderated by levels of stress/discomfort with the discussion: In high-stress situations, gender differences are maximized: Men express less emotion, more restricted affect, and more withdrawal than women do (Vogel, Wester, Heesacker, & Madon, 2003).

In a groundbreaking study of emotional expression (including facial expressions, vocal tone, and speech content) in lesbian, gay, and heterosexual couples’ videotaped interactions in which they were asked to discuss areas of disagreement (Gottman, Levenson, Swanson, et al., 2003), men expressed more anger than women did, and women expressed more excitement and joy than men did, regardless of sexual orientation. Moreover, women, regardless of their sexual orientation, were sadder than men were when they were the recipient of a conflict laden message from their partners. Differences in emotional expression emerged between gay male couples and lesbian couples, in that, lesbians were angrier than gay men when initiating conflict; they also used more humor and showed more excitement/joy. When listening to their partner discuss an issue, lesbians showed more humor and more interest than did gay men.

In another study Gottman, Levenson, Gross et al. (2003) analyzed data from the same longitudinal data set of homosexual and heterosexual couples and found that, for lesbian couples, the expression of high affection and low sadness was more significantly related to relationship satisfaction than it was for gay male couples; for gay men, cognitive validation by partners was more significantly related to relationship satisfaction than it was for lesbians. These data are consistent with other research that indicates that women are relatively more motivated than men are to seek emotional intimacy, whereas men are relatively more motivated than women are to control emotions, in accordance with stereotypic display rules (Brody, 1999).

Facial Expressions and Other Nonverbal Behaviors

Women are more accurate facial expressors of most emotions, both when posing deliberately and when being observed unobtrusively (Hall, 1984). A measure that integrates facial, vocal, and postural expressions shows that girls express more sadness and anxiety than boys at ages 4 and 6, and, over this 2-year period, boys decrease their expression of these emotions (Chaplin et al., 2005). Quantitative reviews have also concluded that women are more generally expressive with their faces and hands, and they smile, laugh, and nod more than men do (Hall, 1984; LaFrance, Hecht, & Paluck, 2003). Both European American and Hmong American women showed more smiles than men did when recalling and reliving experiences involving happiness and love (Chentsova-Dutton & Tsai,

2007). It is important to note, however, that these behaviors do not have to reflect emotional states (Chovil, 1991–1992; Krauss, Chen, & Chawla, 1996). Smiling is notably ambiguous as to its “real” emotional meaning, and some authors have suggested that smiling in women reflects false positivity. For example, women’s smiles in one study were more discrepant from the content of their verbal statements than was the case for men (Bugental, Love, & Gianetto, 1971). However, women’s facial expressions were less discrepant from their words than were men’s in a study by Halberstadt, Hayes, and Pike (1988). Furthermore, women and men display Duchenne smiles (those that are likely to reflect spontaneous enjoyment) and non-Duchenne smiles (those that are likely to reflect other social motives) in equal proportion (Hecht & LaFrance, 1998; Prkachin & Silverman, 2002; Woodzicka, 2008), which means that women do not seem to display an excessive proportion of emotionally artificial smiles. However, simple comparisons such as these must be considered with caution because, to the extent that smiling is a function of concurrent emotional state, those emotional states need to be considered when evaluating the gender differences in smiling.

Men may convey anger more clearly in their facial expressions than women do. For example, when participants were videotaped as they discussed angry, sad, and happy emotional memories, a panel of judges was subsequently able to identify men’s facial displays of anger (independent of verbal content) more accurately than women’s (Coats & Feldman, 1996). Men are also more facially reactive in response to angry stimuli than are women (Dimberg & Lundquist, 1990).

Nonverbal Decoding Skill

Across many studies, women score higher than men in identifying the meanings of nonverbal cues of face, body, and voice (Hall, 1978, 1984; McClure, 2000). It is interesting that most of these tests measure sensitivity to expressions of affect, which is a feminine-stereotypic knowledge domain. When the knowledge domain is masculine stereotypic (e.g., judging status or dominance) or not particularly gender stereotypic (e.g., detecting deception), the differences are much smaller or nonexistent (Aamodt & Custer, 2006; Mast & Hall, 2004). Ickes, Gesn, and Graham (2000) suggested that women’s superiority on interpersonal sensitivity tests may be due in part to motivational differences that are triggered by awareness of the feminine-stereotypic nature of these tests. Some research has shown either increments for women or decrements for men when the feminine-stereotypic nature of the test is made salient (Horgan & Smith, 2006; Klein & Hodges, 2001; Koenig & Eagly, 2005). However, effects of gender framing of the task, as well as other methods of manipulating motivation (e.g., offering monetary incentives), are inconsistent and often negligible (Ambady, Bernieri, & Richeson, 2000; Hall et al., 2008). Furthermore, studies show that tested knowledge of cue meanings can predict performance on emotion judgment tasks (Davitz et al., 1964; Rosip & Hall, 2004), though it is not known whether differences in knowledge account for women’s superiority on emotion judgment tests (in Rosip and Hall’s study it did not). At present, one has to conclude that the etiology of gender differences in interpersonal sensitivity is still a matter of speculation.

Setting aside the question of etiology, one can still ask whether interpersonal sensitivity matters in the real world and whether gender is a moderator of such effects. Meta-analyses indeed show that performance on interpersonal sensitivity tests (which, as indicated above, typically involve emotion judgments) is related to many indicators of positive intra- and interpersonal functioning, both in relationships and in the workplace (Davis & Kraus, 1997; Hall, Andrzejewski, & Yopchick, in press). Hall, Andrzejewski, and Yopchick (in press) observed in their meta-analysis that the correlations were somewhat stronger for women than for men. Byron (2007) found that for female, but not for male, participants in the workplace, the positive relation of their emotion judgment ability to their

subordinates' satisfaction was mediated by subordinates' ratings of the participants' supportiveness. Thus, in the workplace women may use their interpersonal skills to guide their supportive behaviors toward subordinates, with good effect in terms of employee satisfaction.

Emotional Competence

Theories of emotional intelligence define several emotion-related traits and skills to be important for adaptive functioning (Matthews, Zeidner, & Roberts, 2002), including perceiving emotions accurately, using emotion to facilitate thought, and understanding and managing emotion. Women score higher than men on all of these components on the Mayer, Salovey, and Caruso Emotional Intelligence Test (MSCEIT; Brackett, Rivers, Shiffman, Lerner, & Salovey, 2006; Day & Carroll, 2004; Mayer, Caruso, & Salovey, 2000). Consistent with this result is the large literature that documents women's advantage in perceiving nonverbally communicated emotions (see above).

Mirgain and Cordova (2007) went beyond the use of standardized testing instruments to measure a broader definition of emotional competence based on videotapes of married couples' interactions. Husbands and wives were similar on some dimensions of emotional competence, but, when significant differences occurred, they showed wives to be more competent (e.g., lack of defensiveness), and trends favored wives for several other coded dimensions (e.g., eliciting positive emotions). In that study, emotional competence predicted own and spouse's marital satisfaction in both husbands and wives.

Several other constructs can be seen as falling generally under the heading of emotional competence. Gohm and Clore (2000) found that women reported a greater tendency to pay attention to their emotions. When participants were clustered according to their pattern of scores on attention, clarity, and intensity, women predominated among those who were high on all three and those who were high on intensity but low on clarity (labeled "overwhelmed"), whereas men predominated among those who were low on all three and those who were low on intensity and high on clarity (labeled "cerebral").

Women and girls display more complex emotion knowledge than men and boys do when asked to describe emotional reactions of self and others in hypothetical scenarios (Ciarrochi, Hynes, & Crittenden, 2005). Ciarrochi et al. (2005) showed that a motivational manipulation brought men's performance up to the level of women's, but only after men spent a significantly longer amount of time on the task. Thus, motivational factors may play an important role in emotion-related tasks.

Relationship Specificity

Some critical aspects of context that affect emotional expressiveness are the characteristics of the participants in the interaction and the nature of their relationship, including their level of familiarity and intimacy, their power and status with respect to each other, and their gender. For example, both men and women express more frequent and intense emotions to people they know intimately and to whom they feel closer (Barrett et al., 1998). Barrett et al. (1998) speculated that women's tendencies to rate their interpersonal interactions as more intimate than men's may partially mediate gender differences in emotional intensity. Both men and women are also more likely to express anger directly in the context of their families rather than in the workplace, as well as to someone of equal or lower

status, rather than to someone of higher status (Lively & Powell, 2006). However, women report that they control their emotions less with family members than men do (Matsumoto et al., 1998).

The relationship between level of intimacy and comfort in a relationship and the quality of emotional expression is further demonstrated in studies of adaptation to premenstrual symptoms in lesbian and heterosexual women (Ussher & Perz, 2008). When compared to heterosexual women, lesbians expressed less tension, guilt, and self-blame about premenstrual symptoms, presumably because they were more able to discuss their feelings and needs openly in response to their partners' greater awareness and recognition of their premenstrual distress, as well as in the context of a more egalitarian and empathic relationship. Other studies have indicated that lesbian couples make more efforts to resolve conflict, to argue effectively, and to explore feelings more openly than do heterosexual couples (see Ussher & Perz, 2008, for a discussion of these issues). Gottman, Levenson, Gross et al. (2003) found that gay couples (both lesbians and gay men) displayed more positive affect than did heterosexual couples, both when initiating conflict discussions themselves and when the recipient of such discussions. More specifically, initiators in homosexual couples displayed less belligerence, less sadness, and less fear and tension than initiators in heterosexual couples did, whereas listeners displayed more affection, humor, and joy/excitement than heterosexual partners did. The authors interpreted the relatively greater positive emotional expression in gay couples as due to the greater equality between partners in same-sex relationships. Their hypothesis is that equality is associated with lower hostility. Further, because there are fewer legal and cultural barriers to leaving homosexual relationships than to leaving heterosexual relationships, positive interactions may be the "glue" that keeps homosexual relationships stable.

Studies of individuals have indicated that both genders are more comfortable disclosing feelings (with the possible exception of anger) to women than to men (Timmers et al., 1998). In a meta-analysis of gender differences in self-disclosure (which includes, but is not limited to, the disclosure of feelings), women self-disclosed more to female partners, but not more to male partners, than men did (Dindia & Allen, 1992). Anger may be the only feeling that is disclosed more toward men than toward women, especially in situations in which no provocation is involved (Bettencourt & Miller, 1996). Women from a wide variety of cultures also express emotions to a greater number of people than do men, who tend to limit themselves to expressing emotions only to intimate partners (Rimé, Mesquita, Philippot, & Boca, 1991). Other research indicates that the salience of gender identity may interact with the gender of the conversational partner in affecting the frequency with which emotions are referenced. References to emotions on the part of women were heightened when they interacted with men rather than with other women, but only when gender had previously been made salient (Palomares, 2008).

A recent study demonstrates the complex interaction among distal and proximal factors, including the contributions of the match between gender of siblings in family of origin and gender of partner in an ongoing interaction as contributors to gender differences in emotional expressiveness. Brody et al. (2008) demonstrated that women with sisters (as compared to women with brothers) reported significantly more vulnerable feelings (sadness, shame, fear, and guilt) as well as more anger after interacting cooperatively with an experimental confederate who differed in gender from that of their siblings, whereas men with brothers (compared to men with sisters) reported significantly more vulnerable feelings (sadness, shame, fear, guilt, and anger) after interacting with partners who were the same gender as that of their siblings. As consistent with previous literature (Brody, Muderrisoglu, & Nakash-Eisikovits, 2002), it is possible that women experience more vulnerable emotions in reaction to threats to intimacy (interactions with peers who are different in gender to that of siblings is assumed to be less familiar/intimate), whereas men experience more vulnerable emotions in reaction to establishing and maintaining intimacy (interactions with peers who are the same gender as siblings is assumed to be more familiar/intimate).

Cultural Specificity

Across 37 countries, women report more intense emotions that last longer and are expressed more overtly than do men (Fisher & Manstead, 2000). In other cross-cultural studies, women have expressed more nonverbal emotional reactions, including facial reactions, vocal reactions, body movements, laughing, and smiling when expressing joy, sadness, fear, and anger than have men (Scherer et al., 1986). Moreover, in a six-nation study where U.S. and Japanese college students were used as posers of facial expressions, the emotions portrayed by women were more accurately judged by every cultural group even though the photographs were intended to be standardized exemplars (Biehl et al., 1997). However, gender of judge \times gender of poser \times culture interactions have also been found to exist for at least some emotions (Matsumoto, 1992). And, in a more recent study of 42,000 participants who resided in South America, North America, and southern and central Europe (Merten, 2005), women were more accurate than men at recognizing seven basic emotional expressions, including anger, fear, and sadness. This is consistent with the finding of Rosenthal, Hall, DiMatteo, Rogers, and Archer (1979) that women outscored men on a test of decoding nonverbal affective expressions in over 15 cultural groups around the world.

Gender differences in emotional expression across cultures are likely to vary as a function of cultural values, especially individualistic versus collectivistic values (i.e., giving priority to personal goals vs. loyalty to collective/group goals). In individualistic cultures, there is an emphasis on the actualization of internal self attributes and social disengagement, whereas in collectivistic cultures, there is an emphasis on interdependent group relationships and social engagement. Emotions in each culture help to promote each culture's values, such that shame in collectivistic cultures motivates group loyalty, whereas anger in individualistic cultures motivates the attainment of personal goals. Moreover, distinctive emotions in each culture also signal whether relevant goals have been attained or not; for example, pride signals the attainment of personal goals, and is reported more frequently by members of individualistic cultures in association with positive feelings, whereas friendliness signals the attainment of an interdependent relationship, and is reported more frequently by members of collectivistic cultures in association with positive experiences (Kitayama, Markus, & Kurokawa, 2000). Gender differences have been found to vary as a function of collectivistic and individualistic values. In Fischer and Manstead's (2000) data, the extent of gender differences in the intensity and duration of joy, shame, disgust, and guilt, and in the nonverbal behaviors associated with those emotions, were greater in individualistic than in collectivistic countries. Fischer and Manstead (2000) hypothesized that men in individualistic cultures are especially likely to minimize emotional expressions because expressing emotions might threaten the control that is critical to their status. Similarly, Merten (2005) found that gender differences in the extent to which men and women accurately recognized seven basic emotions increased as the levels of gender empowerment increased (i.e., the extent to which women took part in political and economic organizations). For some emotions, for example fear, this was because women became more accurate when levels of empowerment increased; whereas for others, for example anger, men became less accurate in their recognition skills when levels of gender empowerment increased.

Recent research on the Big Five (BFI) personality factors using cross cultural data from over 55 countries provided similar results; gender differences in levels of neuroticism, agreeableness, extraversion, and conscientiousness were higher in individualistic countries than in collectivistic countries (Schmitt, Realo, Voracek, & Allik, 2008). At least some of these dimensions, including neuroticism, agreeableness, and extraversion, have been found to be associated with increased emotional expressiveness, such as heightened worry/anxiety and emotional intensity (Tobin et al., 2000). Several studies have indicated that women are higher in neuroticism, agreeableness, warmth, extraversion, and openness to feelings, whereas men are higher in assertiveness and openness to

ideas (Burton, Hafetz, & Henninger, 2007; Costa, Terracciano, & McCrae, 2001). Of particular note is that men's personality trait scores, more than women's, changed with the relative economic development levels of the culture: Men were less neurotic, agreeable, and conscientious in their self-descriptions in developed countries than in less-developed countries. Schmitt et al. (2008), in contrast to Fischer and Manstead (2000), argued that the larger gender differences in personality among more-developed nations may reflect a more general biological trend (which they termed a "natural tendency") toward greater dimorphism in resource-rich environments and reduced dimorphism in countries with scarce resources. They concluded that different social roles cannot be a plausible explanation for gender differences in personality (and by extension, emotional processes) because social roles are more divergent in less-developed cultures than in more-developed cultures. However, their conclusion ought to be tempered because undoubtedly multiple contextual variables contributed to their findings, including the fact that more-developed cultures may also differ from less-developed cultures in ethnicity, gender-differentiated emotion stereotypes, and emerging gender roles not well measured by traditional scales (e.g., the "second shift" phenomenon for women in developed countries).

Physiological Arousal

Gender differences in physiological arousal in response to emotional stimuli, including changes in heart rate, blood pressure, skin conductance, and levels of catecholamines (epinephrine and norepinephrine), have been found to be specific to particular physiological measures and emotions, as well as to particular tasks and circumstances (see Brody, 1999). In the same situations, some measures of arousal (e.g., neuroendocrine functioning, blood pressure) show men to be more aroused than women, whereas others (e.g., cardiovascular reactivity, skin conductance) show inconsistent or contradictory gender difference patterns (Burriss, Powell, & White, 2007; Chentsova-Dutton & Tsai, 2007; Neumann & Waldstein, 2001; Polefrone & Manuck, 1987). Type of emotion, age, and ethnicity may moderate gender differences. For example, men show higher levels of skin conductance in reaction to fearful films than women do, but not to films that evoke other emotions (Kring & Gordon, 1998). Although 15–50-year-old women show higher cardiac reactivity than same aged men when recalling angry or scary memories, no gender differences are evident when people recall sad or happy memories. No gender differences in cardiac reactivity are found across emotions for people over age 50 (Labouvie-Vief, Lumley, Jain, & Heinze, 2003). Moreover, American Black men exhibit greater cardiovascular reactivity to imagined emotional situations than do other groups (Vrana & Rollock, 2002).

Gender differences in the patterns of correspondence between physiological arousal and other modes of emotional expression (e.g., self-reports) are consistent with gender differences in emotion regulation and, in fact, often provide clues about emotion control strategies. We (Brody & Hall, 2008) have suggested that women are more likely than men to be "externalizers," who express emotions overtly with no corresponding physiological arousal, or "generalizers," who show concordance between physiological arousal and other modes of emotional expression, even at young ages (Quas, Hong, Alkon, & Boyce, 2000) and especially at high levels of physiological reactivity (Avero & Calvo, 1999). In contrast, men are more likely than women to be "low responders" (Kring & Gordon, 1998), who show no or low levels of expression across modalities, or "internalizers," who show physiological arousal with no overt emotional expression. Discordance among men may be related to masculine-stereotypic gender roles that encourage maintaining control or suppressing the behaviors and self-reports that correspond to arousal (Avero & Calvo, 1999), whereas

concordance among women may be related to heightened emotional awareness of self and others and feminine-stereotypic gender roles that encourage emotional expression.

Exceptions to these patterns have been noted in the literature on marital interaction, in which husbands' arousal has sometimes been found to be more likely to correspond to their negative affect than wives' arousal is to theirs (Levenson et al., 1994, but see Kiecolt-Glaser et al., 1996). Moreover, men's cardiovascular reactivity is more often related to their expression and suppression of anger than is women's to theirs (Burns & Katkin, 1993).

Neural Substrates of Emotional Functioning

With the advent of new technology, particularly functional magnetic resonance imaging (fMRI) and positron emission tomography (PET scans), researchers can study potential sex differences in the brain regions involved in emotional expression, perception, and experience, especially in limbic system activation and brain lateralization (Schienle, Schafer, Stark, Walter, & Vaitl, 2005). In a meta-analytic review of neuroimaging results for gender differences in emotion perception, Wager and Smith (2003) reported that women show greater bilaterality in emotion-relevant activation than men do, but this is not consistently found (Schienle et al., 2005). Although recent data are intriguing, the studies are plagued with small sample sizes, the lack of a coherent theoretical model that incorporates the idea that biological development is both influenced by and influences the social context, and inconsistencies in the interpretation of data. Researchers often fail to consider that sex differences in the activation of a specific brain region in response to emotional stimuli can result from a multitude of processes, including differences in attention, the quality of emotional experience, the imagery associated with the experience, or the expression of emotion in different modalities (Wager & Ochsner, 2005). Activation itself has been interpreted confusingly to indicate that an area of the brain is both strong or weak for a particular function (see the argument made by Brody, 1999). We hope that these limitations will be addressed as the field progresses.

Etiology of Gender Differences

The data that show general trends for women to be more verbally and facially expressive than men, as well as better able to decode emotions, can be viewed as consistent with culturally constructed gender role-related differences in motives, goals, social expectancies, and social status. For example, the emotions that women express more than men do (e.g., warmth, happiness, shame, fear, and nervousness), their stronger abilities in emotional decoding, and their higher facial and nonverbal expressiveness may be related to motives for affiliation and intimacy; to a self-schema based on interdependence; to perceived vulnerability in the face of lower power; and to adherence to traditional gender roles (including child caretaking and social bonding, which necessitate reading others' emotion signals). Men's greater expressions of pride, loneliness, and contempt are consistent with masculine roles of differentiating from and competing with others; with maintaining a relatively high-status position; and with a self-schema based on individualism or independence. The different types of emotional regulation strategies used by women and men, and their rationale for using them (avoiding interpersonal conflict versus maintaining control), are also consistent with gender role-related motives and undoubtedly contribute to some of the gender differences in patterns of expressiveness, including concordance/externalizing and discordance/internalizing. That gender differences in various aspects of emotional functioning become minimized as adults age is also

consistent with the idea that emotions are adaptive for gender roles, which become less rigid in later life (Gutmann, 1987).

Further, many of the gender differences in emotional functioning we have reviewed can also be explained with reference to display rules and the impact of stereotype threat. As we noted earlier, stereotypes have both prescriptive aspects, in which non-conformity is punished, and also function to alter the nature of interpersonal and intrapersonal motives and processes by eliciting and shaping behaviors consistent with expectations of self and others. Because being “emotional,” a feminine-stereotypic trait, is evaluated more negatively than its bipolar opposite, the masculine-stereotypic trait of being “rational” (Shields, 2007), it makes sense that women would become anxious about confirming the stereotype of emotionality, and, in the process, ironically act “emotionally” in ways that are consistent with it. For men, anxiety about conforming to the prescribed stereotype of “non-emotionality” may lead to an avoidance of most emotional expressions with the exception of those that confer status and make men less vulnerable. Angry outbursts have been found to be more characteristic of depression in men than in women (Winkler, Pjrek, & Kasper, 2006), perhaps because anger is a socially acceptable emotion for men and confers higher status. Moreover, anger may be related to the “fight” component of the fight versus flight response that accompanies autonomic arousal, whereas anxiety and panic, more characteristic of women, may be related to the “flight” component. These alternative pathways for the expression of autonomic arousal may have both social and biological underpinnings.

Other sociocultural factors that contribute to gender differences in emotional expressiveness are gender roles and power and status differences between men and women. Chrisler (2008) argued that fear of loss of control (especially of anger, as well as of sexual and eating behavior) is an especially pervasive theme for North American women, and may be a form of internalized oppression. She also noted that, because of their lower power and status, women have fewer opportunities to exercise control over their lives and roles than men do, and consequently feel less competent. How feelings of incompetence impact other types of emotions is demonstrated in a study of over 2,000 5th grade students in Germany (Frenzel, Pekrun, & Goetz, 2007). Girls reported less enjoyment and pride, but more anxiety, hopelessness, and shame in their math achievement than boys did, even though girls and boys had received similar math grades. The girls’ emotions were due to their low competence beliefs and the lower value they placed on liking mathematics, combined with their high achievement motivation in mathematics. However, sociocultural and gender role-related variables (especially in isolation, as main effects) cannot always account for gender differences in emotion. For example, evidence indicates that status differences do not account well for gender differences in nonverbal behavior (Hall, Coats, & LeBeau, 2005).

In our view, there are multiple, interrelated factors that contribute to gender differences that span cultural, biological, societal, interpersonal, and intrapersonal levels of analysis. Furthermore, a multiplicity of causes co-exists with a multiplicity of moderating factors. We propose two etiological models that encompass proximal and distal factors, interpersonal and intrapersonal feedback processes, and the complex intertwining of situational, sociocultural, biological, personality, and cognitive factors both over time and in specific situations.

A Developmental Perspective

The first model includes distal factors, such as gender differences in temperament, family socialization history, gender-segregated play patterns, and cultural values, all of which contribute to the nature of gender differences. An integration of these factors involves a feedback loop in which differing temperamental characteristics of male and female infants elicit differential responses from caretakers

and peers, who are also conforming to cultural pressures and display rules for gender socialization. Different temperamental characteristics include higher activity and arousal levels in boys and faster maturation rates for effortful control processes and attention focusing in girls (see Brody, 1999; Else-Quest, Hyde, Goldsmith, & Van Hulle, 2006). Higher levels of sociability/empathy in girls may also possibly be rooted in temperament (Brody, 1999; Brody & Hall, 2000; although see also Else-Quest et al., 2006), but more probably emerge within the first 2 years of life (Buss, Brooker, & Leuty, 2008; Gunnar & Donahue, 1980; Roopnarine, 1986) as a function of parenting practices and also as a result of higher levels of self-control in infancy (along with early language development), which make it more likely that girls would attend to socioemotional relationships and rules. Studies that show that young girls initiate more social interaction with mothers and tend to maintain closer proximity to adults than boys do (Buss et al., 2008; Gunnar & Donahue, 1980; Roopnarine, 1986) are consistent with data that show higher levels of agreeableness and sociability characterize women later in development (Goodwin & Gotlib, 2004). In turn, agreeableness is a significant predictor of other emotional processes that are heightened in women, including emotional intensity and efforts to regulate emotions (Tobin et al., 2000).

The socialization of emotion is especially influenced by characteristics of the family system, including the parents' own temperaments, their gender-role attitudes and behaviors, the quality of their marital relationships, their cultural and socioeconomic backgrounds, and the gender constellation of the children in their families (Brody, 1999). As consistent with feminist object relations analyses of development, when fathers are more involved in child care, sons and daughters express less gender-role stereotypic emotions (Brody, 1997). The quality of parent-child narrative discourse and interaction has been found to vary as a function of the gender composition of the parent-child dyad and the type of emotion displayed or discussed. For example, fathers attend more to their preschool daughters' emotions of sadness and anxiety than to that of their sons and more to their sons' expressions of anger than to that of their daughters, and parental attention predicts the expression of sadness and anxiety 2 years later (Chaplin et al., 2005). Parents mention more specific emotion words as well as a greater variety of emotion words when talking to daughters than to sons, and they talk about sadness almost three times more frequently with preschool girls than with boys (see Fivush, 2007). Mothers' use of emotion labels significantly predicts individual differences in children's use of emotion labels (Cervantes & Callanan, 1998). Parents also place emotional experiences in a more social context and talk more about other people and relationships with daughters than with sons (see Fivush, 2007). By the end of the preschool years, and then throughout development, girls and women tell longer, more relationally oriented, and more emotionally laden narratives about their past than do boys and men (Davis, 1999; Fivush, 2007).

Finally, gender-segregated peer groups and differentiated patterns of play both elicit and reinforce gender-role-specific emotional styles (Rose & Rudolph, 2006). For example, boys tend to play in larger groups, to engage in less extended dyadic interactions than girls do, to play more rough-and-tumble games, and to be the victims of physical aggression more often than girls are. Girls tend to disclose more feelings with peers in extended dyadic interactions, to engage in more prosocial behaviors, and to report more friendship stress than boys do. All of these factors may encourage girls' facility in expressing and decoding emotions, especially in expressing feelings that connote vulnerability (Brody, 1999; Rose & Rudolph, 2006).

Putting Distal and Proximal Cues Together: The Example of Smiling

The second model integrates distal factors (such as gender differences in social roles and cultural values, social knowledge, and developmental history) with proximal factors (including characteristics

of the situation, especially quality of affect, others' expectations, and treatment by others) to account for gender differences in expressiveness. Smiling makes a good illustration (Hall, Carter, & Horgan, 2000). A key feature of the model is a set of feedback processes that intensify women's positive affect during social interaction and, thereby, increase smiling.

If we take women's greater smiling as a starting point, regardless of its immediate cause, smiling itself enhances positive affect through both physiological feedback mechanisms (Strack, Martin, & Stepper, 1988) and attributional processes. Facial feedback would produce more frequent and intense positive affect in women than in men. Positive psychological feedback can also follow from smiling due to gender-related motives and traits. For example, if women smile partly to fulfill their internalized conception of "femininity," this would reinforce their feelings of femininity and generate positive affect, which would produce more smiling. Other gender-related motives are interpersonal trust, liking for others, and capacity for intimacy. Some of these motives (e.g., liking others) intrinsically imply more positive affect and smiling. But, in addition, the knowledge that one has acted on these motives (e.g., showing that one is trusting, that one likes others) produces positive affect because one is acting in concordance with a gender-relevant value (Wood, Christensen, Hebl, & Rothgerber, 1997). In turn, others respond favorably, which contribute to the cycle. Women may also use smiling to put others at ease, to facilitate interaction, and to defuse conflict; these motives produce positive feedback because it is reinforcing to feel socially competent and to receive favorable reactions from others, which in turn promotes more smiling. Finally, smiling itself is highly reciprocal: the more one is smiled at, the more one will smile back (Hinsz & Tomhave, 1991). Reciprocity, combined with emotional contagion and facial feedback processes, should increase the intensity of women's positive affect and smiling and contribute to women's greater reported intensity of experience. This model implies that even when smiling might originate in non-emotional motives (e.g., felt social pressure to "act nice"), the various feedback mechanisms could trigger emotional processes that, in turn, impact smiling.

Thus, women experience numerous positive feedback cycles involving their own behavior, their cognitions, their physiological processes, and others' behaviors that sum to create enhanced positive affect in immediate social interactions, which ultimately influences how much they smile relative to men.

A corresponding logic can be applied in understanding men's smiling, but there are more complexities. This is because, unlike with women where all of the influences are hypothesized to influence smiling in the same (reinforcing) direction, with men some influences should inhibit smiling and some should promote smiling. For example, norms and expectations would inhibit smiling and therefore reduce positive affect and reduce further smiling. On the other hand, successful role enactment (i.e., acting like a "proper man") should be rewarding and therefore promote smiling. That men end up smiling less than women may indicate that the inhibitory effect is stronger than the facilitative one, and/or that men's overall level of positive affect is lower than women's, meaning that (other things being equal) their overall level of smiling would be lower. The fact that some elements in the model are predicted to increase men's positive affect and smiling might explain why gender differences are not greater than they are. In other words, it is not that men never smile; they simply smile less than women do.

Concluding Thoughts and Future Research Directions

In this chapter, we have emphasized that there are few main effects of gender on emotional functioning that are not moderated by other variables, such as personality variables, culture, and the social context. As noted by gender researchers across diverse fields (Fivush & Buckner, 2003;

Stewart & McDermott, 2004), the interesting theoretical and research question becomes in what types of contexts gender, and its associated values, goals, motives, and roles, emerges as a salient identity. Because emotion is fundamentally linked to our conceptions of gender, with women viewed as the “emotional sex,” any context in which gender is salient will probably serve to maximize gender differences in emotional functioning. We currently have limited understanding of the types of contexts in which gender becomes salient, or how the salience of gender varies as a function of other aspects of identity, such as ethnicity. Future researchers could focus productively on this interesting set of questions.

Other important questions for future researchers to address are under what sets of circumstances stereotypes about emotional expression result in “stereotype threat” and what the affective consequences of such threats are for each gender. In particular, our current understanding of men’s emotionality, and how it is impacted by an interaction between cultural stereotypes, developmental socialization, and biological factors, is quite limited, perhaps partly because researchers have been influenced by the cultural stereotype that men are “non-emotional” and have overlooked the fact that men can be quite emotionally expressive in specific settings or when displaying specific emotions, such as enthusiasm at a political rally.

Moreover, there is very little available research on gender differences in emotional expression in populations other than White, heterosexual, American, middle class samples. It is very important for researchers to expand questions of gender to other populations, particularly to ethnic and sexual minority populations.

Much of the current research on gender differences in emotion relies on self-reports, which we have argued are problematic for many reasons. If researchers do use self-report measures, it is better to have people reflect on specific emotional experiences in the moment than to have them generalize across emotions, or to report on “emotionality,” which is itself an imprecise concept, or to recollect past emotions, which research has shown to be inaccurate. Although the topic of gender differences in recollected emotions is in itself interesting, researchers need to recognize that if they are relying on recollections of past emotions, there may be gender differences in those recollections that do not reflect gender differences in emotions that were actually expressed or experienced at the time. The most fruitful studies are those that incorporate a diverse set of measures, including self-reports, behavioral measures, qualitative measures such as narratives, and physiological measures, to investigate consistencies and inconsistencies across these various types of measurement, with acknowledgments as to the limitations of the information provided by each type of measure.

The relation of emotion to nonverbal expressions and how such relations (or non-relations) impact gender differences is a particularly important area to pursue in future research. It is not sufficient to document how often men and women display various nonverbal behaviors (such as smiling); we need to know when, and in particular why, they engage in these behaviors. In everyday interaction, nonverbal behavior is under a certain (though unknown) degree of intentional control, which means that people can behave in ways that imply the presence of emotions they are not feeling. The complex connections among gender, emotional state, expressive control, and social goals are not well understood.

We have also argued that an understanding of the etiology of gender differences in emotional functioning involves integrating multiple, interacting distal and proximal variables. Distal variables include biological temperament, social context, and peer and family socialization history, whereas proximal variables include feedback cycles among motivational, personality, situational, and cognitive determinants. One of the most exciting areas for future investigation is the complex interplay between biological mediators of emotional expression and social factors in determining gender differences in emotional expression. With the advent of new technologies such as fMRIs and PET scans, groundbreaking work is possible on the neurological underpinnings of emotional expression.

However, this work must be interpreted within the theoretical understanding that biological differences do not represent the beginning of a linear sequence of variables that “cause” gender differences in emotional expression; rather, biological differences may themselves be the result of sociocultural influences. Additional research on how biological differences and sociocultural variables, such as power imbalances and gender roles, exert mutual and reciprocal influences on each other in affecting gender differences in emotional expression would be very exciting research indeed.

In brief, future researchers should incorporate a diverse set of measures of emotional functioning in studies designed to assess biological, personality, social, cognitive, and cultural variables as both mediators and moderators of gender differences in emotional functioning. The focus should be on investigating correlates, patterns, and contextual variations of gender differences and on using multiple types of measurement and multiple modalities of emotional expression.

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Chapter 22

Sex and Gender Differences in Eating Behavior

C. Peter Herman and Janet Polivy

In this chapter, we review the research literature on sex and gender differences in hunger and eating behavior. If you ask people about these types of differences in hunger and eating, they will readily identify some: women exhibit certain distinctive cravings during pregnancy and certain phases of the menstrual cycle; men eat more than women do; men are more likely to eat red meat (and other unhealthy food) than women are; men and women have different views of salad. For example, we recently heard a male comedian describe a salad as something that women consider a meal and that men consider as something that accompanies a meal – and that usually goes uneaten. Some of these gross (over)generalizations have been captured in formal stereotype studies, in which participants systematically provide their views about sex differences in cravings and eating. We examine some of these stereotypes, but our primary focus is on actual observed differences between the sexes, some of which may corroborate the stereotypes and others of which may not. (Technically, we should be equally focused on non-differences between the sexes, which arguably are just as interesting, especially if a non-difference conflicts with a prevailing stereotype. Although we mention non-differences when we encounter them in passing, we were unable to comb the extensive literature for all instances in which the null hypothesis was not rejected or indeed for all instances in which no sex-linked hypothesis was made or tested.)

We might have taken any one of several approaches to organizing this chapter. For want of a better organizing principle, we focus on two facets of eating: quantity (how much?) and quality (food preferences and selection). We also briefly attend to hunger, a topic that has attracted only the brief attention of researchers. For each of these topics, we try to establish whether there are reliable sex-related differences. If there are any gender role-related differences (i.e., differences between masculine and feminine individuals, independent of biological sex), we discuss them. And insofar as common stereotypes are supported or contradicted by the data, we discuss those as well. As a basic organizing principle, we examine both main effects and interactions; that is, we start by asking whether men and women differ on the measure of interest (e.g., amount eaten), and then proceed to ask whether men and women differ in the measure of interest when certain other moderator variables are introduced (e.g., amount eaten under stressful conditions).

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Amount Eaten

Main Effects

Do men eat more than women do? The answer would appear to be a resounding yes, although naturally there are some studies that fail to find evidence of greater intake in men. In the words of Pliner, Bell, Hirsch, and Kinchla (2006, p. 194), “many, if not most, studies find that males eat more than females.” In their own study, Pliner et al. found that men ate 87% more than did women (850.5 vs. 455.4 kcal). The significance of this difference might be questioned on the grounds that Pliner et al. served their male participants more food than they served to the female participants, but (a) the difference in the amount served was only 25% and (b) the reason that men were served more was that in pretesting, when men and women were served equal amounts, the men ate more.

A by no means exhaustive list of studies in which men ate more than women did includes Bates, Prentice, and Finch (1999), Beer-Borst et al. (2000), Davy, Van Walleghen, and Orr (2007), de Castro (1995), Green (1987, as cited in Rolls, Fedoroff, & Guthrie, 1991), Hetherington, Anderson, Norton, and Newson (2006), Martin, Anton, Walden, Arnett, Greenway, et al. (2007), Oliver, Wardle, and Gibson (2000), Pliner and Chaiken (1990), Rolls, Morris, and Roe (2002), Salvy, Jarrin, Paluch, Irfan, and Pliner (2007), and Weizenbaum, Benson, Solomon, and Brehany (1980). Laessle, Lehrke, and Duckers (2007) found that men were more likely than were women to ask for a second helping of chocolate pudding (the principal food in the study). Krantz (1979) did not measure intake per se, but found that men selected significantly ($p < 0.01$) more food than did women in a cafeteria setting. Grogan, Bell, and Conner (1997) also did not measure intake but found that men intended to eat snack foods more frequently than women did.

Not every study finds that men eat more than women do. Davy et al. (2007), for instance, found no sex-related difference in (reported) breakfast intake (although there was a pronounced sex-related difference in intake during the experiment proper). It seems reasonable to speculate that breakfast may be a meal that is highly “normed,” so that everyone more or less eats roughly the same things; alternatively, it could be that a man’s “single bowl of cereal” is larger than a woman’s. Weizenbaum et al. (1980) found no difference between men and a subset of women with above-average-length menses, although the eating test was confined to intake of M&Ms and peanuts.

Why do men eat more than women do? The most obvious reason, it would seem, is that male animals tend to be larger than female animals, and so, one might imagine, their energy needs are correspondingly greater (at least after puberty; see Rolls et al., 1991). Thus, Davy et al. (2007) served a smaller preload to their female participants than to their male participants, “according to sex-related differences in estimated energy requirements” (p. 143); these researchers simply adjusted preload size on the basis of body weight, and the women were only about 75% the size/weight of the men. As we have already noted, men ate considerably more than did women in the experiment ($p < 0.01$), but Davy et al. did not provide the relevant means, so we cannot calculate whether men ate more per unit body weight than did women.

We know that men eat more quickly, or at least claim to eat more quickly, than do women. Otsuka et al. (2006) found that a higher proportion of Japanese women than Japanese men reported their intake as “very slow,” “slow,” or “medium,” whereas a higher proportion of the men than of the women reported their intake as “fast” or “very fast.” Further, reported speed of eating was directly related to intake and to weight and weight gain (apparently even when differences in intake amount were controlled). The conceptual significance of this finding, however, is unclear. It may well be that faster eating leads to greater weight, but what is responsible for the men’s faster eating rate? Rolls et al. (1991, pp. 134–135) suggest that “women may have been taught to take small bites,

which would decrease. . . eating rate.” Whatever drives eating rate may be the true source of intake and weight differences.

Still, it appears that the extent by which men outeat women is greater than the difference in size alone. For instance, de Castro (1995) presents a regression analysis in which the beta for gender is 0.32 (the largest beta of all), whereas the beta for weight is only 0.07, which suggests that the sex/gender difference is more than simply a matter of the men being larger than the women. Bates et al. (1999) noted that the gender difference in intake that they observed “reflects the gender differences in body size,” but the gender difference in intake was 33%, whereas the gender difference in weight was only 16%. (Oliver et al., 2000, on the other hand, found no sex-related difference in intake when body size was included as a covariate.) Of course, size alone may not determine caloric requirements. Men are not only bigger than are women, but their resting metabolic rate (RMR) is higher as well (Davy et al., 2007), which means that their energy demands are greater, even when overall size is held constant. To some extent, the RMR difference is attributable to men’s greater musculature (and women’s higher body-fat levels), but this natural difference may be exacerbated by women’s greater tendency to diet, which itself tends to suppress metabolic rate. It is interesting to note that men, when they want to lose weight, are more likely than are women to turn to exercise, whereas women are more likely than are men to restrict their food intake (Drewnowski & Yee, 1987). These divergent strategies have divergent consequences, as men, who are building their muscles, increase their metabolic rate, and women, who are starving themselves, reduce their metabolic rate. In order to maintain one’s weight under these circumstances, men require many more calories, even on a per-unit-weight basis.

The foregoing discussion assumes that caloric intake is mostly a matter of need and that men need more calories than women do. Another possibility, however, is that regardless of caloric requirements, women deliberately suppress their intake in an attempt to lose weight; we have already noted that women are more likely than men are to diet, even when the desire to lose weight is held constant (Drewnowski & Yee, 1987). The desire to lose weight, however, is not equal: women are more eager to lose weight than men are, and some men (who strive for mesomorphy) even seek to gain weight, as long as the additional weight is in the right places (see, e.g., Alexander & Tepper, 1995). Several studies have shown that women score higher than do men in dietary restraint (e.g., Alexander & Tepper, 1995; de Castro, 1995; Grogan et al., 1997; Klein, Faraday, Quigley, & Grunberg, 2004; Martin et al., 2007; Mooney & Walbourn, 2001; Oliver et al., 2000; Provencher, Drapeau, Tremblay, Despres, & Lemieux, 2003; Rolls et al., 2002; Van Strien & Bazelier, 2007; Weinstein, Shide, & Rolls, 1997) as measured by all three of the instruments that assess restraint: our (Herman & Polivy, 1980) Restraint Scale, Stunkard and Messick’s (1985) Three-Factor Eating Questionnaire (TFEQ), and Van Strien, Frijters, Bergers, and Defares’s (1986) Dutch Eating Behavior Questionnaire (DEBQ).¹ Women more frequently express a desire to lose weight than do men (Alexander & Tepper, 1995; Pliner, Chaiken, & Flett, 1990) and are more likely than are men to diet to lose weight (Liebman, Cameron, Carson, Brown, & Meyer, 2001). Weight gain has more “negative utility” for women than for men (Grogan et al., 1997), that is, women are judged more negatively by others than men are when they gain weight, and women feel worse than men do about their own weight gain.

Another possible reason why women might suppress their intake is that eating sparingly serves certain impression-management goals; that is, eating a smaller amount on a given occasion may convey the impression that the individual is admirably concerned about her weight. It may even

¹Hetherington et al. (2006) did not find significant differences on the TFEQ or DEBQ, but the means were in the expected direction.

convey the impression that she weighs less than she actually does (Vartanian, Herman, & Polivy, 2008). There is plentiful evidence that eating sparingly allows women to convey an impression of femininity (see Vartanian, Herman, & Polivy, 2007, for a review). Many of the studies that have explored impression management as a possible motive for reduced intake in women have done so in certain restricted situations (such as when women have particularly strong reasons to want to appear feminine), so we discuss these studies later in an “interaction” context, rather than here as a “main effect.”

Interactions

Menstrual cycle. Folk wisdom suggests that food intake (both quantities and types of food ingested) varies as a function of menstrual-cycle phase. Such variations do not qualify as a typical sex difference, inasmuch as men do not seem to participate at all; but by the same token, the fact that women vary hormonally and appetitively over the course of the month, whereas men do not, is itself a sex difference of considerable interest.

The basic finding regarding amount eaten is that women (and females in nonhuman species) tend to eat more in the luteal (premenstrual) phase than in the follicular (postmenstrual) phase. Both-Orthman, Rubinow, Hoban, Malley, and Grover (1988), for instance, after citing “several reports. . .[of] increased intake observed during the luteal phase” (p. 628), found that self-reported appetite was significantly higher in the 7 days before the menses than in the 7 days after; this was especially true for women who reported that they experience “premenstrual syndrome” (PMS). Cohen, Sherwin, and Fleming (1987) challenged the notion that cravings and intake are differentially elevated during PMS (as compared to normal luteal-phase increases), but the argument seems to depend on quantitative comparisons for which the data are probably insufficiently sensitive. Dalvit (1981) found that women ate about 500 kcal/day more during the 10 days after ovulation than during the 10 days before. Gong, Garrel, and Calloway (1989) found that luteal-phase intake was greater than in the follicular and periovulatory phases but not greater than during the menstrual phase. Weizenbaum et al. (1980) found that the luteal-phase increase was confined to women with longer (>5 days) menses and was absent in women with shorter (≤ 5 days) menses. Similarly, Johnson, Corrigan, Lemmon, Bergeron, and Crusco (1994) found greater intake during the luteal phase than during the follicular/ovulatory phase, but luteal intake was not significantly greater than perimenstrual intake. Pliner and Fleming (1983) found a marginal increase in intake from the mid-follicular phase to the mid-luteal phase. It is interesting that these researchers found negative alliesthesia (i.e., the more an individual eats of a particular substance, the more the pleasantness of the taste declines; Cabanac, 1971), which allegedly is suppressed during severe hunger, to be more pronounced in the luteal phase than in the follicular phase, precisely the opposite of what one would expect were the luteal phase to be characterized by hunger; but Pliner and Fleming were able to salvage the notion of greater hunger in the luteal phase by invoking some other physiological mechanisms that might have masked the expected effect. Lyons, Truswell, Mira, Vizzard, and Abraham (1989), who used weighed food records rather than estimates or recalls, failed to find a significant pre- vs. postmenstrual difference. Lyons et al. argued that estimates and recalls of intake, which dominate the literature, are often inaccurate; and indeed, measures of the menstrual cycle itself often depend on recall, which introduces an element of uncertainty. After their extensive review, Dye and Blundell (1997, p. 1149) concluded that “generally there is an increase in energy intake and appetite during the premenstrual phase (when compared to the ovulatory or postmenstrual phases). This increase in energy intake and appetite during the premenstrual phase also occurs in women who suffer from PMS. In these women the appetite changes may be experienced with greater intensity and given increased psychological emphasis.”

Generally, the premenstrual increase in intake has been attributed strictly to physiological factors. For instance, Dalvit-McPhillips (1983) noted that basal metabolic rate may be higher during the premenstrual phase, so women would require increased energy intake if weight and energy levels are to be maintained. Dye and Blundell (1997), in their review, pointed out that “such statistically significant cycle-related trends are not observed in women using oral contraceptives or women with anovulatory cycles” (p. 1144). Barkan et al. (2003) suggested that “It might be interesting to investigate whether plasma ghrelin levels vary between the different stages of the menstrual cycle” (p. 2182); Cohen et al. (1987) and Lyons et al. (1989) suggested that estrogen levels might mediate intake. We detect a widespread assumption that physiological factors such as hormone levels directly drive eating; this assumption ignores the possibility that hormone levels (or other physiological changes) could affect food intake through the mediation of psychological factors; for instance, it is possible that heightened emotionality or lack of energy, either of which might be traced back to physiological sources, could reduce self-control (a psychological factor), which could, in turn, lead to increased food intake. Dye and Blundell (1997, p. 1145) suggested that “few studies have taken account of menstrual cycle-related [psychological] symptoms, which are most commonly reported in the premenstrual phase. These symptoms may influence behavior in an indirect way (in contrast to direct hormonal influence).” One study (Cohen et al., 1987) examined mood as a possible mediator of menstrual cycle effects on food intake (and craving), and, although they found that mood was more negative in the luteal phase when intake and cravings were elevated, there was “no relation between mood and cravings nor between mood and eating scores” (p. 465), contrary to Bancroft and Backstrom’s (1985) suggestion. Research on food intake tends to cluster into “physiological” and “psychological” camps, with inadequate attention paid to their mutual influence. The finding of enhanced luteal-phase intake is currently “owned” by the physiological camp, but more sophisticated interpretations may be expected in the future.

Stress and eating. We have encountered the suggestion (Dye & Blundell, 1997) that premenstrual increases in intake may be mediated by psychological factors, such as stress. The history of research and speculation on the connection of stress (or distress) and eating is a lengthy one, but it has always been cognizant of interaction effects, and these interactions have prominently included sex/gender.

Women score significantly higher than do men on the emotional eating subscale (but not the external eating subscale) of the Dutch Eating Behavior Questionnaire (Klein et al., 2004; Oliver et al., 2000; van Strien & Bazelier, 2007). Women, as we have seen, also score higher on various measures of dietary restraint, and there is a substantial literature (see Greeno & Wing, 1994, for a dated but still pertinent review) to indicate that restrained eaters tend to eat more when upset, whereas unrestrained eaters tend to eat less when upset.

Sex-related differences in intake during stress have been reported. Typically, women (like dieters more generally) are likely to eat more when stressed, whereas men (like nondieters more generally) are likely to eat less when stressed. For example, Zellner, Loaiza, Gonzalez, Pita, and Morales’s (2006) female participants reported becoming more likely to eat when under stress, whereas their male counterparts reported a decreased likelihood of eating. Grunberg and Straub (1992) found that men ate significantly less when shown a disturbing film than in the control condition, whereas women ate nonsignificantly more. There was a hint that the increased eating by women was displaced toward sweet foods, which is consistent with some of the evidence pertaining to premenstrual eating. Zellner et al. found greater intake of sweet, high-fat food (M&Ms) but decreased intake of sweet, healthy food (grapes), from which they concluded that stress disinhibited eating in women (who are more likely than are men to be inhibited eaters in the first place) and that this disinhibited eating was more likely to be directed at foods normally proscribed by weight-loss diets. Michaud et al. (1990) reported that only women ate more when stressed, although the significant increase in intake for women (135 kcal) was

outstripped by the (apparently nonsignificant) increase in intake for men (181 kcal). Weinstein et al. (1997) also found that both women and men reported eating more under conditions of stress, but the effect was (nonsignificantly) stronger for women than for men.

Klein et al. (2004) did not find sex-related differences in food intake following the imposition of a noise stressor, but it is possible that with the termination of the noise, the stress itself abated, leaving the participants more relieved than stressed. Nguyen-Michel, Unger, and Spruijt-Metz (2007) also failed to find sex-related differences, but their study was a survey of reported intake, and such surveys are often plagued with methodological flaws, including most notably reporting biases, some of which may be influenced by gender roles. Oliver et al. (2000), however, also failed to find the expected stress-by-sex interaction, and their study was not subject to either of the foregoing limitations. Indeed, these authors argued that their study may have been more valid than that of Grunberg and Straub (1992) in that it involved a true meal, rather than a mere snack. This point cuts both ways, however; it could be argued that snack intake is a more meaningful measure of stress-induced eating than is the quantity consumed at a meal inasmuch as stress may differentially potentiate snack intake.

Thought suppression and expression. Considerable research has been conducted on the effects of attempted thought suppression on behavior (Wenzlaff & Wegner, 2000); the basic notion is that attempting to suppress a thought may ironically increase the prevalence of that very thought, either during or after the attempted-suppression effort. "Rebound" effects may also spill over into behavior, so that attempting not to think about food may increase not only food thoughts but eating as well. Johnston, Bulik, and Anstiss (1999) found that people who attempted to suppress thoughts of chocolate performed better on a task offering chocolate rewards, although intake per se was not assessed. Erskine (2008) speculated that women would show more suppression-induced rebound effects than would men, if only because women are more likely to be dieters; and dieters, who are already inhibiting their intake, might be expected to be more vulnerable to rebound effects. There were no intake differences between the sexes in the thought-suppression condition or in a condition in which participants simply verbalized whatever thoughts they had. In another control condition that involved deliberate expression of thoughts about chocolate, however, men ate considerably more than did women ($p = 0.001$). Erskine, who also found that women liked chocolate more than men did, offered no cogent explanation for this expression-induced sex-related difference. Perhaps participants interpreted the expression condition as tantamount to permission to eat (or even a demand to eat), and men simply outate women, as they often do. This explanation, however, is undercut by the finding of no sex-related difference in the verbalization control group.

Partner sex, desirability, and familiarity. Mori, Chaiken, and Pliner (1987) manipulated the sex and perceived romantic desirability of naïve participants' eating partner (a confederate). These authors were interested in eating as a tactic of impression management; eating less was interpreted as a means for women to convey an impression of femininity. Thus, the fact that women who scored lower on Spence and Helmreich's (1978) Personal Attributes Questionnaire's index of femininity ate less overall was taken as evidence that these women saw themselves as lacking in femininity (as reflected in their low PAQ femininity scores) and therefore compensated by eating less, so as to bolster their feminine image. Had women who scored high on PAQ femininity been the ones eating less, perhaps Mori et al. would have argued that it follows logically that the most feminine women would be the ones eating the least. In response to the manipulation of confederate sex and desirability, women ate less when paired with a male partner than when paired with a female partner, but this effect was significant only when the male partner was desirable (i.e., attractive and eligible). Women who ate with a desirable male partner ate less than anyone else, which Mori et al. interpreted as evidence in favor of their proposal that women eat sparingly as a way of conveying a strategic feminine impression. To complicate matters, however, men ate considerably less when paired with a female

partner (irrespective of her desirability) than when paired with a male partner. This finding forced Mori et al. to consider the possibility that eating less might reflect more than (or other than) femininity; if men eat less in the presence of women, perhaps eating less reflects not femininity so much as politeness or attentiveness, in which case such motives might account for the women's behavior as well as the men's. Pliner and Chaiken (1990) replicated the findings of Mori et al.; both women and men ate less when with an other-sex eating partner, and women ate the least of all when paired with a desirable male partner.

In a second study, Mori et al. (1987) manipulated female participants' perceptions of how feminine they were (using false feedback on an interest inventory) and whether a desirable male eating companion was aware of how feminine the female participants were. Women who believed that they scored as relatively masculine, and who ate with men who knew that the women had scored as relatively masculine, ate significantly less than did women in the presence of men who knew that the women had scored as relatively feminine. The "masculine" women were presumably compensating for their publicly threatened identity, whereas the "feminine" women could perhaps afford to eat more, given that their femininity was already established. In a further complication, women who scored as relatively feminine and who ate with men who did not know that the women had scored as relatively feminine also ate only a small amount, presumably to get the point across to the men that they (the women) were indeed relatively feminine.

Salvy et al. (2007) manipulated both the sex and familiarity of the partner. Thus, men ate relatively little when paired with women, as in the studies just discussed, but this effect was moderated by familiarity. If the man ate with a familiar woman, he ate more than if he ate with an unfamiliar woman; men who ate with familiar men ate by far the most. Women likewise ate more with familiar others than with strangers. Forty percent of women who ate with unfamiliar men ate nothing at all.

These studies of impression management raise the interesting issue of why eating less makes women appear more feminine. There appears to be little question that women who eat sparingly are perceived as more feminine, but scant attention has been paid to the origin of this consumption stereotype. At this point, it seems that we have progressed little beyond a circularity: women eat less than do men, so women who eat the least are the most feminine. This formulation may work in general, but it poses certain problems for women trying to make a good impression. First, how little must a woman eat in order to convey an impression of femininity? And is abstaining from food altogether the ultimate feminine behavior or does it convey a different message altogether? Moreover, what if the particular man whom one is trying to impress with one's femininity does not subscribe to the general stereotype that connects minimal eating with femininity? And what if one is trying to avoid creating the impression of femininity, which is not necessarily an unalloyed virtue for modern women? Also left unaddressed by this research is the question of whether or how men might use their eating to enhance their perceived masculinity. If eating less makes women appear to be more feminine, does that mean that eating more will make men appear to be more masculine? Perhaps, but the sort of masculinity conveyed by maximal indulgence is not necessarily the sort of masculinity that appeals to women. Also left for future research are questions concerning whether eating specific types of foods may convey masculinity or femininity (more on this below).

Social influence. There is a large literature (see Herman, Roth, & Polivy, 2003, for a review) on conformity or matching effects in eating, most of which indicates that people tend to be strongly influenced not only by the amount eaten by others, usually confederates instructed to eat either a large or a small amount, but also by other naïve eaters with whom they are paired (Herman, Koenig-Nobert, Peterson, & Polivy, 2005). Salvy et al. (2007) found a strong sex-related difference in this general effect, as significant matching occurred only in dyads that included at least one woman. Intake correlations in male–male dyads were not significant, which suggests that men are indifferent

to the amount that other men eat. There was matching in male–female dyads, which might mean that men attend to (and adjust their intake to) the amount that women eat, but which could just as easily mean that women adjust their intake to that of their male partners.

The Salvy et al. (2007) study showed that familiar male/male dyads ate by far the most food. This finding corresponds to Rolls et al.'s (1991) conclusion that social facilitation of eating may be substantially stronger in men than in women. There is substantial evidence that social facilitation is enhanced when the group consists of friends and family as opposed to strangers (Clendenen, Herman, & Polivy, 1994; de Castro, 1994), presumably because people are more eager to make a good impression (by eating less) when in the company of strangers. The implication here is that women are more concerned than men are about restricting their eating for impression-management purposes, perhaps even to the extent of suppressing their intake when eating with familiar women. Klesges, Bartsch, Norwood, Kautzman, and Haugrud (1984) found that women (but not men) actually decreased their eating in large groups, contrary to the standard social-facilitation effect. Rolls et al. (1991, p. 134) recommended that “there should be further studies on gender differences in the social facilitation of eating.”

Food Preferences

The term “appetite” generally refers to objective intake rather than to subjective enthusiasm for food, although we (e.g., Herman & Vaccarino, 2000) have argued that the distinction between desire and actual intake ought to be maintained. Beyond overall intake, researchers may examine intake of (or preferences for) specific foods, macronutrients, or tastes. Often these differential preferences are referred to as “specific appetites,” and, equally often, these specific appetites are thought to reflect underlying physiological needs (e.g., an enhanced appetite for salt in people who are salt depleted). In this section we examine sex-related differences in preferences for (and intake of) particular foods (or foods from particular categories).

Main Effects

Do men and women differ in the foods that they like? Is it true that “(real) men don’t eat quiche” (and, if it is true, is it because men do not like quiche or because they are somehow embarrassed to eat it)? As we mentioned earlier, women and men may be found, stereotypically, at opposite ends of the vegetable–animal continuum. How much truth is there to the stereotype?

Beer-Borst et al. (2000) found that women ate fruits and vegetables more frequently than did men, across five different European samples; similar results were found by Wardle et al. (2004) (who studied only fruit intake) in 23 mostly European countries and by Serdula et al. (1995) in the USA. Kubberød, Ueland, Rodbotten, Westad, and Risvik (2002) likewise found that women had a greater preference for vegetables, in large part owing to men’s distaste for vegetables (Mooney & Walbourn, 2001). (This reminds us of the remark by the proverbial vegetarian that “I’m a vegetarian not because I love animals but because I hate vegetables.”)

Erskine (2008; see also Wansink, Cheney, & Chan, 2003) found that women expressed a stronger preference for chocolate than did men, which is consistent with other findings of a large preponderance of women among chocolate “addicts” (Hetherington & MacDiarmid, 1993) or chocolate cravers (Weingarten & Elston, 1991). Similarly, women rate sweets higher in pleasantness than do men (Grogan et al., 1997), although the researchers found no difference in (reported) intake of plain

biscuits, chocolate biscuits, chocolate, confectionery, or cakes/pastries. Wansink et al. (2003) found that women preferred sweets (and other snacks) as comfort foods, whereas men preferred more meal-related comfort foods (e.g., pizza, pasta, meat, soup). The researchers suggested that men are more accustomed to having their meals prepared for them (by women), so that, in times of distress, men look toward a meal, whereas women look away from meal preparation. As for vegetables and salad, women are more likely than are men to consider them as comfort foods, but even women do not rate vegetables as very comforting.

Kubberød et al. (2002; see also Kubberød, Dingstad, Ueland, & Risvik, 2006) documented a strong sex-related difference in acceptance of red meat; men like beef, lamb, ostrich, sausages, and hamburgers (the “stronger” meats) much more than women do. These researchers noted that the sex-related difference is not simply due to men liking red meat more, but also to women actively rejecting red meat, out of a combination of disgust and concern for the effect of red meat on their bodies (i.e., health and appearance concerns) (see also Mooney & Walbourn, 2001). “Men feel hedonic pleasure in seeing and eating red meat while women experience discomfort” (Rousset, Deiss, Juillard, Schlich, & Droit-Volet, 2005, p. 609), although these researchers noted that among (French) women, there are some who either like or dislike red meat more than others. The only evidence in opposition to this pattern comes from a literary essay in the *New York Times Book Review* (Nicholson, 2008, p. 23), in which it is claimed that “more women are now keeping up with the guys, eating red meat and boozing to excess.” This claim appears to be based more on hope than fact, as the author continued, “And I can encounter these women where?” Kubberød et al. (2002, p. 293) quoted Fürst (1994) to the effect that “the male identity is confirmed through what the man chooses to eat, whereas the female identity, to a larger extent, is defined by what she does not eat.” Worsley and Skrzypiec (1997) characterized vegetarianism as “largely a female phenomenon” (p. 402).

Men report eating more savory pies than do women (Grogan et al., 1997); is this simply because savory pies contain meat, which men are more likely to eat? Oliver et al. (2000) found that men expressed a much stronger preference for fatty, salty foods than did women, but, in their study, such foods did not include meats, so maybe men prefer salt. However, men showed a significant preference for fatty, bland foods as well, so maybe it is fat and not salt that distinguishes the sexes; certainly part of women’s avoidance of meat involves its perceived fattiness. Women express a stronger preference for low-calorie food than do men (Logue, Logue, Uzzo, McCarty, & Smith, 1988; Logue & Smith, 1986), and women are more likely to report healthy foods as pleasurable (Rappoport, Peters, Downey, McCann, & Huff-Corzine, 1993); further, women are “more concerned and knowledgeable about the health value of food than [are] men” (Rappoport et al., p. 44). Maybe women’s aversion to meat pies, as documented by Grogan et al., is as much as rejection of the pastry crust as it is of the meat. Rousset et al. (2005) noted that those women who object to red meat also object to starchy foods, which suggests that the objection may be related to perceived fatteningness. Before we rush to congratulate women on their commitment to a healthy diet, however, it should be remembered that what passes for a healthy diet these days is also likely to be a diet that conduces toward weight loss (or against weight gain), and that weight is a prominent element in attractiveness, especially for women. Thus, it may be that women’s concern about health actually masks a more profound underlying concern about appearance (Hayes & Ross, 1987). “One reason people eat right is that they are concerned with their appearance” (Hayes & Ross, p. 128).

Interactions

Menstrual cycle. As we have seen, intake is higher in the luteal (premenstrual) phase than in the follicular (postmenstrual) phase of the menstrual cycle. Beyond this simple quantitative shift,

however, there are strong suggestions, which “sometimes have achieved celebrity status” (Dye & Blundell, 1997, p. 1144) that the type of food consumed preferentially premenstrually shifts as well. In particular, strong claims have been made for enhanced carbohydrate appetite premenstrually. Dalvit-McPhillips (1983), for instance, found that carbohydrate (but not fat or protein) intake almost doubled premenstrually compared to postmenstrually, an effect that the researchers ascribed to “a complex interplay of physiological processes” (p. 211). Cohen et al. (1987) found a premenstrual increase in craving for chocolate and other sweets (see also Weingarten & Elston, 1991). Bowen and Grunberg’s (1990) participants claimed increased liking for sweet (but not salty or bland) food premenstrually, an effect that the researchers attributed to elevated levels of estrogens and progestins. Johnson et al. (1994) found lower carbohydrate and fat intake during the follicular/ovulatory phase than during either the luteal or the perimenstrual phase; in terms of percentages, only percentage of energy intake from fat was significantly higher in the luteal phase. Gong et al. (1989), however, found only a nonsignificant increase in sucrose intake during the luteal phase. Dye and Blundell (pp. 1144–1145) observed “The well-publicized view has been that it is carbohydrate intake that increases in the luteal phase. However, there are an equal number of studies which document significant increases in fat intake at this stage of the cycle. Such results may represent general increases in appetite rather than specific increases in intake of a particular macronutrient.” They concluded (p. 1148) that “there is little evidence for a selective craving of carbohydrate foods premenstrually or for a preferred intake of carbohydrate.”

Stress. Oliver et al. (2000) reported an unexpected interaction, such that stress increased men’s (but not women’s) desire for sweet foods. Michaud et al. (1990) found that fat intake increased in stressed boys, but that stressed girls, although they ate more overall, did not change the basic composition of their diets. “A stressful event in school did not appear to lead to overconsumption of sweets, nor of so-called ‘empty calories’ convenience foods” (p. 62).

Hunger

Is there reason to expect sex-related differences in hunger? Men have higher energy needs and expenditures than do women, so they might be expected to be hungrier; but then again, they eat more, as discussed above. If we were to try to find evidence of greater hunger in men, presumably it would have to be at the precise moment when they have incurred some energy loss but not yet eaten; such enhanced hunger would almost certainly be brief and intermittent. Women, on the other hand, are more likely to diet or to attempt weight suppression, as we have seen, which might leave them feeling chronically hungry.

Fasting ghrelin levels (supposedly indicative of hunger) are appreciably higher in men than in women (Barkan et al., 2003; Greenman et al., 2004); ghrelin levels remain higher in women even after a glucose or lipid load (Greenman et al., 2004). Ghrelin levels notwithstanding, actual reports of hunger do not show sex differences (Davy et al., 2007; Erskine, 2008; Oliver et al., 2000). It may be that hunger is experienced as a relative condition, so that individuals who are chronically deprived may habituate to their state and report enhanced hunger only when they detect a noticeable change from their normal state. If so, it might be even more difficult to elicit reports of hunger from women if they are chronically undernourished. Still, Uher, Treasure, Heining, Brammer, and Campbell (2006) found that women reported that the effect of fasting on reports of hunger was more pronounced in women than in men, which the researchers attributed to “the greater sensitivity of females to humoral signals of hunger and satiation” (p. 117). This explanation hardly put the question to rest.

Conclusions

It is clear that there are extensive and interesting differences between women and men in what they eat and how much they eat. We will not recapitulate those differences here. It is more important, we believe, to draw the reader's attention to the fundamental issue that emerges from our survey of these differences – namely, what is the source of the sex/gender differences that have been observed? Much of the literature appears to be premised on the assumption that the major differences between men and women are hormonal and that when we observe differences in amount or type of food consumed, those differences may be traced back to basic physiology. For instance, the literature on the menstrual cycle and food intake almost invariably assumes that luteal–follicular phase differences in intake are attributable to hormonal shifts that parallel (and drive) the shifts in food intake. This assumption is bolstered by the fact that nonhuman animals exhibit similar phase-linked intake patterns. Occasionally some attention is paid to the possibility that the increase in intake during the luteal phase, at least for humans, may somehow reflect the heightened emotionality associated with the premenstrual phase. This possibility introduces a psychological element alongside the physiological element, but basically leaves the woman at the mercy of her body; whether the increased intake is driven by emotions or hormones, the woman has little option but to (over)eat in accordance to the dictates of her inner demons.

A fundamentally different view of sex-related differences in eating is premised on the notion that men and women differ in their basic psychological motives and that those motives play out in the domain of eating. For instance, it is clear that women eat less than men do. (There are some exceptions, but those exceptions are indeed exceptional.) Is this difference in amount eaten simply a reflection of basic biology or is there a deliberate, strategic aspect to women's relatively meager intake? We know that women are much more likely than are men to be dieters and to score high on measures of dietary restraint. This is simply another way of saying that women are more motivated than are men to restrict their food intake (probably because they are more concerned than men are about achieving and/or maintaining a slim physique). Likewise, is the fact that women are less likely to indulge in red meat simply a natural difference (perhaps hormonal, perhaps evolved at the behavioral level) or is it a reflection of women's belief that eating red meat conveys an impression that threatens their femininity, either directly (“Real women do not eat steak”) or indirectly (“Red meat is fattening and, therefore, threatening to my willowy, feminine appearance”)? We have seen evidence that manipulating the social situation affects eating in ways that appear to have nothing to do with hormones and everything to do with social motives.

Of course, we are not obliged to choose decisively between physiology and social motives as the key to explaining sex-related differences in eating; it is quite possible that physiology operates in some cases and social motives in others. Indeed, it is quite possible that both operate at the same time in certain situations. We recommend that, when attempting to explain a given sex-related difference, one retain an open mind about the roles of biology and social motives. Further, we encourage people to entertain the possibility that either or both of these factors may be operating. The field of eating more generally, leaving aside sex differences, has been plagued by one-sidedness. Many researchers (who come from a background in physiology or animal behavior) favor strictly biological accounts of variations in intake, and other researchers and theorists (trained in social or clinical psychology or women's studies) favor social and personal motives as the determinants of eating. We have long argued for a reconciliation of these conflicting perspectives (e.g., Herman & Polivy, 1984). It would appear that the field of sex/gender differences in eating is an excellent venue for practicing the sort of multiple perspective-taking that is required.

Directions for Future Research

Given the low ratio of answers to questions in the foregoing survey, the aspiring researcher has a wide choice of topics that could profitably be explored. The main sex-related differences that we have uncovered are (a) that men eat more than women do and (b) that women and men diverge when it comes to red meat (a “masculine” food) and vegetables (a “feminine” food). Several questions suggest themselves. For instance, is the basic sex-related difference in intake, such that men eat more than women do, entirely explicable in terms of basic physiological differences (e.g., body size, resting metabolic rate) or do women actively suppress their intake below what their basic physiology demands? In other words, is the sex-related difference in caloric intake purely physiological or is it also a gender-related difference with a deliberate, psychological aspect?

Some questions related to this basic difference include (1) Why is eating less perceived as more feminine? Is it the case that being perceived as smaller is tantamount to being perceived as more feminine, and if so, does eating less make one appear to be smaller, as Vartanian et al. (2008) have suggested? (2) How might a man use his food intake to enhance his masculinity? If eating less makes a woman appear to be more feminine, does eating more make a man appear to be more masculine? Might a man assert his masculinity in terms of food choice (selecting red meat and/or rejecting vegetables) rather than in terms of amount consumed? Do LGBT individuals use food choice and consumption to enact gender?

As for the association of masculinity with red meat (and femininity with vegetables), it would be interesting to determine whether these associations are limited to the developed world in which the vast majority of surveys have been conducted. Is this a human universal or a culturally constrained phenomenon? Also, is there some way to determine the extent to which men’s relatively elevated intake of red meat and women’s relatively elevated intake of vegetables might account for the significant sex-related difference (in developed countries, at least) in longevity? Is red meat killing men and are vegetables keeping women alive?

Other unresolved empirical issues include whether (and why) there are sex-related differences in the social facilitation of eating; whether (and why) there are sex-related differences in the experience of hunger; and whether (and why) there are menstrual-phase differences in amount and type of food consumed. Unanswered questions about sex and gender differences in eating abound.

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Chapter 23

Gender Differences in Sexuality

Jennifer Petersen and Janet Shibley Hyde

The majority of women (happily for them) are not very much troubled with sexual feelings of any kind. What men are habitually women are only exceptionally.

Dr. William Acton (1857)

Gender differences in sexual attitudes and behaviors are associated with perhaps the most widespread gender stereotypes of any aspect of psychology. Popular opinion suggests that men prefer sex frequently and with much variety, whereas women are thought to be sexually disengaged, only accepting of sexual activity when it results in procreation or satisfying their partners. An abundance of research has explored this topic to examine claims about gender differences in sexuality. In this chapter we review the results of that research on gender differences in sexual behaviors and attitudes.

A point of clarification should be made to introduce the terminology used in this chapter. “Gender” is a term that typically is associated with the psychosocial aspects of being a man or a woman, whereas “sex” typically refers to the biological aspects of being a man or a woman. In order to reduce confusion we will use the term “gender” to refer to both the psychosocial and biological aspects of men/maleness and women/femaleness and reserve the term “sex” to refer to sexual activity. The term “sexuality” is a global term, which refers to sexual attitudes, behaviors, identity, and physical and mental health.

Theories of Gender and Sexuality

This chapter presents some key theories on gender differences in sexuality. Presented here are psychoanalytic, neo-analytic, evolutionary psychology, cognitive social learning, social structural, and gender schema theories.

Psychoanalytic Theory

Psychoanalytic theory is perhaps the most well-known theory of sexuality and gender. Sigmund Freud (1924) proposed that people are driven by an instinct for life, which he referred to as the libido or sex drive. The libido is the primary source of sexual motivation and is focused on areas

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of the body that determine sexual arousal. These areas, which Freud termed the erogenous zones, include the mouth, anus, and genitals. Freud proposed that, throughout development, children focus their attention on one or another of the erogenous zones. During the oral stage, infants experience pleasure through their mouth by sucking on objects and feeding. Later, during the anal stage, children experience pleasure through defecating as they learn to control their bowels and to use the toilet.

Freud proposed that children between the ages of 3 and 6 enter the phallic stage in which the focus of pleasure centers on the penis. A boy in this stage is fascinated with his penis as a source of pleasure. It is during this stage, Freud suggested, that the Oedipal conflict occurs. During the Oedipal conflict a boy develops a sexual attraction toward his mother. However a boy's sexual love for his mother is impeded because his mother's romantic love is reserved for his father. Psychoanalytic theory suggests that boys wish to destroy their fathers in order to rid themselves of their adversary; however, they fear that their fathers will retaliate by causing harm to their penis, a phenomenon known as castration anxiety. Freud suggested that, in order to reduce castration anxiety, boys must cease their sexual desire for their mothers and begin to identify with their fathers to develop socially acceptable masculine roles.

The phallic stage is more complex for girls who, according to Freud, come to the realization that they do not possess a penis. This realization is accompanied by the notion that they have been castrated. Psychoanalytic theory proposes that girls' disappointment about not having a penis is associated with rejection of their mothers, whom they hold responsible for their castration. Therefore, according to this theory, girls develop a strong attraction to their fathers in what Freud termed the Electra conflict.

Freud suggested that children enter a latency stage in which libidinal urges are suppressed after the resolution of the Oedipal or Electra conflict. Finally, during young adolescence, children enter the genital stage in which adult libidinal urges are apparent. During this stage, which continues throughout adulthood, men and women are motivated to have sex by a libidinal instinct. Psychoanalytic theory suggests that children must progress through and resolve all stages of sexual development in order to develop typical adult sexual motivation. However, sexual development, especially during the phallic stage, is much more complex for girls than for boys. Freud proposed that girls never fully resolve their Electra conflict and continue to feel a sense of inferiority to boys. Therefore, according to this theory, adult women continue their fascination with the penis and desire to give sexual pleasure to their superior male partners. Freud also suggested that women are motivated for sexual intercourse in an attempt to produce sons to compensate for their lack of a penis. However, this theory proposes that the primary sexual motivation for men is sexual arousal from the libido.

Psychoanalytic theory is one of few theories that attend to the development of sexual orientation. Freud suggested that some children develop a negative Oedipal or Electra conflict in which they are attracted to their same-gender parent and compete for affection with their other-gender parent. In particular, Freud argued that boys develop a negative Oedipal conflict when they have a weak father figure and a mother who is overly protective and affectionate, which he termed a "homoseducative mother." Psychoanalytic theory suggests that children who have a negative Oedipal or Electra conflict never fully resolve it and seek same-gender sexual behavior in adulthood to compensate for their sexual desire toward their same-gender parent.

Numerous criticisms have been raised about psychoanalytic theory. First, because Freud suggested that libidinal motivation is largely driven by unconscious processes, this theory is not falsifiable. Feminists have also criticized this theory as phallogocentric and focused on an unjustified assumption that the penis is superior to the vulva or clitoris (Lerner, 1986). Finally, Freud's theory is heterosexist as it assumes that heterosexual development is normative.

Neo-analytic Theory

Many psychoanalytic theorists modified Freud's theory to adapt to modern sexual culture and feminist ideas. Nancy Chodorow (1978) proposed that gender differences stem from early mother–child interactions. Mothers, who are typically the primary caretakers, develop a strong relationship with their children by providing for their needs. This theory suggests that young girls and boys internalize this relationship and develop a close connection to their mothers, which determines gender roles in adulthood.

Chodorow (1978) proposed that this close mother–child relationship affects the perceptions of the self and attitudes toward women for both girls and boys. She suggested that girls never entirely break this strong early connection to their mothers and continue to define themselves in relational terms. Girls mimic their mother's care by developing a relational connection to others and a sense of selflessness. In contrast, neo-analytic theory proposes that boys develop a masculine identity in opposition to their mothers and separate themselves from femininity by developing a sense of individualism. Through this rejection of their maternal relationship, men associate masculinity with the rejection of femininity and thus learn to devalue all women.

This theory suggests that women and men differ in their sexual motivation in adulthood. According to neo-analytic theory, women's needs for relational commitments are never completely satisfied even through marriage and close friendships, and they can only be fully satisfied in relationships with their own children. Chodorow suggested that women desire close relationships with their romantic partner and value sex for its reproductive capacity rather than for sexual pleasure. Therefore, women may seek long-term sexual relationships with the motivation of producing children to satisfy their relational need. However, this theory suggests that men have less need for strong relationships, and thus have less desire to have children. According to neo-analytic theory, men have learned to devalue women in order to repress their maternal relationships and are primarily motivated to engage in sexual relationships for personal sexual pleasure rather than for relational commitment or procreation. Therefore, men may prefer sex that does not rely on relational commitments, such as casual sex or extra-marital affairs.

Neo-analytic theory has been subjected to many of the same criticisms as Freud's theory. Similar to psychoanalytic theory, Chodorow's work was based on a clinical sample, which does not generalize to the population at large. In addition, neo-analytic theory does not address the development of sexual orientation. Finally, neo-analytic theory focuses on the role of gender in mother–child relationships and ignores other important social factors such as race and social class.

Evolutionary Psychology

According to evolutionary psychology, patterns of sexuality are the result of natural selection (Trivers, 1972). Individuals who have the most adaptive genes are likely to survive and pass those genes onto successive generations. According to natural selection, the more offspring that individuals produce to pass on their genes, the more successful they are genetically. Therefore sexuality for both men and women is largely driven by a desire for reproduction. However, sexual strategies theory proposes that men and women have different strategies for achieving genetic success and that these strategies lead to gender differences in sexual attitudes and behavior (Buss, 1995, 1998; Buss & Schmitt, 1993).

According to sexual selection theory, differential parental investment provides a basis for understanding gender differences in sexuality (Bjorklund & Kipp, 1996; Trivers, 1972). Because women

are limited in the number of viable ova they can produce, merely providing an ovum for reproduction is an investment. In addition, women invest 9 months in gestation. After the child is born, they may invest time in breastfeeding. This theory suggests that women are motivated to have few children, and their sexual strategy focuses on caring for those children so that they survive to carry on their mother's genes. Therefore, sexual strategies theory argues that women seek long-term sexual partners who value commitment and paternal care. Women may also select wealthy and powerful mates who will be capable of providing resources for themselves and their children.

Men, in contrast, have very little parental investment in their offspring. They are able to father children simply by engaging in coitus, and they have a virtually limitless supply of sperm to father many children. Therefore, this theory proposes that men's sexual motivation stems from a desire to have as many children as possible with the hope that some of those children will survive to carry on their genes. Because women are limited in their reproductive capacity, this strategy requires men to seek multiple sexual partners and to have casual sex to maximize the number of children they sire. Sexual strategies theory suggests that men seek short-term sexual partners who will not require commitment and who have a healthy reproductive system to mother their children. This theory argues that men place emphasis on the physical attractiveness of their mate as a marker of genetic success and evolutionary fitness.

Another interpretation of evolutionary psychology was adopted by Sarah Blaffer Hrdy (2003). She observed that, in contrast to sexual strategies theory, many female primates prefer to have sex frequently with multiple partners, whereas male primates prefer to stay in committed relationships with their partners. Hrdy (2003) suggested that these females were using concealed ovulation to their advantage by creating confusion about the paternity of their offspring. Through this process of paternity uncertainty, females were able to reduce infanticide of their children by other males in the troop and to receive resources from all of the potential fathers. Hrdy further suggested that male primates are motivated to remain in committed relationships in order to assure their paternity and to provide resources only for those offspring who share their genes. This illustrates that the pattern of male preference for multiple partners and female preference for exclusive relationships may not be universal.

The primary criticism of evolutionary theory is the lack of attention given to sociological and cultural factors that influence sexual motivation. The role of learning is largely ignored in evolutionary psychology. Finally, much of the evidence for evolutionary psychology is provided by animal models that may not generalize to complex human sexual motivation.

Cognitive Social Learning Theory

According to cognitive social learning theory, learning occurs through reinforcement and punishment, as well as through the process of observing and modeling others (Bussey & Bandura, 1999). This process is mediated by cognitive decisions about which behaviors should be imitated and which should be ignored. Behaviors that are rewarded are more likely to be imitated, whereas behaviors that are punished are less likely to be imitated. Observers pay more attention to same-gender models and, therefore, are more likely to reproduce behaviors modeled by people of their same gender than by people of the other gender (Bussey & Bandura, 1999).

Heterosexual behaviors are modeled and rewarded for the majority of individuals (Hyde & Jaffee, 2000). Many youth imitate these behaviors by engaging in heterosexual behaviors. However, this theory suggests that some young boys and girls who spend more time with models of same-gender sexual behavior would imitate homosexual behaviors (Masters & Johnson, 1979). The data do not

generally support this aspect of the theory, however. Children who grow up with gay or lesbian parents spend a large amount of time with homosexual models, but are not more likely to become gay or lesbian than are children of heterosexual parents (Allen & Burrell, 2002). This theory also suggests that individuals who were punished for heterosexual behaviors early in life would prefer same-gender sexual behaviors (Masters & Johnson, 1979). For example, a girl who was raped at a young age may fear heterosexual contact and turn to homosexual behaviors later in life. Again, data do not support this assumption. Gay men and lesbians are no more likely than heterosexuals to have had negative heterosexual experiences earlier in life (Bell, Weinberg, & Hammerstein, 1981).

The sexual double standard may play a role in shaping gender differences according to cognitive social learning theory (Aubrey, 2004). Observers learn that girls and women who engage in casual sex and have multiple partners are chastised with disparaging remarks, whereas women who value commitment are esteemed. In contrast, observers learn that boys and men are rewarded for engaging in sex frequently with multiple partners and chastised for valuing sexual commitment. Therefore, observers model gendered behaviors that are rewarded according to the double standard and do not model gender-inconsistent behaviors that are punished.

The media provide popular models of sexual expression for both men and women. The double standard continues to exist in most popular media, which provide models of sexual behavior consistent with gender stereotypes (Aubrey, 2004). In addition, the media are becoming increasingly sexually liberal and providing more promiscuous models for both men and women. Increased globalization and access to technology allow people around the world access to these media. Changes in sexual behavior are likely to follow. Increased exposure to media is associated with more sexually permissive attitudes and behaviors (Chia, 2006; Zurbriggen & Morgan, 2006). Therefore cognitive social learning theory suggests that the gender gap in sexuality will narrow as models of women's sexual expression in the media become more permissive.

Social Structural Theory

According to social structural theory, gender differences in sexuality are determined by gender differences in power (Eagly & Wood, 1999). Historically, men specialized in the workplace because of their larger size and strength, whereas women, who have the ability to lactate, specialized in childcare. Because many societies value monetary gain over childcare, men had greater power than women. Although women make up almost one-half of the U.S. workforce today (43%; U.S. Department of Labor, 2008), a gender gap in economic power still remains such that women earn only 80 cents for every dollar earned by men (U.S. Bureau of Labor Statistics, 2008).

Social structural theory posits that this disparity in power produces gender differences in psychological variables including sexual motivation and behavior (Eagly & Wood, 1999). For example, as gender equality increases, women place less emphasis on earning potential for their mate, and men place less emphasis on good housekeeping for their mate (Eagly & Wood, 1999). In egalitarian societies the sexual double standard is weaker, which allows both men and women more freedom of sexual expression. However, in traditional societies, which have a large gender difference in power, there are large gender differences in sexual expression. For example, the gender difference in number of sex partners is smaller in countries in North America and in Australia than in countries in Asia, in Africa, and in the Middle East (Petersen & Hyde, 2008). Social structural theory argues that cultural context determines the magnitude of gender differences in sexual motivation and behavior (Eagly & Wood, 1999).

Gender Schema Theory

Gender schema theory helps to explain why gender stereotypes about sexuality persist. According to gender schema theory, individuals pay attention to gender stereotype-consistent information and ignore gender stereotype-inconsistent information. In Martin and Halverson's (1983) famous experiment on gender schemas, researchers presented children with pictures of boys and girls performing gender-consistent and gender-inconsistent actions. One week later children recalled gender-consistent images correctly, but distorted images with gender-inconsistent information. For example, children accurately recalled an image of a girl baking cookies, but inaccurately recalled an image of girls boxing as an image of boys boxing.

Sexual gender schemas are perpetuated by the double standard. Information consistent with the double standard is likely to be remembered, and information inconsistent with it is ignored. For example, individuals may regard a woman who has had multiple sex partners and casual sex as an anomaly, whereas a man who engages in the same behaviors may be considered typical of his gender.

Summary of Theories

Although the various theories described above propose multiple mechanisms for gender differences in sexuality, the majority of the theories predict that men will have more sexual experience and hold more liberal attitudes toward sexuality than women will. In particular, these theories propose that men prefer short-term relationships with casual sex and multiple partners, whereas women prefer sex within the context of a committed relationship. Some theories propose that the motivation for such behaviors is biologically determined through natural selection, whereas others propose that cultural or learning mechanisms determine sexual motivation.

Despite the multiple theories on gender and sexual motivation, some sexual behaviors remain largely unexplained. For example, same-gender sexual behavior has been neglected by many of these theories, which assume heterosexual relationships. In addition, modern aspects of sexuality such as contraception and concerns about HIV/AIDS and other STIs are not addressed by any of the theories. Finally, because some of these theories do not offer differential predictions, supporting or rejecting one theory over another is difficult.

Research on Gender Differences in Sexual Behaviors

Theories of gender differences in sexual behaviors have spurred a plethora of research to test claims that men engage in more sexual behaviors than women do. However, this research indicates that gender differences are smaller than theory suggests for the majority of sexual behaviors. Here we review the research on gender differences in sexual behaviors.

Meta-analytic Findings

Meta-analysis provides a systematic approach to synthesizing the available data on gender differences in sexual behaviors. Oliver and Hyde (1993) conducted a meta-analysis over a decade ago, which provided a comprehensive overview of research on gender differences in sexuality at the time. This meta-analysis included 177 studies from around the world to estimate the magnitude of gender differences in sexuality.

The effect size d was calculated as a measure of the magnitude of gender differences in sexuality. Because theory suggested that men would engage in more sexual behaviors than women, this effect size was calculated as the mean value for men minus the mean value for women, divided by the pooled within-gender standard deviation. Therefore, positive effect sizes indicated that men were more sexually experienced than women were, whereas negative values indicated that women were more sexually experienced than men. Cohen (1977) established guidelines for interpreting effect sizes. According to these criteria, $0.01 < d < 0.35$ is a small effect, $0.36 < d < 0.65$ is a medium effect, and $d > 0.65$ is a large effect.

Oliver and Hyde assessed gender differences in 10 sexual behaviors, including incidence of vaginal sex, same-gender sexual behavior, masturbation, oral sex, number of sex partners, and frequency of intercourse. The results of this meta-analysis supported popular stereotypes, which suggest that men engage in more sexual behaviors than do women for all of the behaviors. However, for many of the behaviors the effects were smaller than theory might suggest. Men were considerably more likely than women to masturbate ($d = 0.96$), but there were only moderate gender differences in incidence of intercourse ($d = 0.33$), frequency of intercourse ($d = 0.31$), number of sex partners ($d = 0.25$), and same-gender sexual behaviors ($d = 0.33$; Oliver & Hyde, 1993). There was no gender difference in incidence of oral sex ($d = 0.10$).

Although this meta-analysis provided valuable insight about gender differences in sexual behaviors at the time, the results are not current to today's sexual culture. We (Petersen & Hyde, in press) updated the Oliver and Hyde (1993) study by reviewing recent research (published between 1993 and 2007), using the most current statistical methods (Lipsey & Wilson, 2001), and including several large-scale surveys. We (Petersen & Hyde, in press) computed effect sizes for 834 articles that represent almost 1.5 million participants from around the world. Although studies of sexual minorities were included, the majority of studies focused primarily on heterosexual participants.

We reviewed research on the same sexual behaviors as the Oliver and Hyde (1993) study, with the addition of pornography use. Men were considerably more likely than women to report pornography use ($d = 0.63$) and masturbation ($d = 0.53$), but were only somewhat more likely to have had intercourse ($d = 0.16$) and more sexual partners ($d = 0.26$). There were no gender differences in frequency of intercourse ($d = 0.06$), oral sex ($d = 0.06$), and same-gender sexual behavior ($d = -0.05$).

In accordance with cognitive social learning theory, gender differences in sexuality are narrowing across time. A comparison of effect sizes across both studies indicates that effect sizes were generally smaller in our recent meta-analysis than in the earlier Oliver and Hyde analysis. Men and women are more similar in their sexual attitudes in current research than in older studies. As society develops more permissive attitudes toward women's sexuality, gender differences in sexual behaviors decrease.

In our meta-analysis we also examined the samples' age, ethnicity, and nationality as moderators of gender differences in sexuality. Many sexual behaviors were found to have larger gender differences among younger people than among older people. For example, there were larger gender differences in frequency and incidence of intercourse in adolescence than during the college years.

Ethnicity of the sample was also considered as a moderator of gender differences in sexual behaviors. Generally, White samples had smaller gender differences in sexual behaviors than ethnic minority samples. For example, there was a smaller gender differences in number of sexual partners in studies conducted with primarily White participants than in those with primarily Black participants. However, these results should be interpreted cautiously due to the small number of studies that focused exclusively on ethnic minorities.

As noted earlier, social structural theory proposes that gender differences are a product of cultural differences in the gender disparity in power. Therefore, cultures with a smaller gender difference in power should have a smaller gender difference in sexual attitudes and behaviors than those cultures with large gender inequalities. We (Petersen & Hyde, in press) examined this claim using nationality as a moderator of gender differences in sexual attitudes and behaviors. Results supported social structural theory; the majority of gender differences in sexual behaviors were smaller in Europe, Australia, and the USA than in countries with larger gender inequalities in Asia, Africa, Latin America, and the Middle East.

Large Surveys

In our meta-analysis (Petersen & Hyde, in press), we also examined gender differences in sexual behaviors in several large-scale surveys. These large-scale surveys were based on probability sampling and include, but are not limited to, the National Longitudinal Study of Adolescent Health (Add Health; UNC Population Health, 2003) and Britain's National Survey of Sexual Attitudes and Lifestyles (NATSAL II; National Center for Social Research, 2001). Because these studies had better sampling techniques and included several thousand participants, they were analyzed separately from the data uncovered in literature searches. The results from these studies are generally consistent with the general analysis of studies uncovered in literature searches.

The National Health and Social Life Survey (NHSL; Laumann, Gagnon, Michael, & Michaels, 1994) gathered data from over 3,000 U.S. adults aged 18–59. This survey showed that men were more likely than women to masturbate ($d = 0.44$) and use pornography ($d = 0.32$), but showed small gender differences in incidence of intercourse ($d = 0.08$), oral sex ($d = 0.20$), and number of sex partners ($d = 0.19$). These findings are consistent with our meta-analysis, which again suggests that the majority of sexual behaviors are small, with the exception of masturbation and pornography use.

The National Survey of Sexual Attitudes and Lifestyles (NATSAL II, National Center for Social Research, 2001) surveyed over 10,000 British adults aged 16–44. This survey revealed comparable results to the NHSL for masturbation incidence ($d = 0.57$), but indicated no gender difference in many of the other sexual behaviors, including incidence of intercourse ($d = -0.10$), oral sex ($d = -0.03$), and number of sex partners ($d = 0.00$).

Other Sexual Behaviors

Gender differences in other sexual behaviors that were not assessed by these meta-analyses are reviewed here. Orgasm consistency is one such behavior that has revealed considerable gender differences. Men are consistently more likely to have an orgasm during intercourse than women are. According to the NHSL (Laumann et al., 1994), 75% of men, but only 29% of women, report always reaching orgasm during partnered sex. Although the gender gap narrows for masturbation, men continue to reach orgasm more consistently than women do (90% vs. 60%; Laumann et al., 1994).

Gender differences in sexual fantasies reveal mixed results. A review by Leitenberg and Henning (1995) suggests that men are more likely than women to fantasize during masturbation (even when gender differences in masturbation incidence are controlled), but there was no gender difference in sexual fantasies during intercourse. However, a study of daily diary reports indicates that gender

difference in daily fantasies during masturbation may be due to the trigger of the fantasy (Jones & Barlow, 1990). That study distinguished between fantasies triggered by external stimuli (e.g., television, books) and internal stimuli (i.e., spontaneous sexual thoughts). Men reported more daily fantasies triggered by external stimuli than women did, but there was no gender difference in daily reports of fantasies triggered by internal stimuli. Perhaps gender differences in sexual fantasies are a product of men's greater exposure to sexually explicit material (e.g., pornography).

Men may have greater exposure to sexually explicit material than women do because they are more aroused by it. A meta-analysis revealed that men self-report more positive emotions in response to erotic material than women do (Murnen & Stockton, 1997). However, the physiological response to erotic material reveals much smaller gender differences (Allen et al., 2007). The type of erotic material may also determine gender differences in sexual arousal. Men and women are equally aroused by female-oriented erotic video clips, which focus on romance and center on female characters, but men are more aroused than women in response to male-oriented video clips, which center on sexual activity without romance (Janssen, Carpenter, & Graham, 2003).

Gender Differences in Sexual Attitudes

Research generally reveals smaller gender differences in sexual attitudes than in sexual behaviors. The Oliver and Hyde (1993) meta-analysis assessed gender differences in 11 sexual attitudes including attitudes toward casual sex, premarital sex, sexual permissiveness, and masturbation. This meta-analysis showed a large gender difference for attitudes toward casual sex ($d = 0.81$); men were more likely than women to approve of casual sex. This study also showed moderate gender differences in general sexual permissiveness ($d = 0.57$), but only small differences in attitudes toward premarital sex ($d = 0.37$) and no gender differences in attitudes toward masturbation ($d = 0.09$; Oliver & Hyde, 1993).

We (Petersen & Hyde, in press) recently reviewed gender differences in the same sexual attitudes as in the previous study. Similar to the results of the Oliver and Hyde (1993) study, men held significantly more permissive attitudes about casual sex ($d = 0.45$), but there were small gender differences in attitudes toward premarital sex ($d = 0.17$) and general sexual permissiveness ($d = 0.21$), and no gender difference in attitudes toward masturbation ($d = 0.02$).

Moderator analyses for gender differences in sexual attitudes revealed results similar to moderators of gender and sexual behaviors. In terms of age, gender differences in sexual attitudes were smaller for younger participants than for older participants. In particular, there was a smaller gender difference in attitudes toward extra-marital sex among younger samples than among older samples. Ethnicity and nationality did not moderate gender differences for any of the sexual attitudes studied.

Large-scale surveys reviewed in this meta-analysis focused primarily on sexual behaviors and gave little attention to sexual attitudes. Nevertheless, the results of those surveys that did examine sexual attitudes were similar to the general analysis of studies on gender and sexual attitudes. For example, NATSAL II (National Center for Social Research, 2001) showed moderate gender differences in attitudes toward casual sex ($d = 0.42$).

Gender Differences in Attitudes Toward Homosexuality

Both we (Petersen & Hyde, in press) and Oliver and Hyde (1993) assessed gender differences in attitudes toward homosexuals. Oliver and Hyde (1993) discovered no gender differences in attitudes

toward homosexuals ($d = -0.01$). Whitley and Kite (1996) criticized the Oliver and Hyde (1993) study by arguing that different search criteria should have been used to generate studies focused on attitudes toward homosexuals and that attitudes toward gay men and lesbians should be analyzed separately. Their meta-analysis indicated that men had more negative attitudes toward gay men than women did ($d = -0.41$), but there was no gender difference in attitudes toward lesbian women ($d = -0.06$; Kite & Whitley, 1996). In our study we replicated the search criteria suggested by Kite and Whitley (1996) and found slightly smaller gender differences for attitudes toward gay men ($d = -0.18$) and no gender difference in attitudes toward lesbians ($d = -0.02$).

As reported earlier, the majority of measures assessed in both meta-analyses revealed decreasing gender differences in sexuality from the time of the Oliver and Hyde analysis (1993) to our more recent study. The only exceptions to this trend are attitudes toward homosexuals. Tolerant attitudes toward homosexuals may be increasing more rapidly among women than among men, thus increasing the gender gap in modern studies. In addition, different search criteria as suggested by Whitley, Bernard, and Kite (1995) and more modern research focused on attitudes toward homosexuals made relevant studies more accessible for our study than was the case for the Oliver and Hyde study.

Gender Differences in Sexual Desire

Sexual desire was not included in these meta-analyses (Oliver & Hyde, 1993; Petersen & Hyde, in press; Wells & Twenge, 2005), but has been reviewed by other researchers (Hiller, 2005; Leiblum, 2002). Gender differences and individual differences in sexual desire may be a serious source of conflict in many relationships. Understanding these gender differences may alleviate some of the stress associated with couples' incongruent sexual desires.

Generally researchers conclude that men have a greater desire and stronger motivation for sex than women do (Bachmann & Leiblum, 1991; Laumann et al., 1994). Men report desiring sex more frequently, with more partners, and with more variety than women do (Peplau, Fingerhut, & Beals, 2004). For example, gay men report engaging in sex more frequently than lesbians do (Peplau, Cochran, & Mays, 1997). In addition, boys report sexual arousal earlier than girls (Laumann et al., 1994), and older men continue to report more sexual arousal than older women do (Bachmann & Leiblum, 1991).

However, these gender differences may be due to gender differences in the expression of sexual desire. Women's sexual desire may be more complex than men's, focused on contextual factors and emotional arousal, rather than the genitals (Fisher, 1999). For example, women are more likely than men to report sexual arousal in response to verbal exchanges and non-genital touching (Fisher, 1999). Another example of the complexity of women's sexual desire can be seen in women's greater flexibility in sexual orientation. Women are more likely than men to report that they are attracted to an individual regardless of his or her gender. Therefore, women report bisexuality more commonly than men do (Rust, 1993; Savin-Williams & Ream, 2007), and women are also more likely than men to report changing sexual identities across the lifespan (Diamond, 1998; Savin-Williams & Ream, 2007).

Although many elderly men and women engage in sexual behaviors, sexual desire typically decreases with age. Age-related hormonal changes may reduce sexual desire and, because reduced estrogen levels decrease vaginal lubrication, may make intercourse uncomfortable for older women. However, sexual desire may decrease with age due to many other factors including reduced health, negative stereotypes about sex and the elderly, and lack of a sexual partner (AARP, 1999). Although elderly men are more likely to continue engaging in sexual behaviors than elderly women are

(Bachmann & Leiblum, 1991; Bretschneider & McCoy, 1988), this is probably because the disproportionate gender ratio among the elderly offers more sexual partners for heterosexual men than for heterosexual women.

Gender and Mate Selection and Retention

Another area of sex research that has received considerable attention is gender differences in mate selection criteria. According to evolutionary theory, women prefer older men who are wealthy and can provide resources for themselves and their offspring (Buss 1998; Buss & Schmitt, 1993). In contrast, men prefer younger women who are physically attractive, which is thought to be a sign of evolutionary fitness (Buss, 1998; Buss & Schmitt, 1993). Although the majority of the studies on gender differences in mate selection are based on convenience samples of undergraduates, one study was a well-sampled survey (Sprecher, Sullivan, & Hatfield, 1994). The results of that study indicate that men generally preferred mates who were physically attractive and young, whereas women preferred mates who had higher earning potential. Although those data support evolutionary theory, they could also be interpreted with a socio-cultural explanation (Eagly & Wood, 1999). Large gender differences in power are associated with women's economic and social dependency on men. Therefore, women may prefer a mate with high earning potential.

Although mate selection criteria may differ by gender, mate retention tactics are similar for both men and women. Of the top six mate retention acts reported by men and women, five of them are the same for the two groups: compliments on appearance; sitting next to the person when others were around; being kind, nice, and caring; being helpful; and looking nice (Buss, 1988). The sixth tactic reported by women was "I made up my face to look nice." One is not surprised that men did not list this tactic, and it is also difficult to see how it differs from looking nice, which was listed by both women and men.

Explaining Gender Differences in Sexuality

Results from meta-analytic reviews and other studies suggest that gender differences in sexuality are much smaller than theory indicates. Of the 30 different sexual attitudes and behaviors assessed in our (Petersen & Hyde, in press) meta-analysis, 26 indicated small or no gender differences. Although the gender differences were small, men were consistently more sexually permissive and sexually experienced than women were. Why are men more sexually permissive and sexually active than women are? Why are there large gender differences in some sexual attitudes and behaviors and small gender differences in others? Here we review some of the research that explains gender differences in sexuality.

Self-reports

A number of theorists have suggested that gender differences in sexual behaviors are a product of gender differences in self-reports, rather than actual differences in behavior. In order to examine this claim, Alexander and Fisher (2003) devised a clever experiment. Participants were randomly assigned to one of three conditions. In the bogus pipeline condition participants were given a false polygraph test while they completed the questionnaire. They were told that this polygraph would

report to the experimenters whenever a question was answered dishonestly. In the anonymous condition participants were asked to complete a questionnaire about their current sexual behaviors with no one else in the room and then place their completed questionnaires in a sealed envelope in a locked box. In the exposure threat condition participants were asked to give their names to the experimenter and to complete the questionnaire while an experimenter was in the room.

As hypothesized, the smallest gender differences in reported sexual behaviors occurred in the bogus pipeline condition, when participants were told that the experimenters could detect dishonesty; therefore participants presumably answered more honestly. Slightly larger gender differences were reported in the anonymous condition, and gender differences were largest in the exposure threat condition, where participants were given little anonymity. In particular, women underreported incidences of sexual behaviors in the anonymous and exposure threat conditions in comparison to the bogus pipeline condition, whereas men's responses were relatively consistent across conditions.

Women in the exposure threat condition may have been tempted to underreport their sexual experiences because the double standard indicates that women should have little sexual experience. In accordance with results from our meta-analysis (Petersen & Hyde, in press), women underreported incidences of masturbation and pornography use, which may be socially taboo for women (Alexander & Fisher, 2003). However, in the bogus pipeline condition, when women were encouraged to respond honestly, their reported sexual behaviors were more comparable to men's. This suggests that gender differences in sexual behavior may, to some extent, be an artifact of gender differences in reporting rather than actual gender differences in behavior.

Biological Factors

Gender differences in sexuality may also be due to biological factors including sexual anatomy, gender differences in the brain, hormones, prenatal factors, and timing of pubertal development. In this section we review biological factors that may contribute to gender differences in sexual behavior and motivation.

Anatomical differences. A man's erection is a highly visible and obvious response to sexual arousal. Although a clitoral erection also occurs in response to sexual arousal, it is much less visible. Because women's genitals are less visible than men's genitals, women often are unaware of their physical sexual response. In addition, women are rarely taught about their sexual response. The words *penis* and *erection* appear more frequently in books about sexuality than the words *clitoris* and *vaginal lubrication* (Yates, 1982). These symbols of sexual arousal are likely to have a large impact on subjective feelings of sexual arousal and sexual motivation. Women may not feel aroused if they are not aware of the signs of arousal. Research supports the hypothesis that awareness of sexual arousal is associated with feelings of arousal and increased sexual desire. Women who are taught to pay attention to their vaginal lubrication while watching pornography are more likely to report feeling sexually aroused in response to the pornography than are women who are not given this instruction (Elliott & O'Donahue, 1997).

The visible sign of the penile erection is a signal that suggests that the man should seek sexual pleasure by initiating sexual contact with a partner or by masturbating. Therefore a penile erection may be a sufficient motivator for sexual activity among men. In contrast, women may not pay attention to their genitals for signs of sexual arousal and may seek external cues, such as a partner's arousal, to become aroused themselves.

Brain differences. Brain activation in response to arousal is similar for both men and women. However, the areas of the hypothalamus that are activated during sexual arousal are differentiated

somewhat by gender. In particular, the ventromedial hypothalamus is activated during women's sexual response, whereas the medial pre-optic area is highlighted during men's sexual response (Graziottin, 2004). Men's cingulate gyrus, thalamus, and amygdala also are activated during sexual arousal (Hamann, Herman, & Nolan, 2004; Park et al., 2001). Research on these areas of the brain during women's sexual arousal has not yet been conducted.

Anatomical brain differences may also contribute to sexual orientation. LeVay (1991) found that the anterior portion of the hypothalamus in gay men was more similar to that of women than to that of straight men. However, this postmortem study focused almost exclusively on men who had died from AIDS, ignored lesbians, and presumed heterosexuality for all participants not explicitly labeled as homosexual.

Hormones. The association between testosterone and sexual arousal is widely known and may be one source of gender differences in sexuality. Castrated primates who lose their source of testosterone also lose their sexual desire (Michael & Zumpe, 1988). However, when these primates are given synthetic testosterone, they regain a normal sex drive (Michael & Zumpe, 1988). During the lifespan, when women produce lower levels of testosterone, such as during menopause, sex drive also decreases. Testosterone replacement therapy during these times, although controversial, seems to improve the sex lives of many women (Apperloo, Van der Stege, Hoek, & Schultz, 2003; Davis, 2000).

Women have roughly one-tenth the amount of testosterone as men do (Yassin, 2006). Therefore, it follows that women would have a weaker sex drive than men if testosterone is linked to sexual desire. However, the human endocrine system is much too complex to draw such a simple conclusion. Testosterone production and synthesis may be different for men and women. There is some evidence that women synthesize testosterone more efficiently than men do, and, therefore, women need lower levels to produce the same amount of sexual desire (Gorski, Gordon, Shryne, & Southam, 2007). The cells of women's hypothalamus may be more sensitive to testosterone than is true for men's (Gorski et al., 2007). Some researchers have proposed that low levels of testosterone in men are associated with a homosexual identity. However, research does not support the hypothesis of hormonal differences between heterosexual and gay men (Banks & Gartrell, 1995).

Vasopressin, another hormone associated with sexual arousal, has differential effects on men and women. Vasopressin is released during men's sexual arousal and is strongly associated with their sexual response (Hiller, 2004, 2005). However, this hormone seems to have the opposite effect on women by reducing sexual arousal, perhaps because of its association with lactation. Vasopressin is regulated by levels of testosterone and estrogen, which are also highly sexually differentiated (Hiller, 2004).

In sum, the human endocrine system is much too complex and dependent on too many factors to conclude that hormones dictate that women have lower sexual desire than men. There are countless within-gender variations and individual differences in hormone production and synthesis. Cultural and societal factors interact with biological factors to produce great individual variation. In addition, much of the research that has linked sex hormones to sexual desire was done with animals and may not translate well to humans. However, sex hormones clearly are linked to sexual desire and should be explored further in future research.

Prenatal factors. Prenatal factors may also contribute to gender differences in sexuality. For example, maternal stress during pregnancy is associated with homosexual behaviors in rodent pups. Female rats that are exposed to stress during pregnancy are more likely than those not exposed to stress to produce male offspring who assume the female-mating posture (Ellis & Cole-Harding, 2001). However, research on prenatal stress in humans is inconclusive. Prenatal antigens produced by mothers who have many sons may also affect sons' sexual identity (Blanchard, 1997). This hypothesis suggests that, during pregnancy, mothers develop antibodies to an antigen associated

with male fetal sexual differentiation. With each successive male birth these antigens grow stronger, and thus potentially affect sexual differentiation in the brain of later-born sons. Research in support of this hypothesis indicates that gay men on average have more older brothers than straight men do (Blanchard, 1997). The birth order effect does not seem to be associated with sexual orientation in women because mothers do not produce antibodies during female fetal sexual differentiation (Blanchard, 1997). However, female fetuses that are exposed to abnormally high levels of prenatal estrogen may be more likely as adults to identify as lesbian (Meyers-Bahlburg et al., 1995). Mothers who took a drug with high levels of estrogen to reduce morning sickness during pregnancy were more likely to have lesbian daughters than mothers not exposed to the drug (Meyers-Bahlburg et al., 1995). Prenatal hormone exposure does not seem to be linked to male homosexuality.

Pubertal development. Testosterone and estrogen, as well as other sex hormones, increase during pubertal development. Increased levels of testosterone are associated with sexual initiation for both boys and girls during pubertal development (Udry, 1988). Although the relationship between testosterone and sexual behavior is stronger for boys than for girls, it was testosterone, rather than estrogen, that predicted sexual initiation for girls (Udry, 1988). A complex interaction of hormonal, physical, and social changes during pubertal development is associated with sexual initiation. As girls develop a more curvy figure they often gain sexual attention from boys, thus increasing the pressure on them to have sex. Girls and boys who enter pubertal development earlier than their peers may spend more time with an older peer group who have already initiated sex. Therefore, peer influences to initiate sex may occur earlier for adolescents with advanced pubertal development than for those who develop later.

Menopause. Sex hormone levels drop later in life for both men and women. During menopause women experience a decrease in estrogen as hormone production in the ovaries begins to decline. Reduction in vaginal lubrication and elasticity accompanies this change in estrogen and may make intercourse uncomfortable. New hormone replacement treatments are available for women who choose to reduce these symptoms, but these treatments are controversial. There is some speculation that a similar decline in sex hormones, known as andropause, may occur in men (Perry et al., 2001). However, there is little research to support this claim.

Socio-cultural Factors

In addition to biological factors, cultural factors play a role in determining gender differences in sexual behavior and motivation. In many cultures around the world a double standard exists, in which some sexual behaviors are acceptable for one gender (usually men), but unacceptable for others (usually women). In North America the sexual double standard continues to exist, but has changed and perhaps weakened across time (Crawford & Popp, 2003; Marks & Fraley, 2006). Although premarital sex was once acceptable only for men, the “new” double standard accepts premarital sex for both genders. Today, women report engaging in premarital sex almost as frequently as men do (Petersen & Hyde, in press). However, women are expected to have sex within the context of a loving, committed relationship and to limit their number of partners. Men, in contrast, may have casual sex with multiple partners without worrying about the social repercussions, such as disparaging remarks, that often befall a woman who engages in similar behaviors.

Cultural gender roles also determine gender differences in sexuality. As suggested by social structural theory, gender roles that dictate dominant masculine and submissive feminine roles translate to larger gender differences in sexual behaviors and motivation. Men often are taught that they must initiate sexual behavior, whereas women may think that initiating sex is too forward. Therefore,

men often bear the burden of responsibility not only for their own sexual satisfaction, but for the satisfaction of their partners as well (Zilbergeld, 1999). Women who are not sexually satisfied may not feel comfortable taking the initiative to express their personal preferences and thus have to rely on their male partners to understand their needs.

Baumeister (2000) suggested that women's sexuality is more malleable to social and contextual influences than men's sexuality is. He supported his erotic plasticity hypothesis by citing instances of women's greater sexual variability, lower correlations between attitudes and behavior for women, and greater influence of socio-cultural factors on women's sexual attitudes and behaviors. Baumeister (2000) suggested that this greater sexual flexibility among women has evolutionary origins. In response, Hyde and Durik (2000) suggested that socio-cultural influences explain gender differences in erotic plasticity. In particular, women typically have less power than men do, and thus are more likely to be influenced by men than men are by women (Fiske, 1993). For example, the magnitude of gender differences in power is correlated with the magnitude of gender differences in sexuality (Hyde & Durik, 2000).

Other Factors

Some research suggests that different factors may affect sexual excitation and inhibition among men and women. The dual control model indicates that a combination of factors that influence sexual excitation and inhibition determines sexual arousal (Janssen & Bancroft, 2007). Janssen and Bancroft conducted a factor analysis that yielded one factor for sexual excitation and two factors for sexual inhibition – performance and consequences. Men scored higher on the sexual excitation factor and lower on both inhibition factors than women did (Janssen & Bancroft, 2007). Perhaps women are more concerned about sexual performance and sexual consequences than men are, which increases women's sexual inhibition.

A number of different factors may contribute to women feeling more sexually inhibited. One such factor is body esteem. Women are less satisfied with their bodies than men are, and they may feel sexually inhibited to show their bodies to their partners. Women who have low body esteem have lower levels of sexual desire and engage in sex less frequently than women with high body esteem (Koch, Mansfield, Thureau, & Carey, 2005).

Another factor that contributes to women's sexual inhibition is the disproportionate role women play in family concerns. Women typically bear more responsibility for family matters and childcare than men do. Therefore, women may be particularly concerned that children might observe their parents during intercourse. Because this concern weighs more heavily on women, they are likely to be more distracted than their male partners during sex. Indeed, women with children have sex less frequently than women who do not have children (Apt & Hurlbert, 1992). In addition, women who do not have children may feel a social responsibility to reproduce. The pressures of fertility often reduce sexual satisfaction and become a distraction from sexual intimacy. These distractions associated with increased maternal responsibility for family matters reduce sexual satisfaction and thus increase gender differences in sexual behaviors.

In contrast, women who do not want children or who are not yet ready for the responsibility of motherhood may feel reluctant to engage in sexual behavior that might result in pregnancy. Although pregnancy fears may also affect men, the fear is much greater for women because only they experience pregnancy and childbirth. Particularly before modern birth control methods were available, women may have felt more anxiety than men about engaging in premarital sexual behavior. Even today, when modern methods of birth control are available, 37% of adolescents do not regularly use contraception when they engage in intercourse (Centers for Disease Control and Prevention, 2006).

Therefore, fear of pregnancy remains a relevant concern that may contribute to gender differences in sexual behaviors.

Ineffective methods of women's sexual stimulation may also be associated with gender differences in sexuality. Sex education often focuses only on sexual intercourse, which does not provide much stimulation to the clitoris, the primary source of women's sexual pleasure. Couples may be unaware of sexual techniques that provide sufficient clitoral stimulation. Therefore, women may not be as sexually satisfied as men, for whom sexual intercourse is an adequate means of stimulation. Gender differences in sexuality may stem from both men's and women's ignorance of the female genitalia and techniques for stimulation. Education about female anatomy and various sexual techniques may enhance sexual pleasure and reduce the gender gap in sexuality (Masters & Johnson, 1979).

Low masturbation incidence among women may also lead to less sexual pleasure. Women are less likely than men to masturbate, but masturbation is an excellent source of sexual knowledge and exploration. Men and women who masturbate are more aware of their sexual anatomy and more knowledgeable about their sexual preferences than others who do not masturbate. Kinsey, Pomeroy, and Martin's (1948) data indicated that women who masturbated to orgasm before marriage were more likely to reach orgasm during intercourse with their husbands than were women who had not masturbated. Structured masturbation exercises are often used in sex therapy as an educational technique to teach women about their own bodies and preferences (McMullen & Rosen, 1979). Because men are more likely to masturbate than women are, they may be more aware of their sexual anatomy and preferences, which may translate to greater desire for sexual intercourse and higher ratings of sexual satisfaction.

Anatomical, biological, and socio-cultural factors all play a role in determining gender differences in sexuality. No single factor determines gender differences in sexuality, but rather a complex interaction of multiple factors. For example, lack of proper sex education and less awareness of the female genitalia may combine with low levels of testosterone to produce a lower sex drive in women than in men.

Transgender

Research on gender and sexuality suggests that within-gender variation exceeds between-gender variation, which results in minimal gender differences for the majority of sexual attitudes and behaviors. Transgenderism is an example of the large individual diversity of gender and sexual expression. *Transgender* is a broad term characterized by a challenge of traditional gender roles and gender identity and includes, but is not limited to, transvestites (people who dress as the other gender) and transsexuals (people who believe that their gender identity does not match their biology). Transgenderism is not associated with sexual orientation. In fact, in one survey, 87% of transvestites identified as heterosexual (Docter & Prince, 1997).

Gender dysphoric disorder is classified in the *DSM-IV* as dissatisfaction with one's gender (American Psychiatric Association, 2000). The classification of transsexuals as having a mental disorder is a controversial topic (see Volume II, Chapter 6). Many researchers believe that the anxiety associated with gender dysphoria causes significant mental distress and, therefore, should be classified and treated as a mental disorder. However, others believe that the anxiety associated with transgenderism is a problem with society's rigid gender roles rather than with the individual. For example, some cultures classify transgender individuals as a third gender, thereby treating this phenomenon as normative. Anxiety is not associated with transgendered people in societies in which transgenderism is classified as a third gender (Sell, 2001).

The primary treatment for gender dysphoria is gender reassignment. This process is multifaceted and often takes years to complete (Carroll, 2007). The first stage of this process is counseling. This step alone may last for years in an attempt to reduce the anxiety associated with gender dysphoria and to determine that the individual is transgender rather than the victim of another mental disorder. The second step in the gender reassignment process is hormone therapy. Individuals are given synthetic estrogen or testosterone to produce masculine or feminine characteristics in accordance with their preferred gender. For example, a male to female (MtF) transsexual would take estrogen to increase fat deposits on the breasts and hips and obtain a more curvy figure. The third step is to live as a member of the other gender. This includes dressing as the gender one wishes to become and identifying as that gender. The final stage of gender reassignment is surgery to produce a penis and testes for a female to male transsexual (FtM) or breasts and a vagina for MtF transsexuals. The majority of individuals who complete all steps of the process are generally satisfied with the results (Carroll, 2007).

Transgendered individuals provide a unique insight into the dynamics of gender and sexuality. They challenge the concept of duality of gender roles and rigid concepts of sexuality. Transgender individuals are an example of the variety of sexual and gendered expression that contributes to a diverse sexual culture. Researchers must recognize sexual diversity and focus on the complexity of sexual expression that cannot be explained by gender alone.

Future Direction

Since the advent of the AIDS era, sex research has received increased interest from researchers across multiple disciplines. This increased interest has been accompanied by a wide range of research to improve the understanding of gender differences and similarities in sexuality. However, sex research would benefit from several developments to improve its quality. In general sex research relies far too heavily on college students between the ages of 18 and 22. This population provides little diversity in terms of socioeconomic status, ethnicity, marital status, sexual orientation, and, of course, age. Researchers should place a greater emphasis on recruiting participants from underrepresented social, economic, and ethnic backgrounds to broaden the understanding of sexuality for all people.

In addition, research on sexuality relies heavily on self-report measures. Although self-reports are often the only method of accessing private sexual information, they may be corrupted by memory bias and social desirability effects (Alexander & Fisher, 2003). Technology has provided myriad opportunities for physiological measures such as fMRI and photoplethysmography to measure sexual arousal. Even when self-report is the only available option, modern methods such as computer-assisted interviews and daily diary reports should reduce distortion and memory bias, providing more accurate results (McAuliffe, DiFranceisco, & Reed, 2007; Morrison-Beedy, Carey, & Tu, 2006). Using multiple methods provides a technique for triangulation to validate measures and obtain the most accurate information available. Modern research on sexuality would benefit from these opportunities to develop the field and to identify consistencies and inconsistencies with traditional data collection methods.

Conclusion

The gender similarities hypothesis (Hyde, 2006) suggests that gender differences for the majority of psychological factors are minimal. Our review supports this hypothesis with findings from meta-analyses of sexual attitudes and behaviors and suggests that gender similarities in sexuality

are the rule rather than the exception. Although there are gender differences in some areas of sexuality, such as masturbation incidence and pornography use, the majority of sexual attitudes and behaviors are associated with minimal gender differences. Even when these differences do exist, socio-cultural explanations, such as differences in self-report and inequality of power, are potential explanations.

Emphasizing gender similarities in sexuality where they exist is essential for breaking down the double standard and gaining equality of sexual expression. As society becomes more sexually liberal and gender differences continue to narrow, equal opportunities for sexual expression become more realistic. Implications of gender equality in sexuality include reduced power differentials, which in turn should increase sexual self-esteem, produce fewer sexual disorders associated with performance anxiety, and reduce sexual violence.

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Part VII
Lifespan Development

Chapter 24

Gender Identity and Stereotyping in Early and Middle Childhood

May Ling Halim and Diane Ruble

Without much effort, one can easily imagine a young girl, at age 3 or 4, happily wearing a pink, frilly dress. She twirls, she dances, she skips in her dress, reveling in its femininity and flounce. In the same vein, with great ease one can imagine a small boy, a towel draped around his neck, his bony arms outstretched in fists. He imagines his muscles bulging and his strength abounding, running here and there in an attempt to fly off to combat unseen evil forces.

What can explain these gender differences in behavior? There are many different possible explanations. Some might say girls and boys come into the world this way, that DNA causes a preference for pink or an adoration of superheroes. Others may say these children simply learn from examples around them, seeking to imitate their mothers or fathers, for example. Many forces may interact, but in this chapter, we consider these behaviors through the lens of cognitive-developmental theory. Cognitive-developmental theory emphasizes a few central tenets. It emphasizes close links between gender development and children's basic cognitive development (Martin, Ruble, & Szkrybalo, 2002). It also views children as internally, self-initiated "gender detectives"—agents who actively construct the meaning of gender categories, rather than as passive recipients of external gender socialization agents. In addition, cognitive-developmental theory posits that a motivational drive to master these gender categories causes children to seek out information about their sex and to behave in accordance to what they deem appropriate gendered ways (Stangor & Ruble, 1987).

Hence, in the present chapter, we focus on the development of gender identity and gender stereotyping, two constructs that involve cognition. We first broadly define gender identity and stereotyping. Next we discuss their possible antecedents. Finally we connect gender identity and stereotyping with gender-typed behavior and preferences, adjustment, and intergroup relations in early childhood. Throughout we incorporate recent research and classic literature, and also provide examples from our own laboratory.

Gender Identity

Definition

We define gender identity as a person's sense of self as a female or male (Zucker & Bradley, 1995). In this way, gender identity serves as a social identity. Social identity theory posits that when one

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identifies with a social category, such as with girls or boys, one can relate to others in that social category. That is, even without direct contact with others in that social category, people can identify with the group (Tajfel & Turner, 1986).

Theorists have also posited that gender identities can function on two different levels, depending on what the context makes salient. Gender identity can function on an individual level, or as “me girl” or “me boy.” At other times, gender identity can function on a collective level, when children think of themselves as members of a gender group, or as “we girls” or “we boys” (Maccoby, 1998; Ruble et al., 2004). Indeed, Thoits and Virshup (1997) called this level of social identity the “we.” Most of the literature in the field has focused on the individual level of gender identity.

Understanding social categories, and that one belongs to one or more of these categories, is a major transition in children’s lives (Ruble, 1994). Moreover, categorizing others and the self in terms of gender starts early and quickly. Converging evidence suggests that gender identity may emerge between 18 and 24 months based on tacit preverbal measures of gender knowledge (see Martin et al., 2002), such as gender-typed visual preferences, recognition of labels associated with faces, and metaphoric associations with gender. Between ages 27 and 30 months, most children can accurately label their sex and place a picture of themselves among those of other same-sex children, but many children attain basic gender identity even earlier (Campbell, Shirley, & Caygill, 2002; Zosuls, Ruble, Tamis-LeMonda, Shrout, Bornstein, & Greulich, 2009). By age 5, children spontaneously categorize people by gender (Bennett, Sani, Hopkins, Agostini, & Mallucchi, 2000).

Given the early importance of forming a gender identity, one might ask what the key developmental steps entail. Kohlberg (1966) proposed that forming a gender identity necessitates understanding gender constancy. Gender constancy is related to children’s cognitive-developmental task of learning constancy and conservation in general (Piaget, 1965). In order to attain gender constancy, children must move through three stages (Slaby & Frey, 1975). First, children must accurately identify themselves and others as boys/men or girls/women. Second, children must grasp gender stability, the understanding that one’s sex remains stable over time. That is, understanding that a baby girl will become an adult woman, and a baby boy will become an adult man. Third, children must understand gender consistency, a more sophisticated level of constancy than gender stability. Gender consistency refers to the understanding that despite superficial changes, a boy will remain a boy and a girl will remain a girl. For instance, even if a boy wears a dress, he will still remain a boy. His sex remains the same.

Research has shown that, on average, children achieve full understanding of constancy at 6–7 years of age (Szkrybalo & Ruble, 1999). Other studies (e.g., Slaby & Frey, 1975) have shown that children achieve full constancy a little earlier, but methodological details may cause this difference. When interviewers use a forced-choice method to assess constancy, allowing only yes or no answers to constancy questions, children often answer correctly. But only older children can explain their answer in a way that proves genuine understanding of constancy (e.g., “You can’t change” versus “I don’t know”; Szkrybalo & Ruble, 1999) that we believe is not accounted for by age differences in verbal ability.

Multidimensionality

Centrality or importance. Along with gender constancy, theorists have outlined several other dimensions of gender identity, a conception of gender identity as a multidimensional construct. One dimension of gender identity that many psychologists converge upon is centrality, which is defined as how important gender is to the child’s overall self-concept (Ashmore, Deaux, & McLaughlin-Volpe, 2004; Luhtanen & Crocker, 1992; Sellers, Smith, Shelton, Rowley, & Chavous, 1998).

Chatman, Malanchuk, and Eccles (2003) defined centrality as implicit centrality and explicit centrality. Explicit centrality refers to the conscious appraisal of an identity element as an important or central part of the self-concept, what we consider centrality in general. Implicit centrality, on the other hand, is the extent to which a given identity is chronically accessible in an individual's everyday, normative experiences as they relate to the self. Like other implicit constructs, it may be helpful to think of implicit centrality as more automatic, more efficient, less controllable, and less intentional than explicit centrality (Nosek, 2007). To our knowledge, researchers have not yet directly examined implicit gender centrality in young children. However, we speculate that a distinction between implicit and explicit gender centrality may not emerge until age 7 or 8. At earlier ages we speculate that explicit versus implicit levels of centrality would largely overlap. Often when very young children respond to questions about explicit gender centrality, they do so without hesitation and with great gusto, in an almost automatic fashion. Also, children may have a greater capacity for self-reflection at this age (Harter, 1998). Other research has provided evidence for stable and distinct implicit evaluative attitudes in children ages 6–11 in regard to racial attitudes (Dunham, Baron, & Banaji, 2006; Sinclair, Dunn, & Lowery, 2005; Turner, Hewstone, & Voci, 2007), age 10 in regard to gender attitudes (Skowronski & Lawrence, 2001), and ages 9–18 in regard to weight and thinness (Craeynest et al., 2005; Craeynest, Crombez, Deforche, Tanghe, & De Bourdeaudhuij, 2008).

Another theorized dimension of identity relates to centrality in a state rather than a trait, stable or chronic form. Sellers et al. (1998) proposed the dimension of salience, which refers to the extent to which one's group identity is a relevant part of one's self-concept at a particular moment or in a particular situation. This dimension of salience was explicitly proposed to describe the unique identity of the African American experience. To date, little research on gender identity in early childhood has taken into account salience as a key dimension. However, one could imagine in certain contexts, such as when a boy sits among a group of girls (e.g., McGuire, McGuire, Child, & Fujioka, 1978), or when children choose a costume in a Halloween store full of Cinderella gowns and Spiderman suits, gender could become more important to a child's identity at that moment than it is at other times. In fact, one recent study showed the fluidity of gender identity centrality. Turner and Brown (2007) showed in a multicultural sample of 5- to 7-year-olds that, after reading about a same-sex individual being excluded from an activity because of his or her sex, the centrality of gender decreased, but only for girls, and only for girls with average levels of centrality. Girls with very low or very high levels of centrality were unaffected by reading about these scenarios.

Evaluation or regard. Another key dimension of gender identity is evaluation of or regard for one's gender group. To borrow from Sellers et al. (1998), regard refers to a child's affective and evaluative judgment of his or her gender group in terms of positive–negative valence. Scholars have separated regard into two components—private regard and public regard (Ashmore et al., 2004; Crocker, Luhtanen, Blaine, & Broadnax, 1994; Luhtanen & Crocker, 1992; Sellers et al., 1998; Shelton & Sellers, 2000).

Private regard is the evaluation of one's gender group as judged by the self. It is a child's personal feelings about her or his gender group. Egan and Perry's (2001) proposed dimension of gender contentedness relates to private regard, that is, feelings of contentment with one's own gender. On the other hand, public regard is a child's judgment of how other people evaluate that child's gender.

The developmental literature has focused more attention on private regard of one's gender in early childhood than on public regard. To our knowledge, no one has yet directly examined these two separate constructs together for gender identity in young children. In fact, most research on public and private regard has focused on racial or ethnic identity.

Other dimensions. Several theorists have proposed additional dimensions of gender identity. Luhtanen and Crocker's (1992) scale of collective identities, in general, distinguished membership esteem as a dimension. They defined membership esteem as involving judgments of how good or

worthy one is as a member of one's social groups in general. If we apply this to gender identity, membership esteem would be how good or worthy children feel as girls or boys.

Egan and Perry (2001) included felt typicality in their model of gender identity and adjustment. Felt typicality includes self-perceptions of gender typicality. Moreover, they considered felt typicality as a continuous dimension, applicable to the general population, and not only to children diagnosed with gender identity disorder. This dimension is thought to remain relatively stable over time—if a boy feels atypical right at this instant, he is likely to feel atypical several weeks, months, and possibly years from now.

Another dimension of Egan and Perry's (2001) model includes felt pressure for gender conformity. They defined this as the degree to which children feel compelled to engage in gender-congruent conduct. Pressure to conform to gender-congruent conduct can come from parents, peers, the media, and other socializing agents. They also included intergroup attitudes as an additional dimension of identity. They noted that children often consider their own sex as superior to the other, so the model includes an assessment of ingroup favoritism. The items in the Intergroup Bias Scale connect to the dimension of private regard, at least for one's own gender group. Intergroup bias can be viewed as personal attitudes toward the other gender group. The scale's items compare girls and boys, asking which group the child considers to be more like certain traits (e.g., truthful, friendly, annoying, lazy).

Most studies of Egan and Perry's (2001) model have focused on children in middle childhood and preadolescence (Carver, Egan, & Perry, 2004; Corby, Hodges, & Perry, 2007). However, research suggests that the model's dimensions may readily apply to young children as well. Some of the dimensions overlap with others already assessed in young children, such as knowledge of group membership, gender contentedness, and intergroup attitudes. A few researchers have looked at these dimensions in relation to self-esteem, which we discuss later in this chapter. Furthermore, no one has specifically and directly looked at gender membership esteem in young children. Thus, we have little knowledge about the levels of these dimensions, the variability of these dimensions, and the applicability of these dimensions in early childhood.

Individual Differences and Variation

Research designed to compare boys' and girls' gender identity has shown mixed results. On one hand, some researchers have found that, at least in middle childhood, boys have higher levels of certain components of gender identity than girls have. Specifically, data have shown that boys have higher levels of gender typicality, gender contentedness, and felt pressure than girls have (Egan & Perry, 2001). On the other hand, some research has shown that girls, in fact, have higher levels of gender centrality than boys have (Turner & Brown, 2007; Verkuyten & Thijs, 2001). We speculate that these discrepancies may have to do with age and cultural differences. Egan and Perry (2001) examined 4th through 8th graders, and the majority was European American, whereas Turner and Brown (2007) studied a wider range of children (5–12 years of age), and three-quarters of them were ethnic minorities. But if these findings are taken at face value, we speculate that the discrepancies point to the multidimensional nature of gender identity. Perhaps boys do have higher levels on some dimensions, whereas girls have higher levels on other dimensions. More research is needed to resolve the issue.

Maccoby (1998) hypothesized that boys have a stronger sense of collective gender identity; that is, membership in the boy group is salient to the boys much more often than membership in the girl group is for girls. She hypothesized that girls perceive boys as part of "those boys," whereas boys see girls in terms of their individual female identities. Her thinking parallels observational

data, which shows that girls often play in dyads or triads, whereas boys more often play in large groups (Maccoby, 2002). Maccoby's (1998) hypothesis is also intriguing given the recent findings in the general social psychological literature on gender differences in the construal of the self. A few insightful studies (Baumeister & Sommer, 1997; Gabriel & Gardner, 1999) show that both men and women construe their selves interdependently, or relationally, but in different ways. Men's interdependent self relies on a larger collective group, whereas women's interdependent self relies on a smaller set of close relationships.

Besides differences in gender identity between girls and boys, we can also consider differences in gender identity between ethnic groups. Unfortunately, the field lacks much research in this area. However, one study showed that European American children in the U.S. considered gender to be more central to their self-concepts than ethnicity, whereas ethnic minority children considered gender and ethnicity to be equally central (Turner & Brown, 2007). Even among adults, only a few researchers have examined gender identity in different ethnic or racial groups. Moore (2004) found that gender identity was more salient in Arab women than in Jewish women. In addition, Arab women associated a salient gender identity as moving toward traditional gender roles, whereas Jewish women associated a salient gender identity as pulling away from traditional gender roles. Harris (1996) examined gender-typed self-descriptions in African American and European American adults with data from a modified version of the Bem Sex-Role Inventory. His results showed that African Americans described themselves in a more androgynous way than European Americans did. Together these studies suggest that gender identity may vary depending on ethnicity, but more research in this area is needed.

A small amount of research has shown differences in gender identity for children questioning their heterosexuality. Carver et al. (2004) applied Egan and Perry's (2001) model of gender identity and adjustment to preadolescents. They found that, regardless of age, questioning children reported fewer gender-typed attributes, a greater sense of feeling different from same-sex others, and less satisfaction with their gender assignment than non-questioning children did. Their results also suggest that questioning one's heterosexuality causes distress, in contrast to the hypothesis that experiencing distress can cause one to question one's heterosexuality. Thus, although the literature on differences in gender identity among sex, ethnic, and sexual orientation groups is growing, there is a need for more research on these topics, especially in early childhood.

Summary

Gender identity is a child's sense of self as a girl or boy. Understanding gender constancy and being able to label the self and others in terms of gender are important steps in achieving gender identity. Moreover, gender identity is multidimensional, and its components vary according to gender, ethnicity, and sexual orientation.

Gender Stereotyping

Gender stereotyping emerges hand in hand with the development of gender identity in early childhood. In this section we first discuss the definition of stereotypes and distinguish between types of stereotyping, then describe the content of those gender stereotypes. Next, we discuss the developmental trajectory of stereotyping. Finally, we discuss possible antecedents of gender stereotyping.

Definition

We define stereotypes here as a set of beliefs about the characteristics or attributes of a group (Judd & Park, 1993). These beliefs distinguish a particular group from other groups by describing differences among groups. Gender stereotypes are beliefs about the characteristics or attributes of men and women, boys and girls. Almost all children become aware of gender stereotypes regardless of family attitudes or values because the mass media and peer interactions, especially at school, expose most children to messages about gender (Maccoby, 2002; Martin & Fabes, 2001).

What kind of gender stereotypes do young children hold? By around 26 months children become most aware of gender differences associated with adults—adult possessions, physical appearance, roles, and abstract characteristics such as softness. At around 31 or 32 months of age, children show awareness of stereotypes about children’s toys (Ruble & Martin, 1998). Later on, at around 5 years, children start to exhibit gender stereotype knowledge about traits or attributes such as “gentle” or “adventurous” (Powlishta, Sen, Serbin, Poulin-Dubois, & Eichstedt, 2001).

Recently, researchers have discovered certain themes of masculine and feminine stereotypes (Miller, Lurye, Zosuls, & Ruble, 2009). When spontaneously describing what girls and boys are like, children describe girls largely in appearance-related terms. This includes things such as dresses, jewelry, hair, make-up, and perfume. In contrast, when spontaneously describing what boys are like, children describe boys largely in activity or behavior-related terms. This includes descriptions such as hitting, wrestling, rough-and-tumble play, and action fantasy play. Thus, already at a young age, girls are what they look like, whereas boys are what they do. Indeed, in a recent study of parent–child narratives, conversations with sons more often included “action-based” activities, whereas conversations with daughters more often included mentions of physical appearance (Cristofaro & Tamis-LeMonda, 2008).

In addition, recent research has shown that young children readily associate deontic properties with social categories in general (Kalish & Lawson, 2008). Deontic properties are rights, duties, permissions, and obligations of members of a social category. In this particular study, young children readily interpreted behaviors and social categories deontically. For example, children may say that a girl “has to” play with dolls, which is a deontic property, in contrast to saying that a girl “usually” plays with dolls or “likes” to play with dolls. Moreover, this study showed that children interpret even novel behaviors and novel social categories deontically.

It is important to note that the nature of the content of these gender stereotypes can vary depending on the specific comparison group. For example, when contrasted to girls, 5- to 7-year-old boys described boys as brave, big, and strong, (Sani & Bennett, 2001; Sani, Bennett, Mullally, & MacPherson, 2003). In comparison, when contrasted to adult men, these boys described boys as loud and talkative. More recent work extends how the comparative context can affect children’s gender stereotypes about behaviors in addition to traits (Bennett & Sani, 2008). For example, girls in a condition that first judged boys and then girls thought girls would like dressing up more and thought more girls would like dressing up in general than girls did in a condition that first judged women and then girls.

Developmental Trajectory

A meta-analysis of developmental studies of stereotype knowledge suggests that gender stereotypes are well developed by the end of preschool (Signorella, Bigler, & Liben, 1993). However, the first question one might ask is: When does gender stereotyping begin? Traditionally, psychologists have

pointed to about age 30 months as the time when children acquire gender stereotypes for toys, clothing, tools, household objects, games, and work (Huston, 1983, 1985; Ruble & Martin, 1998). However, recent research suggests that children start to develop gender stereotypes at an even earlier age (Martin et al., 2002; Miller, Trautner, & Ruble, 2006; Powlishta et al., 2001). Nonverbal “looking time” tasks have shown that even younger infants have some knowledge of activities and objects associated with each gender. Girls aged 18–24 months matched gender-typed toys with the face of a boy or girl (Serbin, Poulin-Dubois, Colburne, Sen, & Eichstedt, 2001). Two-year-olds paid more attention to gender-inconsistent pictures, for example, a man putting on make-up (Serbin, Poulin-Dubois, & Eichstedt, 2002).

What path does gender stereotyping take after early childhood? That is, does gender stereotyping have a ceiling or a peak? Or does it continue through middle childhood? Does flexibility ever occur? Findings have been mixed. Some studies suggest that gender stereotyping remains strong in middle childhood (e.g., Martin, 1989; Serbin, Powlishta, & Gulko, 1993; Signorella et al., 1993).

Other studies have suggested that gender stereotyping and beliefs become more flexible in middle childhood (Carter & Patterson, 1982; Marantz & Mansfield, 1977; Urberg, 1982). For example, a recent study showed that, for most children, gender attitudes declined in traditionalism from middle childhood to adolescence (Crouter, Whiteman, McHale, & Osgood, 2007). In longitudinal studies, researchers have found that, in children aged 5–10 years, the period of rigid gender stereotypes was short-lived and followed by greater flexibility (Miller et al., 2006; Trautner et al., 2005). That is, children reached peak rigidity by age 5–6 and then showed a dramatic increase in flexibility 2 years later, at age 7–8. One interesting study suggests that flexibility in stereotyping reaches a ceiling at some point during middle elementary school (Blakemore, 2003).

One possible explanation for these discrepancies may have to do with distinguishing cultural knowledge from personal beliefs in stereotypes. Answers to who can or should do which type of activities do get more flexible in middle childhood, especially for girls (Katz & Ksanskak, 1994; Serbin et al., 1993). Stereotype knowledge increases between the ages of 5 and 11–12, and personal endorsement of stereotypes declines after age 6–7 (Signorella et al., 1993). Ingroup bias also typically declines after age 4–5 (Heyman & Legare, 2004; Powlishta, Serbin, Doyle, & White, 1994). Similarly, recent research has shown that reasoning biases that favor one’s own gender decline between the ages of 7 and 11 (Klaczynski & Aneja, 2002).

A dual process model can provide a useful perspective. Martin (1989) posited that, as they get older, children are more likely to use individuating information and to rely less on gender stereotypes when making predictions of how stereotypic an individual would be. However, older children may also be more likely to perceive girls and boys as very different. Thus, as children get older, they have a greater understanding that masculinity can be separated from being a boy and femininity from being a girl. That is, they better recognize variability within groups and subtyping. However, they may also continue to distinguish the sexes in new domains that expand the breadth of their stereotypic knowledge. In sum, it appears that children’s knowledge of stereotypes continues to increase, but their acceptance of stereotypes as inflexible or morally “right” decreases after about 7 years of age (Huston, 1983, 1985; Ruble & Martin, 1998; Ruble, Martin, & Berenbaum, 2006).

Are there individual differences in the developmental trajectory of gender stereotyping and flexibility? Do some children peak and then wane, whereas others remain constant, or do others continually increase and then drop off? One longitudinal study explored whether early individual differences in rigidity continue into later childhood (Miller et al., 2006; Trautner et al., 2005). Results showed that those children who reached peak rigidity at an earlier age reached flexibility earlier as well, whereas children who reached peak rigidity later also reached flexibility later. Differences in levels of flexibility disappeared by age 8. Lurye, Zosuls, and Ruble (2008) also showed that, for older children aged 5–7, rigidity in gender roles at one point in time positively predicted rigidity in gender

roles 3–6 years later. However for younger children ages 3–4, rigidity in gender roles failed to predict rigidity several years later. This suggests that individual differences become more apparent with time, as variability in rigidity increases as children get older. Further longitudinal work is needed on the developmental trajectory of gender stereotyping, perhaps studies that might connect individual differences in trajectories with adjustment, or follow children into adolescence and adulthood to examine rigidity of gender stereotypes at later ages.

Research has also shown differences between gender groups in gender stereotyping. Some studies suggest that girls have greater stereotype knowledge than boys do during preschool and later on. Girls also show greater flexibility in their personal acceptance of gender stereotypes than boys do (Miller et al., 2009; O'Brien, Mistry, Hruda, Caldera, & Huston, 2000; Signorella et al., 1993).

Finally, individual differences in cultural context can affect developmental trajectories of stereotyping. Consistent with prior research, a recent study showed that, regardless of cultural context, young children consider gender groups as natural kinds that stem from natural categories found in the world (Rhodes & Gelman, 2009). Thus, when asked whether a boy and a girl are the same kind of people, the overwhelming response in young children was “no.” However, 10- and 17-year-olds responded differently depending on cultural context. Older children from a mid-sized city became much more flexible in their responding; they were more likely to say “yes,” girls and boys are the same kind of people. In contrast, older children from a rural community were much more likely to respond that girls and boys are different kinds of people.

Summary

Gender stereotypes are beliefs about the characteristics or attributes of men and women that distinguish the two gender groups from each other. Like gender identity, the development of gender stereotype knowledge starts early. Almost all children become aware of gender stereotypes, which are well formed by the time they finish preschool. Gender stereotypes hold together a wide-flung web of associations between gender and all different kinds of domains. Personal belief in gender stereotypes as to who should do what reaches peak rigidity at around 5 years of age and then becomes more flexible later on. And finally, individual, as well as group, differences do occur in the timing of the development of gender stereotyping.

Possible Antecedents of Gender Identity and Stereotyping

Thus far we have discussed gender identity and stereotyping separately; however, these two constructs often share similarities. For example, the emergence of gender identity and stereotyping may share certain antecedents. What are these antecedents? As we come from a cognitive-developmental perspective, we choose to focus on a few broad areas: cognitive development, perceptual distinctions and categorical membership, and essentialism. In addition, we review some literature on parent, peer, and sociocultural influences on gender identity and stereotyping.

Cognitive Development

Kohlberg's (1966) cognitive-developmental theory proposes that age-related changes in cognitive structures affect the emergence of gender identity. To form his theory, he took into account Piaget's

(1965) experiments, which show that an important developmental feat involves understanding the concrete-operational concept of conservation of physical properties. However, Kohlberg expanded Piaget's concept of conservation beyond the physical to the social domain (Emmerich, 1982) by proposing gender constancy, the understanding that a person's sex remains the same over time and across superficial transformations, as a cognitive-developmental feat.

Does understanding gender constancy precede gender stereotyping? That is, is the cognitive understanding that sex is constant a requisite for children to start gender stereotyping? Kohlberg hypothesized that learning of gender's permanence motivates children to attend to gender-related information more vigilantly and to master gender-typical behaviors and attitudes. In other words, achievement of gender identity would motivate the observance and mastery of gender-stereotyped behaviors and attitudes. However, results of empirical research remain controversial. Some studies show that gender constancy does predict gender stereotyping; other studies show no such relation.

One explanation for these mixed results is that these studies assessed gender constancy in different ways. Some studies assessed gender constancy as the understanding of gender stability alone. Others assessed gender constancy as the understanding of gender stability and gender consistency. Data suggest that children's understanding of stability mediates increases in stereotypic knowledge in young children (Ruble, Taylor et al., 2007). Psychologists have theorized that, because of greater attention and responsiveness to gender-related information, attainment of gender stability does not initiate gender stereotyping, but magnifies or amplifies it (Frey & Ruble, 1992; Stangor & Ruble, 1987). In contrast, a full understanding of constancy may lead to decreases, rather than increases in gender stereotyping (Marcus & Overton, 1978; Ruble, Taylor et al., 2007). Indeed, in a recent study, full constancy understanding mediated decreases with age in the rigidity of children's gender-related beliefs and attitudes (Ruble, Taylor et al., 2007).

What other cognitive developments might influence gender stereotyping? In addition to constancy, researchers have examined the role of children's level of classification skills. Piaget (1965) showed that young children have difficulty simultaneously categorizing people or objects along two or more dimensions. Psychologists have theorized that such classification limitations might relate to children's gender stereotyping (Katz, 1983; Liben & Bigler, 1987; Martin, Wood, & Little, 1990; Trautner, Helbing, Sahm, & Lohaus, 1989). For example, Bigler (1995) conducted a study to examine classification skills and gender stereotyping in children ages 6–10. She hypothesized that if a child has difficulty understanding that the same person can belong to more than one category simultaneously, the child may be particularly likely to develop rigid and extensive gender-stereotypic beliefs. In contrast, if a child has acquired multiple classification skill, the child should not necessarily develop more stereotypic beliefs because he or she can characterize individuals along multiple dimensions. She also examined the interaction of the environment and classification skills on gender stereotyping. She showed that among children with less advanced classification skills, those placed in a classroom that made functional use of gender showed greater gender stereotyping as to who should perform what occupational roles than did those in a control classroom. However, children of the same ages with advanced classification skills did not exhibit this pattern. This study is important because it shows that cognitive development does have a relationship to gender stereotyping and that cognitive development can also interact with the environment to affect gender stereotyping.

In a related study, Bigler and Liben (1992) did not simply measure classification skills, they experimentally these skills by training some 5–10-year-old children in multiple classification skills. Children trained in multiple classification skills showed more egalitarian responses to a subsequent measure of gender stereotyping and superior memory for counterstereotypic information embedded in stories than children in a control condition did. Again, in this study, the experimenters

assessed gender stereotyping by asking children who should perform certain occupational roles, an assessment of personal acceptance rather than of knowledge. No age interactions were found between older and younger children on the gender stereotyping and memory measures.

Perceptual Distinctions of Gender Categories

Children's ability to perceive distinctions between male and female attributes is a critical component of gender identity. Recent research has shown that by age 1, most infants can categorize individuals by gender (Quinn, Yahr, Kuhn, Slater, & Pascalis, 2002). Even earlier, infants can distinguish the voices of women and men at 6 months, and most can discriminate between photographs of men and women at 9 months. In addition, infants associate women's and men's photographs and their voices at around ages 11–14 months. These results suggest that very early on, even before they can verbally label people by sex, children use perceptual categories that distinguish the sexes (see Martin et al., 2002). These studies show that by a very young age, children are capable of gender category distinctions, a pre-requisite to gender identity.

Conceptual Distinctions of Gender Categories and Labeling

In addition to distinguishing gender categories through physical perception, children soon distinguish gender categories conceptually as well. Like perceptual distinctions, conceptual distinctions are a critical component of gender identity. Developmental psychologists assess the understanding of conceptual gender categories by presenting pictures of boys and girls and men and women and asking children to identify and discriminate the pictures. Fagot, Leinbach, and Hagan (1986) showed that the mean age for children to do this gender labeling task correctly was about 30 months. By age 3 virtually all children can sort photographs on the basis of sex (Leinbach & Fagot, 1986; Thompson, 1975; Weinraub et al., 1984). In addition to the ability to categorize others by sex, children learn to label themselves accurately by sex. Researchers have shown that children can label their own sex by approximately 24–36 months, but children vary a lot in timing (Ruble & Martin, 1998).

Recent research has pointed to the possibility of an earlier time point for both self- and other-labeling. Zosuls et al. (2009) interviewed mothers periodically. They asked the mothers about their children's spontaneous and completely understood uses of the verbal labels girl or boy, male or female, and woman or man. They showed that 70% of parents reported that their children were able to use and understand at least one gender label by 22 months of age.

Parent and Sociocultural Influences

The way parents socialize their children can also affect children's development of gender identity and stereotypes and perhaps bring about individual differences. First, parents can affect children's gender identities. Remember that the ability to label people by gender is an important component of gender identity and signifies a conceptual understanding of gender categories. Fagot and Leinbach (1989) showed that parents who gave positive feedback to same-gender-typed toy play and gave negative feedback to cross-gender-typed toy play for their children were more likely to have a child who could label girls and boys earlier than average. In another study, Fagot, Leinbach, and O'Boyle

(1992) showed that mothers who endorsed more traditional attitudes toward women and gender roles within the family tended to have children who mastered the gender labeling task at ages 24–36 months. Finally, Fagot and Leinbach (1995) showed that children of more egalitarian families, in which fathers had more egalitarian beliefs and reported sharing parenting responsibilities equally with their spouses, mastered the gender labeling task later, on average, than did children from more traditional families. In sum, these studies show that parents can influence the timing of their child's development of a gender identity.

The same Fagot and Leinbach (1995) study showed parents' influence on children's gender stereotyping. Children of egalitarian families showed less gender stereotype knowledge at age 4 than did children of more traditional families. The authors pointed out that fathers, in particular, may strongly influence children's development of gender stereotyping because the mothers in both types of families exhibited similar attitudes and behaviors. Thus, parents can also affect the development of gender stereotype knowledge.

How do parents communicate gender stereotype content to their children? Narratives, or talking about personal experiences, can affect what children learn about gender. In a study of low-income Puerto Rican, Mexican, and Dominican immigrant families, researchers showed that conversations with sons contained more action-based activities than conversations with daughters did (Cristofaro & Tamis-LeMonda, 2008). Conversations with daughters included references to physical appearance more than conversations with sons did. Parents also communicated expectations of appropriate emotions; they subtly hinted that girls can be scared, but boys should not be. Parents also may communicate that there are essential differences in women and men in their actual language—through use of gender generics, such as “boys” or “ladies.” These terms refer to entire gender groups, which may teach children that men/boys and women/girls differ in significant and nonobvious ways (Gelman, Taylor, & Nguyen, 2004).

Society at large can also affect children's knowledge of and use of gender stereotypes. For example, considerable research suggests that television, and the media in general, affect children's knowledge of and use of gender stereotypes. Despite attempts at change over the past few decades, the media still convey stereotypic messages that teach and reinforce traditional gender roles (Ruble et al., 2006). In particular, the media seldom show boys with feminine traits (Evans & Davies, 2000). Even when authors of children's literature choose equal amounts of male and female main characters, the books include fewer illustrations of girls and women (Gooden & Gooden, 2001). In a recent study of children's books, there were nearly twice as many male as female main characters (Hamilton, Anderson, Broaddus, & Young, 2006). In addition, a content analysis of commercials directed toward children revealed that men and boys were more likely than women and girls to be portrayed playing a major role, having active movement in an individual activity, and being in an occupational setting (Davis, 2003).

This persistent under-representation in the media can convey a message of devaluation to girls. Most studies about the media's effects on children's learning of gender stereotypes are correlational, so it is difficult to disentangle whether exposure to media causes increased gender stereotyping, or whether children who already hold these stereotypes seek out media consistent with their beliefs (Ruble et al., 2006). However, a longitudinal study showed that viewing television early in life affected gender stereotyping later in life. Media with messages counter to gender-typed norms viewed during the preschool years particularly had effects in adolescence (Anderson, Huston, Schmitt, Linebarger, & Wright, 2001). In addition, in a natural experiment in Canada, children in a town without television were found to hold less traditional gender attitudes than their counterparts in a town with television. After television came to their town, the children's gender attitudes had increased in traditionalism 2 years later (Kimball, 1986).

Essentialism

Growing research on essentialism also points to its influence on both gender identity and stereotyping. Broadly, essentialism is the belief that certain characteristics (of individuals or categories) are relatively stable, likely to be present at birth, and biologically based (Gelman, Heyman, & Legare, 2007). Essentialism is the view that certain categories, such as gender, have an underlying reality or true nature that one cannot observe directly but that gives an object its identity. Essentialism is also responsible for inferences about other similarities that category members share (Medin & Ortony, 1989).

Medin and Ortony (1989) theorized that essentialism is a “placeholder.” A child can believe that a category possesses an essence without knowing what exactly the essence is, and this absence of knowledge makes many features of the category mysterious. For example, a child might believe that men and women, and boys and girls, possess serious, invisible differences, but have no idea and no way to talk about those exact differences. Thus, essentialism of categories permits ample inductive inferences; correspondingly, essentialism has implications for stereotyping, as we discuss later.

Research has shown that children use essentialism as a reasoning heuristic and that they indeed essentialize the social category of gender (Gelman, 2004; Gelman, Collman, & Maccoby, 1986; Gelman & Taylor, 2000; Taylor, 1996). In one study, an experimenter taught preschool children new properties for specific boys and girls, such as the presence of “andro” or “estro” in their blood (Gelman et al., 1986). Then the experimenter presented children with a drawing of a new boy or girl, but with an atypical appearance, such as a boy with long hair. Children inferred that the new boy would have “andro” in his blood and that the new girl would have “estro” in her blood. The majority of children’s inferences relied on category membership and ignored conflicting perceptual information.

Young children also believe that an infant will develop personality traits associated with her or his gender category regardless of the immediate environment (Taylor, 1996). For example, experimenters told children to imagine girl babies raised on an island populated by boys and men. Then experimenters asked children to predict how these girl babies would grow up and whether they would exhibit gender-stereotyped attributes. On average, preschool children’s answers relied more on innate potential than on environmental influences.

Young children also use category-based reasoning to predict the consistency of an individual’s preferences and fears. Normally, in contrast to how adults respond, young children respond at chance level regarding consistency in an individual’s preferences over time (Kalish, 2002; Kalish & Shiverick, 2004; Lawson & Kalish, 2006). Hence, after learning that a girl likes chocolate chip cookies, one-half of the time children predict that she will like chocolate chip cookies in the future, and one-half of the time they predict that she will not like the cookies in the future. However, given the chance to make an inference that this cookie-eating habit might be due to her gender, children often grab this chance and predict consistency, whereas before they did not (Rhodes & Gelman, 2008). That is, in a certain condition researchers told children that a girl and a boy each went “bemming” and “spouding,” novel activities created with nonsense words. Then they told children that the boy liked bemming and the girl liked spouding. After that, they asked the child to predict future preferences. When the pair of children in the story were both boys or both girls, children responded at chance level, sometimes predicting consistency, sometimes not. However, when presented with a girl and a boy who like different activities, or are afraid of different objects, children robustly predicted consistency.

In a study of adults, Prentice and Miller (2006) showed that category essence can constrain not just what category members are, but also what they become. To illustrate the enormous inductive potential and possibility to affect what category members become, Prentice and Miller (2006) used the classic overestimator/underestimator social psychological paradigm with a sample of male and

female undergraduates. Participants in cross-sex pairs took a perceptual test to estimate the number of dots on a screen. The experimenter then gave them false feedback on whether they were consistently an “overestimator” or an “underestimator” in their ability to count the dots on the screen. Depending on the condition, the experimenter told the participant that their other-sex partner in the experiment either had the same estimating style, had a different estimating style (e.g., a woman told that she was an “overestimator” found out that her male partner was an “underestimator”), or else gave them no information on estimating style. Those in the condition where the other-sex partner had a different style than their own made stronger inductive inferences about perceptual style and gender. Moreover, when they induced that it was a “sex difference,” participants in the different-style condition treated their perceptual style as if it were stable. They showed no tendency to correct for it in order to be more accurate on the second test, whereas the same-style participants did try to correct. Prentice and Miller further emphasized that, in this experiment, there was only a difference between just one man and one woman, which can be seen as the most minimal evidence of category covariation. Yet, this minimal evidence was sufficient to trigger gender essentialist thinking about perceptual style.

Similarly, after learning that another child had performed better on a novel drawing task, preschool children improved less on the drawing task when they also learned that the better-performing child was a member of the other sex than they did if the better-performing child was of the same sex, or if they received no information about sex (Rhodes & Brickman, 2008). The researchers proposed that, in the other-sex condition, preschool children assumed that gender caused differences in drawing task performance. Because preschoolers also assume that gender differences remain highly stable across time and situations, the children lacked motivation to improve. Assumptions of stable gender differences in drawing task abilities also affected self-evaluations, as children in the other-sex condition had the lowest self-evaluations.

These studies of essentialism together emphasize just how salient gender is to young children. Moreover, they emphasize how minimal information need be to spur category-based reasoning along the lines of gender. They also speak to the widespread impact category-based reasoning can have on all kinds of dimensions, from predicting dispositional consistency to performance on tasks.

Summary

Many different factors influence or precede children’s development of gender identity and stereotyping. Some factors, such as perceptual and conceptual distinctions of gender categories clearly form the building blocks of gender identities. Others, such as general cognitive development remain controversial in terms of what effects they have on gender identity and stereotyping. Although gender constancy is a critical component of gender identity, results vary on whether gender constancy is critical for gender stereotyping. Parent and sociocultural influences, as well, can predict the timing of gender identity development and the degree of stereotype knowledge and use. Finally, research on essentialism does not so much predict gender identity or stereotyping development; it elucidates why gender categories, and hence gender identity, may be so salient to children and why young children may be so quick to stereotype by gender.

Possible Consequences of Gender Identity and Stereotyping

We have primarily examined gender development in early childhood from a cognitive-developmental perspective. However, it is important to recognize other cognitive theories of gender development,

such as gender schema theory, which defines gender schemas as mental networks of interrelated associations that represent information about both genders (Bem, 1981; Liben & Signorella, 1980; Marcus, Crane, Bernstein, & Siladi, 1982; Martin & Halverson, 1981). Gender schemas are dynamic knowledge representations, which change in response to situations and age. Like cognitive-developmental theory, gender schema theory views children as active constructors of their individual gender schemas. Thus gender schemas are prone to errors and distortions, and vary with culture and with individual social experiences and preferences. In addition, other cognitive theories, such as social identity theory and self-categorization theory, focus on the categorization of individuals into gender groups and on identification with those collective categories of gender.

What do these cognitive theories have in common? Together, these theories hypothesize that gender cognitions organize and interpret information and provide the standards that guide behavior. These theories also view children as active seekers and constructors of gender, which is why the cognitive theories are often grouped together as “self-socialization” theories. We use “self-socialization” interchangeably with cognitive-developmental theories in this chapter. Finally, these cognitive approaches focus on increases and decreases in gender knowledge and its use and implications for behavior (Martin et al., 2002).

The possible consequences of gender cognitions have long elicited controversy. Are there clear links between how a child thinks and how that child behaves? Can a child’s gender identity or gender stereotype knowledge actually cause certain behaviors and preferences? Some psychologists have raised concerns about the overemphasis on cognitive factors in gender development (Bussey & Bandura, 1999). Also, other researchers have suggested that the evidence fails to show associations between gender cognitions and behavior. We first discuss possible consequences of gender identity and then possible consequences of gender stereotyping.

Possible Consequences of Gender Identity

What are the possible consequences of gender identity? Do gender identities, which can, in some ways, be viewed as gender cognitions, have any links to behavior? In this section, we first examine whether links exist between gender identity and behavior and preferences. Then we look more closely at a specific behavior and preference that psychologists have observed with great interest—that of sex segregation. We also discuss gender identity’s links to attention and memory to get more at the mechanisms of how cognition might affect behaviors and preferences. Finally, we discuss whether gender identity affects children’s adjustment and intergroup relations.

Identity and behavior and preferences. When we see young girls with bows in their hair and a burst of flowers all over their dresses, or when we observe boys proudly displaying the latest Spiderman T-shirt, what do we make of this? Do the way children choose to dress and their preferences for certain items reflect differences in gender identity?

In this section we first discuss a phenomenon that has recently caught our attention. As noted earlier, self-socialization theories of gender development portray children as “gender detectives” who actively construct their own interpretation of what gender means and how it applies to them (Martin & Ruble, 2004; Martin et al., 2002). As children begin to identify with their gender, they increasingly view gender as a central and positive aspect of themselves (Ruble, Taylor et al., 2007). One way girls, in particular, may display and embrace their new identities is by donning gender-typed clothing—namely, pink, frilly dresses, or “PFD.”

Based on informal observation and anecdotal evidence, previous researchers have described an intriguing phenomenon—a proportion of girls appear to pass through a stage when they refuse to

go out unless they are wearing something very feminine, often pink, frilly dresses (Ruble, Lurye, & Zosuls, 2007). The intensity of these desires, and the extremity with which they are expressed despite great inconvenience, surprise many. For example, some parents report having arguments with their daughters about wearing dresses in below-freezing weather. They often compromise by wearing thick leggings beneath their dress. Other parents report an unending parade of pink clothing worn day to day, which, when interrupted by practical reasons, such as a void of clean pink clothing, leads to a tantrum. Recent work has shown that the majority of children who have strong obsessions at one point or another tend to be boys (DeLoache, Simcock, & Macari, 2007) obsessed with things such as dinosaurs or trains. We speculate that perhaps PFD is an untapped obsession of girls.

To study this phenomenon we first documented PFD to find out how prevalent it is and at what age girls show it (Halim, Ruble, Murphy, Greulich, & Zosuls, 2009). We also wanted to explore whether a parallel phenomenon occurs with boys. We then examined whether PFD, a gender-stereotyped behavior, was associated with gender identity along the dimensions of centrality and gender stability.

Thus, as part of a larger study on gender development, 76 parents of 3–7-year-old children (39 girls, 37 boys) were interviewed to assess the prevalence of PFD and the nature of it. PFD was measured based on parents' reports of children's insistence on wearing gender-typed clothing. Three independent judges coded responses. Furthermore, in interviews with the children, two aspects of gender identity were assessed: (i) centrality and evaluation, and (ii) gender constancy in terms of stability.

First, results of analyses of PFD data show that more than one-half of the girls had exhibited PFD, and it was especially prevalent among 3–4-year olds. On the other hand, about one-quarter of the girls had never exhibited PFD. These data suggest that PFD is a real phenomenon that is quite prevalent.

The boys' data were a mirror image of the girls'. About one-quarter of the boys had displayed a masculine version of PFD (mainly the avoidance of feminine clothing and colors, but also the wearing of suits and ties and the donning of superhero costumes). On the other hand, about one-half of the boys had never gone through a phase of clothing rigidity. In contrast to the findings for girls, clothing rigidity was more frequent among older than younger boys, namely among 5- and 6-year olds. These results suggest that a similar manifestation of PFD does exist for some boys, but it is less common. This asymmetry may relate to findings that appearances are particularly relevant for girls (Miller et al., 2009). Also, the age differences between boys and girls may reflect a general pattern in the literature that boys often lag behind girls in gender development (Ruble et al., 2006). Alternatively, because the appearance issues for boys were most frequently avoiding anything that looks feminine, it may be that it takes longer to learn what to avoid about the other sex, hence their delay in developing a masculine form of PFD.

Second, we examined to what extent PFD was related to gender identity. We found that greater centrality and evaluation positively predicted PFD. That is, placing greater importance on gender in one's self-concept and evaluating one's own gender group more positively was associated with PFD. These results suggest that PFD represents children's displaying and embracing of their gender identities.

To study gender stability we examined only 3- and 4-year-olds, as almost all 5–6-year-olds had already attained it. We found that greater understanding of stability positively predicted PFD. These findings suggest that, once children understand the permanence of their sex, they are more likely to actively attempt to understand and to show off their understanding of gender by engaging in gender-stereotyped behaviors. They act as if they are more committed to their gender. Hence, PFD is a ripe example of how gender-stereotyped behaviors are associated with children's emerging gender identities.

Other researchers also have examined links between gender identity and behavior and preferences, particularly gender constancy. Results reveal inconsistencies. Some research does show such

connections between gender constancy and gender-typed behaviors and preferences. Other research fails to show such connections. In support of connections, many studies show positive relationships between the level of gender constancy and the imitation of same-sex others, engagement in same-sex activities, preferences for same-sex clothing, and peers and gender stereotype knowledge (reviewed in Martin et al., 2002). For example, one particular study (Warin, 2000) showed that young children with a better understanding of gender constancy were more likely than other children to refuse to wear cross-gender-typed clothing, such as a pink frilly dress for a boy or army fatigues for a girl. Gender constant children have also been shown to imitate same-gender models (Perloff, 1982; Ruble, Balaban, & Cooper, 1981) and to select gender-appropriate activities more than their peers do (Frey & Ruble, 1992; Stangor & Ruble, 1989). Other studies corroborate that children with higher levels of gender constancy actively avoid cross-gender-typed activities, in addition to dress (Frey & Ruble, 1992; Newman, Cooper, & Ruble, 1995; Stangor & Ruble, 1989; Zucker et al., 1999). However, other research has shown no support for links between gender constancy and gender-typed behaviors and preferences (e.g., Levy, 1998; Zucker et al., 1999; Huston, 1983).

We speculate that these mixed results can be explained with reasoning similar to why gender constancy only sometimes relates to increased stereotype knowledge. It could be that researchers with contradictory results assessed gender constancy differently. Some assessed gender constancy only as the understanding of gender stability. Others assessed gender constancy as the understanding of gender stability plus gender consistency. It could also be that attainment of gender stability does not initiate gender-typed behaviors and preferences, but amplifies them because of greater attention and responsiveness to gender-related information.

Another way psychologists have examined whether gender identity has any links to behavior and preferences is by looking at gender labeling, a critical, early component of gender identity. As noted earlier, gender labeling of the self and others exhibits a growing understanding that people can fall into categories by gender. It shows understanding of perceptual and conceptual categorical distinctions. In a longitudinal study, children who could label themselves by gender earlier than average increased in gender-typed play over several months (Fagot & Leinbach, 1989). Weinraub et al. (1984) also showed a significant relation between children's ability to label themselves verbally by sex and their gender-typed toy preferences. Zosuls et al. (2009) also showed that understanding of gender labels was associated with an increase in gender-typed play between 17 and 21 months of age. Together these studies provide some evidence that early gender identity is associated with increases in gender-typed play.

Other researchers have shown connections between other aspects of gender identity and a preference for gender-typed behaviors and preferences. For example, Wigfield and Eccles (2000) showed that children with more central gender identities valued domains associated with their sex and devalued those associated with the other sex. For example, girls with greater gender identity centrality devalued math more than other girls did.

Examinations of other populations with alternate types of gender identities can also shed light on whether gender identity has links to behaviors and preferences. For example, in a study of tomboys, researchers assessed gender identity by looking at gender contentedness and gender confusion (Bailey, Bechtold, & Berenbaum, 2002). In this sample, a stronger feminine identity was positively correlated with a preference for feminine-typed activities. Though not a direct assessment of gender identity, another study showed that tomboys in middle to late childhood preferred cross-gender activities more than other girls did (Plumb & Cowan, 1984). Also, one group of researchers showed that children diagnosed with gender identity disorder preferred cross-gender play styles more than other children did (Fridell, Owen-Anderson, Johnson, Bradley, & Zucker, 2006).

In summary, although inconsistencies remain, a growing amount of research suggests that gender identity does have some impact on behaviors and preferences in young children. The most basic sign

of gender identity, the ability to label the sexes verbally, has been linked to increases in gender-typed play. The dimensions of centrality and constancy have been shown to affect children's clothing preferences, and indirect evidence from studies of tomboys and gender dysphoric children also suggests that identity can affect preferences for play style and activity.

Identity and sex segregation. Sex segregation, the tendency for girls' strong preference to play with other girls and for boys to do likewise with other boys, is a particular behavior on which many researchers have focused. Sex segregation has emerged as one of the strongest and most persistent forms of children's gendered behavior (Maccoby, 1998). It emerges very early—at 27 months of age for girls and at 36 months for boys (La Freniere, Strayer, & Gauthier, 1984). Also children consistently report spending more time with same-sex peers and siblings (McHale, Kim, Whiteman, & Crouter, 2004). Consistent with this notion, Martin (1989) showed that children predicted liking of target boys and girls based solely on their sex and not their stereotypic or counterstereotypic interests.

However, does sex segregation have anything to do with gender identity? On one hand, research shows that preschool children do establish gender identities prior to sex segregation (Fagot, 1985; Fagot et al., 1986). This suggests that gender identity may affect sex segregation. It could also be the case that gender identity is a necessary, but not sufficient, contributor to sex segregation (Schelling, 1971).

Empirical data reveal mixed conclusions. Studies of tomboys and children with gender identity disorder often support the notion that gender identity leads to sex segregation. For example, tomboys and children with gender identity disorder report liking other-sex playmates more than same-sex playmates (Bailey et al., 2002; Fridell et al., 2006; Zucker & Bradley, 1995). Another study (Smetana & Letourneau, 1984) suggests that gender identity effects on sex segregation may vary by sex and level of gender constancy. They showed that achievement of gender constancy predicted same-sex playmate choice, but only for girls. They showed that girls who had achieved only partial gender constancy (i.e., understanding gender stability but not consistency) engaged in more same-sex social interaction than did girls who had achieved full gender constancy (i.e., understanding both gender stability and consistency). In contrast, one direct study showed no support for the idea that gender identity as assessed by accurate gender labeling of others and gender role knowledge can predict same-sex peer preferences (Moller & Serbin, 1996). Thus, more research, especially longitudinal studies with young children, is needed to determine whether gender identity affects sex segregation, but the picture appears to be more complex than a simple direct relationship.

Identity, attention, and memory. In addition to examining how identity may affect behaviors and preferences, it is important to examine whether identity affects attention and memory, which can shed light on whether cognitive-developmental theories hold up under empirical scrutiny. Cognitive-developmental theory posits that, as children learn about gender categories, they should increase their attention to and awareness of possible gender-related information. What does the evidence thus far suggest? Indeed, once children understand gender categories, they do show increased interest in watching same-sex others (Luecke-Aleksa, Anderson, Collins, & Schmitt, 1995; Slaby & Frey, 1975). Moreover, young children pay more attention to and remember more information about an activity when they believe that others of their own sex perform that particular activity (Bradbard, Martin, Endsley, & Halverson, 1986). This increase in attention occurs even when the objects or activities are novel (Bradbard & Endsley, 1983; Martin, Eisenbud, & Rose, 1995). Hence, a substantial amount of research on attention and memory support cognitive-developmental theories of gender development.

Identity and adjustment. Does gender identity affect a child's adjustment or psychological well-being? And what kind of gender identity functions most adaptively for children? Psychologists have historically believed that gender conforming, or fitting in with others of one's own sex, facilitates

optimal well-being (Kagan, 1964). It was thought that adhering to gender stereotypes signaled normality in children. Feeling masculine would make a boy more secure in himself, and feeling feminine would make a girl more secure in herself. However, another line of thought posits that following the rigid boundaries of one's own gender identity limit a child's freedom in self-actualization. Instead, developing both feminine and masculine qualities and skills would better equip a child to deal with a wider variety of circumstances (Bem, 1974, 1981). Thus in this school of thought, limiting oneself only to gender-typed prescriptions would lead to poor adjustment.

The latest research in this area empirically supports an integration of these two perspectives. Egan and Perry (2001) showed that self-perceptions of gender typicality contributed to a healthy sense of self, a finding confirmed by subsequent studies (Carver, Yunger, & Perry, 2003; Yunger, Carver, & Perry, 2004). Thus it would seem that this research supports the historical view of identity and adjustment, such that fitting in with gender-typed interests and stereotypes optimizes children's well-being. However, the researchers also concluded that children's adjustment is optimized when they feel both secure in their conceptions of themselves as typical members of their gender and also free to explore cross-gender options when they desire. In multidimensional terms, high felt typicality together with low felt pressure to conform to gender stereotypes predicts a healthy sense of self.

On the other end of the spectrum, children who feel atypical may have worse adjustment. Several studies confirm this hypothesis. Carver et al. (2004) showed that children questioning their heterosexuality reported less satisfaction with their social relationships. The particular combination of low gender contentedness combined with high felt pressure was particularly harmful for these children. Patterson and Bigler (2007) showed that being an atypical group member made younger, but not older, children less happy to be a member of their group. Also, in a study of 9–10-year-old Israeli girls, researchers assessed gender identity by having the girls rate themselves on stereotypically masculine and feminine traits (Lobel, Slone, & Winch, 1997). Those who scored high on masculine traits and low on feminine traits diverged from the rest of the sample. This particular group of girls, on average, was less popular among their peers, had a lower level of self-esteem, and was less satisfied with their gender. Girls who scored high on both masculine and feminine traits did not differ on these measures from girls who scored high on feminine traits and low on masculine traits.

Given these converging results, what might mediate the relationship between high felt typicality and better adjustment or, put another way, between low felt typicality and poor adjustment? Recent research points to peer acceptance as a potential mediator between typicality and adjustment. Smith and Leaper (2006) showed that peer acceptance partially mediated the relation between self-perceived gender typicality and self-worth in a large sample of adolescents. Indeed, other research has shown that gender nonconforming targets in childhood home videos recall more childhood rejection (Rieger, Linsenmeier, Gygax, & Bailey, 2008).

Do these findings apply universally to all children? Few researchers have actually examined the relationship between children's gender identity and adjustment in populations other than European American middle-class children. Those who have looked at other populations reported mixed findings. For example, Corby et al. (2007) found very different relationships between components of identity and adjustment for African American and Hispanic children from low-income homes. Indeed, the strong and consistent relationships they found between components of gender identity and adjustment among European American children did not exist or changed directions in African American and Hispanic children. More specifically, there was a paucity of relations between gender identity and adjustment for African American children. They posited that African American preadolescents are coping with a racial minority identity, which causes other dimensions of identity to be less influential at this age. In partial support of this hypothesis, researchers have shown that, in late adolescence, African American girls, on average, do find their racial identities more salient than their gender identities (Shorter-Gooden & Washington, 1996).

For Hispanic girls, gender contentedness was associated with higher rather than lower internalizing problems (Corby et al., 2007). However, for Hispanic boys, felt pressure was associated with lower rather than higher internalizing problems (Corby et al., 2007). Taking into account this variation of gender identity among different ethnic groups, Corby and colleagues (2007) suggested that the implications of gender identity for adjustment depend on the particular meanings that a child attaches to gender, and these meanings may vary across and within ethnic/racial groups.

There are also few studies of gender identity and adjustment in adult groups besides European Americans. However, one study showed that African American women who endorsed high levels of both masculine and feminine traits in a gender role inventory experienced lower levels of stress than did other African American women in the sample (Littlefield, 2003). Another study showed that Israeli adolescent boys who had a more androgynous identity, according to self-ratings of feminine and masculine traits, had higher levels of social self-esteem, on average, than did those with less androgynous gender identities (Parker & Parker, 1992).

Overall, the data suggest that feeling typical of one's gender predicts a positive sense of well-being. Moreover, peer acceptance may partially mediate gender identity's relationship to adjustment. If a child behaves typically of her or his gender group, peers will more likely accept the child, and the child will experience a greater sense of well-being. However, whereas feeling typical of one's gender group promotes better adjustment, feeling pressured from outside sources to conform to gender stereotypes predicts worse adjustment. Finally, researchers need to examine these relationships in diverse populations, as the little research that does exist suggests different relationships for different ethnic groups.

Identity and intergroup relations. Does gender identity affect relations between boys and girls? Before we can answer this question, we must discuss social identity theory, which provides a framework for the topic at hand. Tajfel and Turner (1986) conceptualized a group as a collection of individuals who perceive themselves to be members of the same social category, share some "emotional involvement" in a common definition of themselves, and achieve some consensus about society's evaluation of their group and their membership in it. Further, they define social identity as "those aspects of an individual's self-image that derive from the social categories to which [an individual] perceives [himself/herself] as belonging" (p. 16).

Social identity theory proposes that individuals strive to maintain or enhance their self-esteem by attaining a positive social identity. Furthermore, individuals maintain or enhance a positive social identity by making social comparisons to relevant outgroups. When individuals fail to achieve a positive social identity, the theory predicts that they will strive to leave the existing group and join a more positively distinct group or to make the existing group more positively distinct. In sum, social identity theory's basic hypothesis predicts that pressures to evaluate one's own group positively through ingroup/outgroup comparisons lead social groups to attempt to differentiate themselves from each other.

These assumptions and predictions derive in large part from many experiments that show that "trivial ad hoc" intergroup categorization leads to ingroup favoritism and discrimination against the outgroup. The experiments used "minimal" groups that were "purely cognitive" and symbolic with no real conflict, economic or otherwise.

One theoretical issue of interest is the interplay between social identity dynamics and the attainment of gender constancy in early childhood. As Lutz and Ruble (1995) discussed, many predictions can be made to the how the two theories interact. For example, one might expect an increase in gender prejudice at the time children acquire constancy for several reasons. First, when children acquire constancy, they learn about the unchanging nature of their gender category membership. Thus, children may view their genders as inescapable, and, as a result, may intensify efforts to make membership in that gender category build up personal self-esteem. Second, during constancy

acquisition, children are actively consolidating gender knowledge that makes gender information more salient and heightens its accessibility.

Few studies have directly tested this prediction. However, in our PFD study (Halim et al., 2009), we assessed intergroup attitudes by asking children how much they thought that certain trait words such as “bad” or “mean” describe the other sex. We found that children who exhibit PFD, particularly the older ones, had more negative outgroup attitudes than other children did. Examinations of the connections between gender identity and gender prejudice would be a productive area of inquiry for future developmental research.

Possible Consequences of Gender Stereotyping

Now that we have considered the possible consequences of gender identity, we examine many of the same areas in regard to gender stereotype knowledge and use. In the first section we focus on gender stereotype knowledge and its connections to behaviors and preferences and attention and memory. Similar to questions on identity’s links to these constructs, studies of whether gender stereotype knowledge has any relations to behavior, preferences, attention, and memory could shed light on the controversy about cognition’s role in gender development. We discuss gender stereotype use and its connections to adjustment and intergroup relations.

Stereotype knowledge, behaviors, and preferences. As noted earlier, according to cognitive-developmental theory, children hold gender stereotypes or mental standards of gender-appropriate behavior. Furthermore, children actively attempt to match their behavior to these newly learned stereotypes or standards (Maccoby & Jacklin, 1974). Thus examinations of stereotype knowledge’s connections to behavior and preferences can inform whether cognitive-developmental theory provides a reasonable depiction of gender development. Based on cognitive-developmental theory, increases in gender stereotype knowledge should lead to increases in gender-stereotyped behavior and preferences in young children. There is surprisingly little research that directly assesses the link between stereotype knowledge and gender-stereotyped behavior (see Huston, 1985; Martin, 1993; Signorella, 1987).

The existing literature reveals mixed findings (see Martin, 1993). Many studies do support cognitive-developmental theory. Studies with correlational designs have yielded positive associations between stereotypic knowledge and gender-stereotyped behavior (Aubry, Ruble, & Silverman, 1999; Coker, 1984; Serbin et al., 1993).

In a longitudinal study, Miller et al. (2006) examined the interplay between the development of gender stereotypes and children’s gender-typed preferences between the ages of 5 and 10. They examined children’s gender-typed preferences for toys, play activities, household chores, and occupational activities, as well as their gender stereotype knowledge. They found interesting interactions. Specifically, boys followed the predicted pattern. For boys, increasing knowledge of stereotypes ran in parallel to increasing gender-typed preferences. Their preferences increased up until the point at which they reached their maximum level of stereotype rigidity, and then preferences tended to remain stable. Thus, for boys, gender-typed preferences may develop at the same time as increasing rigidity of stereotyping. However, girls’ patterns were less clear. The researchers also looked at individual differences. Boys who displayed a higher level of peak rigidity in stereotyping, and boys whose peak rigidity occurred earlier, showed stronger gender-typed preferences than their peers did.

Those patterns are consistent with the results of another longitudinal study of gender stereotype knowledge’s relationship to gender-typed preferences. Aubry et al. (1999) showed that 4–8-year-old boys generally followed the predicted pattern. Gender stereotype knowledge about items and

attributes generally positively predicted gender-typed preferences. However, for girls, the data sometimes revealed no relationship or revealed a relationship in the opposite direction. Gender stereotype knowledge sometimes negatively predicted gender-typed preferences.

Others have used experimental designs to show that children follow newly created gender stereotypes when choosing between different novel toys (Bradbard & Endsley, 1983; Bradbard et al., 1986; Martin et al., 1995). In addition, levels of gender constancy may also affect how children use gender stereotype knowledge. Ruble et al. (1981) found that, among 4–6-year olds, children with high levels of gender constancy used gender stereotypes newly learned from television commercials to guide their toy preferences much more than did children with low levels of gender constancy. Newman, Cooper, and Ruble (1995) hypothesized that gender constant children strive to master gender roles, but how well they do so depends on their knowledge of gender stereotypes. They found that only 5–9-year-old gender constant girls with a rich knowledge of gender stereotypes held less positive attitudes than other children held toward computer use.

However, other data do not support cognitive-developmental theory, at least for very early preferences. For example, Perry, White, and Perry (1984) found, among 2–5-year olds, that boys' acquisition of gender stereotypes lagged behind, rather than preceded, their development of gender-typed preferences for toys by about 1 year. Maccoby (1998) concluded that stereotyping is not a necessary condition for the development of certain aspects of gender-typing. However, it is possible that, once children acquire stereotype knowledge, they use stereotypes to guide their own behavior into sex-appropriate channels.

Stereotype knowledge, attention, and memory. Studies of gender stereotyping, attention, and memory can provide insight on the cognitive mechanisms that affect children's gender development. Children tend to remember information that is consistent with a stereotype and to forget or distort information that is inconsistent with it (Calvert & Huston, 1987; Liben & Signorella, 1980; Martin & Halverson, 1983; Signorella et al., 1993). Young children generally remember same-gender-typed objects better than cross-gender-typed ones (Cherney & Ryalls, 1999). Younger children recalled more information from stories that contained gender-consistent activities than they did from other stories (Conkright, Flannagan, & Dykes, 2000). Also, children who more strongly endorse gender stereotypes display poorer memory for counterstereotypic information than their more egalitarian peers do (Carter & Levy, 1988; Liben & Signorella, 1980; Signorella & Liben, 1984).

It may be that children do not encode information that does not fit their gender stereotypic expectations. In a study of mother–child conversations about gender while looking through a storybook, Gelman et al. (2004) showed that 30-month-olds have some difficulty identifying the gender of a person who is engaging in a gender-atypical activity.

Stereotype use and adjustment. It is surprising that the field lacks studies on gender stereotype use and adjustment in young children. In the adult literature, psychologists have focused only on self-stereotyping of gender attributes and adjustment (e.g., Keyes, 1984; Oswald & Lindstedt, 2006; Spence, Helmreich, & Stapp, 1975).

However, one study of young children did consider gender stereotype use and adjustment (Lurye et al., 2008). To measure gender stereotype use, which they viewed more as gender role rigidity, they first told participants about children who had transgressed in terms of gender; for example, a boy who paints his fingernails with nail polish or a girl who plays with trucks. Then they asked participants if they would be friends with each hypothetical child, and if they would want to go to a school that allowed these kinds of behaviors. In the end, they showed an interesting interplay between gender stereotype use and identity. For 5- to 7-year olds, gender stereotype use predicted lower global self-worth, but only for participants with low gender identity centrality and evaluation. There were no effects for 3- to 4-year-olds. The researchers posited that, because age 3–4 is the normative time for a sharp increase in gender stereotype knowledge and use, rigidity at this age

signals social cognitive development, rather than an individual difference that would impact adjustment. Thus, overall, further research on stereotype use and adjustment in children would benefit the field.

Stereotype use and intergroup relations. When we earlier defined gender stereotypes, we differentiated between gender stereotyping and gender prejudice. General stereotyping has been defined as cognitive representations of culturally held beliefs about outgroup members, whereas general prejudice has been seen as a negative affective response toward an outgroup member (McConahay & Hough, 1976). Similarly, Arthur, Bigler, Liben, Gelman, and Ruble (2008) defined gender prejudice as the more affect-laden component of an individual's thinking about gender that consists of one's evaluative feelings about men and women.

Earlier we discussed social identity theory, a theory with much empirical support. However, there are some theoretical issues in social identity theory that developmental studies, in particular, can address. First, how basic is the drive to categorize and achieve a positive social identity through intergroup comparisons? If all individuals have this drive, and if groups truly can be minimal and still elicit intergroup comparisons, then we should see effects even for young children. That is, if the drive to categorize is universal, and all humans are motivated to achieve a positive social identity, then children, in addition to adults, should exhibit intergroup comparison effects. What does the evidence suggest? Children, in fact, do exhibit ingroup favoritism for their own gender group at an early age. Already between the ages of 2 and 3, children develop preferences for peers of their own gender (Ruble & Martin, 1998). Kuhn, Nash, and Bruckner (1978) demonstrated that 2- and 3-year-old children attributed more positive attributes to their own gender group and more negative traits to the other gender group. Researchers have showed evidence for ingroup gender bias in middle and late childhood as well (Verkuyten & Thijs, 2001; Zalk & Katz, 1978).

Even though most children exhibit gender bias, gender differences may exist, though in which direction remains inconclusive. Some research has shown that, although boys typically develop gender attitudes that favor their own group, in middle childhood, girls typically develop more egalitarian gender beliefs (Signorella et al., 1993). This may parallel how most European American children develop stereotypic, pro-European American attitudes about race, whereas African American children often develop non-biased, and sometimes pro-outgroup-biased attitudes (see Spencer & Markstrom-Adams, 1990). In a direct experimental study of how groups of different statuses may differ in intergroup attitudes, Bigler, Brown, and Markell (2001) showed that children who were members of high status, but not low status, groups developed ingroup-biased attitudes. More specifically, high-status children rated their ingroup more positively than the outgroup. In contrast, low-status children rated the ingroup and outgroup equivalently. However, other research has shown that girls exhibit more pro-ingroup gender bias in evaluative attitudes, though only in 10–13 year olds (Verkuyten & Thijs, 2001). Perhaps an age by sex interaction exists. In one study, Welsh children aged 3–9 felt more positively about their own sex than about the other sex (Yee & Brown, 1994). But among the girls, 3-year olds exhibited the most ingroup bias, whereas among the boys, 5- and 7-year olds showed the most bias.

Another theoretical issue that arises in discussions of social identity theory is whether group categorization and comparisons automatically elicit outgroup derogation. Individuals could possibly derive a positive social identity with ingroup favoritism only, without outgroup derogation. What does the research suggest? Developmental studies suggest, contrary to social identity theory, that ingroup favoritism does not automatically confer outgroup derogation (Cameron, Alvarez, Ruble, & Fuglini, 2001). To support this distinction, in an experimental study with novel groups, children's intergroup bias stemmed from differential evaluation of positive, rather than negative, traits (Bigler, Brown, & Markel, 2001; Bigler, Jones, & Lobliner, 1997; Brewer, 1999). That is, intergroup bias took the form of believing that one's ingroup was nearly perfect and the outgroup was merely good.

In addition, when given the opportunity to rate both girls and boys positively or negatively, boys and children who viewed gender as less important to their self-concepts attributed more positive than negative traits to both genders (Susskind & Hodges, 2007), which signals a decoupling of ingroup positivity from outgroup negativity. Also, in a study of 2nd and 5th graders, both boys and girls exhibited ingroup favoritism, but only girls exhibited negative outgroup evaluation (Zalk & Katz, 1978). This interaction could possibly be due to a general “boys are bad” bias in girls (Heyman, 2001). That is, perhaps the default for both girls and boys is to show ingroup positivity only, but, because there is a bias to judge boys as bad, this bias may appear as outgroup negativity for girls.

What factors might affect children’s attitudes toward the other sex? Research suggests that adults’ labeling and functional use of gender categories can affect intergroup attitudes. Patterson and Bigler (2006) divided children into novel “red” and “blue” groups using T-shirt colors. In the experimental condition, teachers used color groups to label children and to organize the classroom, such as by lining up children based on their T-shirt colors. After 3 weeks, children in the experimental classroom showed greater ingroup bias on some measures than did children in a control classroom where color groups were ignored. Even though they did not directly examine gender in this experiment, the data suggest that labeling and the functional use of gender categories can affect intergroup attitudes.

Research on intergroup attitudes in the broader social psychological and developmental fields continues to grow and branch out in interesting directions. For example, some research has provided evidence that children can show different levels of explicit and implicit bias (Baron & Banaji, 2006; Rutland, Cameron, Milne, & McGeorge, 2005). In addition, recent research has shown that preschool and 1st grade children prefer racial ingroup members that exclusively interact with other racial ingroup members (Castelli, De Amicis, & Sherman, 2007). The children evaluated these loyal group members more positively and felt more similar to them, a preference that disappeared among 9- to 11-year old children. The field currently lacks direct evidence of these types of findings in reference to gender prejudice or for very young children. Other researchers have examined attitudes toward own- and other-gender out- and in-subgroups, but only in late adolescence and not in early childhood (Eckes, Trautner, & Behrendt, 2005). Further research in these areas could provide important insight into the development of intergroup attitudes.

Summary

A survey of research on the possible consequences of gender identity and stereotyping overall reveals the potential reach of these constructs. Not only can gender identity and stereotyping affect cognitive processes such as attention and memory, but they may also affect behaviors and preferences. Moreover, gender identity and stereotyping can affect how children feel about themselves and how they interact with and view their peers. In many of these areas, however, research remains sparse and inconclusive such that empirical data often support competing hypotheses. Further research is needed to disentangle these issues.

Future Directions

Our examination of the literature on gender identity and stereotyping in early and middle childhood as a whole reveals several areas that need more empirical attention. There is a lack of research on

theorized dimensions of gender identity in young children. For example, little research exists on the emergence of public regard. We do not know much about how and when children learn what others think of their own gender. When and how do they learn how much others respect and value their gender? We also need more research on the multidimensionality of gender identity in different ethnic, income, and questioning samples. The little available research on diverse groups suggests wide variation in the multidimensionality of gender identity. There is also a lack of research on gender stereotype use, not just knowledge, and how it relates to adjustment in young children. We also do not know much about how children subgroup genders and about their attitudes toward these subgroups. For example, among girls, there may exist a subgroup of tomboys, but even within tomboys, there may be a subgroup of “sporty” tomboys. Attitudes toward girls could vary depending on subgroup categorization.

There are also areas that have been extensively studied, but still remain contentious in their conclusions. For example, what is the trajectory of gender stereotyping? Does it peak and then wane? Does it increase over time? Also, does gender constancy predict gender stereotype knowledge and use? Does gender identity predict sex segregation? For each of these issues we have suggested ways to explain how different studies might show different results. But further research is still needed, and more longitudinal research is needed as well, especially to capture the temporal, causal effects of these constructs.

Finally, we related gender identity and stereotyping to gender-typed preferences and interests, behavior and activities, beliefs and knowledge, memory, intergroup relations, and adjustment and psychological well-being. Evidence shows that gender identity and stereotyping can relate to all of these facets of children’s lives, which emphasizes its importance in development. We have discussed these facets largely as results of gender identity development and gender stereotyping. However, the direction of causality could go the other way, or could work in both directions, each giving feedback and fueling the other. For example, because being a boy is important to a particular boy, he may want to wear cowboy boots all the time. But wearing these cowboy boots everyday may, in turn, build up the importance of being a boy to him and further bolster or affirm that boys are indeed great. Only future research can clarify the direction of these effects.

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Chapter 25

Gender in Adolescence: Applying a Person-in-Context Approach to Gender Identity and Roles

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When we speak of adolescent gender development, we are referring to the numerous biological, psychological, and social processes that occur during adolescence and that contribute to a person's understanding of being male or female within a larger social world; that is, the focus in this developmental period is on the construction of gender identity and gender roles (O'Sullivan, Graber, & Brooks-Gunn, 2001). Gender identity refers to the endorsement of a particular gender as a part of one's sense of self (i.e., who a person is as a unique individual). In particular, the self develops based on the interaction of the individual with the larger social world, including culture and historical period, which defines the attitudes, behaviors, and experiences appropriate for girls or boys. Hence, gender roles reflect an individual's understanding of these larger sociocultural concepts. Individuals choose to adopt certain behaviors based on their endorsement or integration of those roles into their own gender identities.

Although substantial prior research has focused on the ability to define one's own gender in early childhood, as well as the development of gender-stereotyped behavior and gender identity in childhood, much less attention has been paid to development of different aspects of gender identity and gender roles during adolescence (Maccoby, 1998; Ruble, Martin, & Berenbaum, 2006). At the same time, because adolescence is a time of substantive changes in cognition and self, as well as changes in social experiences, it is a particularly important period for studying the development of internal attitudes and outward behavior that reflect gender (Feiring, 1999). As higher level cognitive skills develop, these skills are often applied to thinking about oneself, thinking about what others think, and thinking about how the self differs across situations. Thus, emerging cognitive skills are an integral part of the development of how adolescents see themselves and evaluate who they are in comparison to others and to broader societal roles. Moreover, gender is a focal feature of the self within the social environment as individuals experience changes in physical form brought about by puberty, changes in peer relationships, and changes in interactions with other-gender peers that occur over the course of adolescence (Maccoby, 1998).

At the same time that adolescents are constructing a new understanding of gender identity and gender roles, they are also developing a more complex view of their own sexuality. We, like others, have defined sexuality broadly as the sense of oneself as a sexual being, which includes the integration of one's sexual desires, attitudes, and behaviors (Graber, Brooks-Gunn, & Galen, 1998). Sexuality during adolescence also is shaped by puberty, by same-gender, and by other-gender peers. Moreover, roles that define sexual behaviors are often intertwined with the sociocultural construction

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of gender roles. As such, the development of sexuality is integrated with our discussion of factors that influence gender identity and roles during adolescence.

In the present chapter, we consider how the development of gender identity and gender roles is shaped by the interaction of individuals within an expanding social network. As Bronfenbrenner's ecological model of development (Bronfenbrenner, 1979) indicates, contextual interactions happen at many levels for adolescents, including immediate familial and peer environments and broader cultural and societal contexts. Hence, we provide an overview of identity and self-development during adolescence, both broadly and in terms of gender specifically; the contexts that impact gender identity and gender roles; and gender differences in behavior, or how gender roles influence behavioral changes during adolescence.

Global Identity Changes in Adolescence

As indicated, several theories of development point to adolescence as an important time of transition and discovery in relation to feelings and thoughts about the self (Erikson, 1968; Kohlberg & Gilligan, 1971). Based on psychoanalytic theory, Erikson presented the concept of identity as a mature self-definition that integrates an understanding of one's abilities, interests, and opportunities. Erikson's stage theory of development brought to the forefront the critical changes in identity that occur during adolescence. In this perspective, identity is achieved by the end of adolescence when the individual has selected and begun to assume adult roles (Muuss, 1995). During adolescence, personal identity shifts from being based mostly on prescribed social norms to the inclusion of one's own experiences and reflection (Meilman, 1979). Marcia (1980) described adolescence as a time when many individuals move away from either a general indifference toward personal ideology or an unquestioned commitment to familial values and roles toward the achievement of a personal identity. Not all adolescents and adults successfully achieve this goal; however, those who do tend to experience stronger feelings of self-worth and more rewarding adult relationships (Kroger, 2003). Though the capacity for identity growth exists throughout adulthood, adults are more limited by the social roles they have adopted, such as career choice or parenthood, whereas a comparative lack of such long-term commitments makes adolescence a more flexible period of life to explore oneself and one's options (Eccles & Bryan, 1994).

The development of the self is a closely related construct to identity development. The "self" is the combination of psychological and physical attributes that are unique to each individual; as we have indicated, it is the sense of who one is and how the individual is similar and distinct from others (Harter, 1999). Although this concept is similar to identity, the development of the self is studied from social-cognitive perspectives, and developmental changes in one's sense of self are closely tied to changes in cognitive abilities. Adolescence is characterized by substantial gains in a person's ability to process complex and abstract concepts (e.g., Keating, 2004). Meta-cognitive abilities (i.e., thinking about thinking) and the ability to consider multiple dimensions of situations at the same time are central to adolescents' cognitive and social development. As such, the way adolescents perceive themselves becomes more nuanced and complex. Adolescents not only spend more time thinking (Kuhn & Udell, 2001), they also spend more time reflecting on their thoughts and who they are. This is evidenced by a shift across childhood to adolescence in the way individuals tend to describe themselves. Whereas young children list their physical traits and the activities in which they engage (e.g., "I have blue eyes and like to swim"), adolescents' primary focus is features of their personality (e.g., "I'm pretty easygoing"). In addition, adolescents are increasingly likely to recognize that their self (or who they are) may depend on context – in other words, that one does

not necessarily act and feel the same way across all situations (Harter, 1999, 2006). Thus, adolescents' cognitive abilities allow them to develop and be aware of the multiple "self" concepts that people have in different roles; by the end of adolescence, individuals are able to unify these different selves into an integrated sense of self that incorporates the complexities of new roles that they are assuming.

Gender Identity Changes in Adolescence

Gender identity in its strictest sense (i.e., perceiving oneself as a boy or a girl) develops during the early childhood period (see Ruble et al., 2006, for a recent review). Individuals who feel that their gender identity does not correspond with their biological sex usually date the emergence of these feelings to early childhood. Although exceptions of pronounced gender realignment occurring later in life exist, they are rare and frequently connected to endocrine disorders (e.g., 5 alpha-reductase deficiency; Imperato-McGinley, Peterson, Gautier, & Sturla, 1979).

This concept of gender identity is not frequently studied in adolescence because significant changes rarely occur after early childhood. However, the term "gender identity" as used in much of the gender development literature often reflects a social-cognitive constructivist point of view, which suggests that the role of gender as part of self develops continually across the lifespan via the individual's cognitive development and interactions in social contexts. Feiring (1999) made a distinction between what she termed "general gender identity," or the knowledge that one is a biological male or female, and "configured gender identity," or the internal attitudes and outward behavior that reflect one's femininity or masculinity and behaviors that one identifies as feminine or masculine. The development of configured gender identity mimics those changes seen more broadly in identity development from childhood to adolescence. Just as individuals begin to emphasize internal over physical characteristics when describing themselves, so too does gender identity shift in importance from physical characteristics to the internalization of expectations for gendered thoughts and behavior.

Configured gender identity is created by the evaluation of one's biological sex in the context of social and cultural norms about gender (Feiring, 1999). Therefore, it is impossible to study this area of gender identity without simultaneously studying the gender-specific roles, scripts, and behaviors that comprise the fabric of the adolescent's environment. Accordingly, much of the research on gender identity in adolescence concerns the salience of gender-role beliefs to identity development and has given rise to new theories of gender identity that employ a multidimensional focus. In addition to identifying gendered traits, such as warmth or instrumentality, that are integral to one's personal sense of self, different facets of gender identity in adolescence may include "gender typicality," or how similar one feels to a typical example of one's gender; "gender contentedness," or how satisfied one is with being a member of one's gender group; and "intergroup bias," or the extent to which one thinks that one's gender is superior to the other. Furthermore, these components may follow different developmental trends (Egan & Perry, 2001). The multidimensional nature of this approach highlights the various cultural and contextual influences that contribute to gender identity.

As noted, whereas adolescence should be a period when gender identity demonstrates developmental changes in line with the varied conceptions presented, theories of gender identity development have been limited. In the following section, we review the gender intensification hypothesis, a main conceptual framework for changes in identity during adolescence. In addition, we discuss the literature that has tested this hypothesis in terms of how gender is manifested in self-perceptions and gender-typed behaviors.

The Gender Intensification Hypothesis

As noted, the adolescent decade involves dramatic physical, psychological, and social changes. Patterns of psychological development in terms of cognitive advances and expanding views of the self suggest that, during adolescence, gender identity and related behaviors would undergo substantial changes. In particular, given that adolescents have a more flexible sense of self, are able to see how their sense of self varies across situations, and more consciously decide which possible self they hope to become, it might be hypothesized that gender identity, gender roles, and gendered behaviors might also become more flexible. However, the prevailing theory of gender identity and role development that is specific to adolescence predicts exactly the opposite. Hill and Lynch (1983) proposed the “gender intensification hypothesis,” which suggests that, after the onset of puberty, boys’ and girls’ diverging appearance triggers an increase in social pressures from peers and adults to behave in traditional gender-differentiated ways. Thus, girls and boys would behave and endorse more traditional gender roles during early adolescence. However, this intensification is thought to dissipate with increased flexibility by mid to late adolescence. Notably, studies of conformity to peer norms and pressures show that conformity tends to peak in the early adolescent period and then decline over time (Berndt, 1996). Several researchers have investigated the gender intensification hypothesis in terms of changes in self-perceptions and self-concept and in gender-typed activities and behaviors; literature on both is reviewed below.

Self-perceptions and self-concept. Perceptions of “traditional” gender roles in adolescence follow patterns similar to those seen in childhood: Girls are expected to be higher in expressive traits, and boys are expected to be higher in instrumental traits (Alfieri, Ruble, & Higgins, 1996; Ruble et al., 2006). Self-ratings of instrumental and expressive traits can follow independent developmental trajectories over the course of adolescence. Barrett and White (2002) studied developmental trajectories of self-rated masculinity/instrumentality and femininity/expressiveness from age 12 to 25. Although nearly all participants slightly increased in femininity during adolescence, those with higher initial levels of masculinity at age 12 tended to increase their endorsement of masculine traits as they aged, whereas those with lower initial levels tended to decline. Consistent with other studies (Ruble et al., 2006), the majority of participants in the study evidenced increasing levels of both traits, which indicates a move toward androgyny as they approached adulthood; however, of those participants who did decline in masculinity/instrumentality, adolescent girls outnumbered boys by more than two to one. Similar developmental trends have been found in examinations of shorter time periods as well. Galambos, Almeida, and Petersen (1990) found that from sixth to eighth grade, the gap in masculinity levels between girls and boys widened, whereas differences in femininity levels stayed approximately the same. It is interesting that increased other-gender traits during adolescence appear to predict same-sex attractions in adulthood for boys, but not for girls (Udry & Chantala, 2006).

Barrett and White (2002) suggested that, because traditionally masculine traits (such as independence, activeness, competitiveness, and self-confidence) are more highly rewarded in Western cultures than are traditionally feminine traits (such as emotionality and understanding of others), individuals with high levels of masculine traits at the outset of adolescence are rewarded for their behavior, which reinforces those traits. In addition, low initial levels of masculinity/instrumentality may result in a reduced sense of self-worth for others, which further decreases masculine traits such as confidence and assertiveness. Because feminine traits are not as highly valued, they are thought to be of less salience to feelings of self-worth.

The greater desirability of traditionally masculine traits and behavior over traditionally feminine traits is present from early childhood, but this difference appears to be exacerbated during adolescence. Adolescent boys find it increasingly unacceptable to display feminine traits, and both boys and girls who are low in masculinity evidence poorer self-esteem and higher rates of depression

than their more masculine male peers and their androgynous female peers (Barrett & White, 2002; Markstrom-Adams, 1989). This may be because feminine traits such as passivity and dependence are not considered to be psychologically desirable (O'Sullivan et al., 2001), or because masculine traits such as activeness and self-confidence serve as protective factors against poor adjustment (Maton, 1990). However, longitudinal studies are needed to determine the directions of effects.

Egan and Perry (2001) pointed out that many researchers who link femininity/expressiveness to negative adjustment outcomes fail to consider whether their constructs of instrumentality and expressiveness are confounded with co-occurring social pressures to behave in accordance with gender-typical stereotypes. Because simply feeling typical to one's gender tends to be associated with positive adjustment outcomes, it is likely that the negative effects of expressiveness, especially for boys, have more to do with outside pressures to conform than with internal feelings of gender typicality (Smith & Leaper, 2005).

Gender-typed activities and behaviors. Traditionally masculine or traditionally feminine behavior (i.e., instrumental or expressive behavior) can manifest itself in different ways. For instance, a study of high school-aged participants showed no gender differences in verbal behaviors such as asking questions or showing uncertainty; however, girls were more likely than boys to smile, to act coy, and to try to appear physically smaller (Kolaric & Galambos, 1995). Beliefs about gender roles can manifest themselves through one's own behavior and attitudes toward that behavior, as well as through one's attitudes toward gender-typed behavior in others. Several studies on attitudes toward others' behavior show gender differences in the sorts of behaviors in which adolescents think male and female individuals should engage. For instance, whereas girls increase their approval of gender equality and role flexibility across middle school, boys actually become more traditional in their attitudes (Galambos et al., 1990).

With respect to behaviors, girls do appear to spend more time taking part in traditionally feminine household tasks and personal care after the onset of adolescence (Ruble & Martin, 1998). In addition, research has documented the existence of clear gender-typed interests in academic subjects during adolescence in both Eastern and Western cultures (Evans, Schweingruber, & Stevenson, 2002; Fredricks & Eccles, 2002), such that boys are more likely to prefer math and science courses. Although girls tend to outperform boys across nearly all academic subjects during elementary school (Serbin, Zelkowitz, Doyle, Gold, & Wheaton, 1990), by adolescence, both genders develop stereotyped expectations for their own and others' performance in several traditionally gender-typed categories. Adolescents expect boys to be better at math, science, and physical activities and girls to be better at language skills, although the stereotyped attitudes of adolescent boys are slightly stronger than those of adolescent girls (e.g., Hong, Veach, & Lawrenz, 2003). However, as in childhood, stereotypes and ability levels do not necessarily correspond with each other. Though gender differences in adolescents' complex problem-solving abilities were documented in the 1970s and 1980s (Hyde, Fennema, & Lamon, 1990), recent research suggests that the differences were due to the under-representation of girls in advanced high school science and mathematics classes; as enrollment has equalized in the past decade, these differences in ability have disappeared (Hyde, Lindberg, Linn, Ellis, & Williams, 2008). Other research has shown that when gender differences in academic performance do exist, they are usually present from childhood and do not seem to increase across adolescence (Fredricks & Eccles, 2002).

Research conducted by Gilligan (1982) on the experiences of women and adolescent girls has often been seen as consistent with gender intensification. Gilligan has asserted that the onset of adolescence is associated with a loss of "voice" in girls – in other words, that the social pressures outlined by the gender intensification hypothesis encourage girls to suppress aspects of their personality in order to match cultural stereotypes of feminine behavior, which is accompanied by a loss of self-confidence and an inability to express themselves openly. Though this phenomenon was described

as unique to adolescent girls and adult women, much of Gilligan's research failed to consider the experiences of male participants (Harter, Waters, & Whitesell, 1997; Maccoby, 1998). Subsequent research with both male and female participants has shown that this "loss of voice," rather than being an experience unique to girls, is felt by both genders in adolescence due to the increasing salience of cross-sex relationships during this time period; that is, both girls and boys have similar urges to guard their behavior so as not to embarrass themselves in front of members of the other sex (Harter et al., 1997).

Galambos (2004, p. 241), accordingly, cautioned that "it is unlikely that gender intensification will apply uniformly to the many aspects of gender identity and gender-related constructs." At the same time, it is clear that early adolescence is a time when many individuals appear to abandon the increasingly flexible attitudes developed during late childhood and instead return to a more rigid, culturally defined gender-role structure on which they base their behavior and attitudes (Eccles & Bryan, 1994). Why might this happen for some adolescents but not others? Eccles and Bryan proposed a stage model of gender-role development in which individuals experience increased salience of gendered behavior in early adolescence (consistent with the gender intensification hypothesis), followed by the development of more autonomous values and attitudes. In this model, the desired endpoint is gender-role "transcendence," or determining, through self-reflection, the most personally appropriate behavior and attitudes for one's own life, which probably will tend more toward androgyny (Bem, 1983; Eccles & Bryan, 1994). This model assumes that gender identity and gender roles are naturally intertwined in childhood and adolescence, and only those adolescents and adults who are able to recognize the differentiation between the two will be able to reduce the importance of gender roles as a defining feature of personal identity. However, studies are needed to test this model directly and to demonstrate that transcendence has some particular value in terms of adjustment or behavior.

Previously, we and others have indicated that behavior and attitude changes during adolescence are the result of how adolescents navigate developmental transitions and are based in part on prior (i.e., childhood) behaviors and attitudes as well as the context of the transition (e.g., Elder, 1998; Graber & Brooks-Gunn, 1996; Rutter, 1989). As we have indicated, gender identity and gender-typed behavior develop via the interaction of the person with the context, and context has multiple levels. During adolescence and much of the lifespan, societal, cultural, and familial contexts define gendered behavior for the individual. Early on, children and peers learn the scripts for behavior that are reinforced. Although adolescents may ultimately reflect upon the meaning of gender and proscriptions for behavior and reject or accept these as part of their own identity, it must also be remembered that contextual definitions themselves are dynamic. That is, the behaviors and attitudes of individuals shape familial and potentially cultural and societal proscriptions as more and more individuals adopt new norms. Early adolescents are highly motivated to conform to social expectations to avoid possible ostracism by their peer group, so much of gender-role acquisition occurs through self-socialization during that time rather than through direct external pressure. As such, we turn next to the social and contextual influences, such as the atmosphere of home life, messages taken from the larger culture, and the extent of the pressure to conform to peers, which serve as factors that shape an adolescent's sense of self, gender identity, gender-typed behaviors, and attitudes toward gender roles.

Person-in-Context Influences

Adolescence is marked by core developmental changes at the biological and social/contextual levels that play a role in changing gender identity and roles. As indicated, psychological changes in

cognition impact views of the self and gender. Other individual changes, such as the onset of puberty, have biological, psychological, and social influences. In addition, these individual changes occur within an array of contexts both proximal (e.g., family and peer relationships) and distal (e.g., media influences on behavior). Our discussion covers general themes of developmental changes in each area, although, for any adolescent, a range of person–context interactions may occur depending on his or her individual development and diversity of contextual experiences.

Puberty

The pubertal transition can be viewed as the impetus for many of the behavioral and social changes that occur during adolescence (Feldman & Elliott, 1990; Graber & Brooks-Gunn, 2002). Pubertal development is a series of interrelated processes that results in maturation and adult reproductive functioning. Pubertal development begins in middle childhood and takes 5–6 years for most adolescents to complete (Brooks-Gunn & Reiter, 1990). We describe typical patterns of development, but it is important to keep in mind that substantial variation exists among children and adolescents.

Hormonal changes. The physiological changes of puberty primarily involve the hypothalamic-pituitary-adrenal (HPA) axis and, to a larger extent, the hypothalamic-pituitary-gonadal (HPG) axis. The HPA axis is responsible for adrenarche, the initial increases in adrenal androgen hormones. Adrenarche begins around age 6 or 7 in girls and possibly later in boys. Adrenal androgens are responsible for the appearance of axillary (i.e., armpit) hair and, in part, for pubic hair.

Hormones of the HPG axis play a main role in the initiation of puberty. The hypothalamic gonadotropin releasing hormone (GnRH) pulse generator is active prenatally and during early infancy, suppressed during childhood, then reactivated at the onset of puberty (Fechner, 2003). In order that puberty begins, the brain's sensitivity to the negative feedback of gonadal sex steroids (estrogen in girls and testosterone in boys) decreases, which then releases the HPA axis from inhibition. Puberty begins with the release of GnRH pulses, which activates pulsatile bursts of gonadotropins, luteinizing hormone (LH), and follicle stimulating hormone (FSH), from the pituitary gland. In girls, the function of LH and FSH is to initiate follicular development in the ovaries, which stimulates them to produce estrogen. Estrogen sensitive tissues, such as the breasts and uterus, then respond to the increase. In boys, increased LH stimulates the testes to secrete testosterone, which results in an increase in testicular size, and FSH stimulates spermatogenesis (Fechner, 2003).

Physical changes of puberty. The physical indicators of puberty most commonly measured in studies include breast development in girls and testicular growth in boys, as well as pubic hair development in both sexes. In girls, secondary sex characteristic development is a result of estrogen from the ovaries. Breast development begins between ages 8 and 13 in the United States; the mean age is 8.9 years for African American girls and 10 years for European American girls (Herman-Giddens et al., 1997). The process of developing mature breasts takes approximately 4.5 years, regardless of whether girls enter puberty earlier or later than average (Brooks-Gunn & Reiter, 1990). Pubic hair development typically begins shortly after breast budding. Pubic hair development begins between the ages of 8 and 13 years in the United States; the mean age is 8.8 years for African American girls and 10.5 years for European American girls (Herman-Giddens et al., 1997). Menarche is a late sign of pubertal development in girls and occurs following a peak in height velocity and during a rapid increase in weight and body fat (Tanner, 1978). In the United States, the mean age of menarche is 12.2 years for African American girls and 12.9 years for European American girls (Herman-Giddens et al., 1997).

In boys, development of secondary sex characteristics is a result of testosterone from the testes. The onset of testicular growth is the initial sign of pubertal development, which occurs, on average,

between 11 and 11.5 years of age, but can begin as early as 9.5 years of age. Pubic hair growth begins at about age 12. The average length of time between initial genital growth and the development of mature genitalia in boys is 3 years. Spermatogenesis, or first ejaculation, usually occurs between 13 and 14 years of age. More noticeable physical changes in boys include voice changes and the development of facial hair (Brooks-Gunn & Reiter, 1990).

In the United States and other places in the Western world in which puberty has been studied, there are no substantial differences in age of onset of secondary sexual characteristics (see Grumbach & Styne, 2003, for a comprehensive review). In Western countries, girls begin puberty before boys by an average of at least 6 months to 1 year (Grumbach & Styne, 2003). However, in areas of the world where nutrition is suboptimal, age of pubertal onset varies more. For example, among the Kikuyu in Kenya, the onset of development of secondary sexual characteristics in girls is 13.0 years, with menarche at 15.9 years. Kikuyu boys enter puberty before or at the same age as girls (Worthman, 1993).

Pubertal effects on identity and gender-typed behavior. Different models have been construed to explain how puberty is associated with changes in self and behavior. Direct models posit that aspects of pubertal development have direct psychological effects via internal change (i.e., increasing hormone levels; Brooks-Gunn, Graber, & Paikoff, 1994; Buchanan, Eccles, & Becker, 1992; Susman, Dorn, & Chrousos, 1991). Indirect models posit that social and contextual factors mediate the way in which biological changes during puberty affect psychological changes (Brooks-Gunn & Reiter, 1990). Pubertal timing models focus on how perceptions of puberty in relation to one's peers (i.e., earlier or later) affect one's psychological adjustment and behavior (Graber & Brooks-Gunn, 1996).

It is difficult to determine with a direct model framework how the hormonal changes of puberty are associated with gender identity and gender roles during adolescence. Studies conducted by Susman and Brooks-Gunn (Brooks-Gunn & Warren, 1989; Susman et al., 1987), which included measures of pubertal hormones as well as other pubertal indices, focused on psychological outcomes such as depressive symptoms and externalizing behaviors. It is possible that, at pubertal onset, girls may have increased hormonal sensitivity to interpersonal stress. For instance, hormones released during the menstrual cycle, such as estrogen, fluctuate in response to psychosocial stress. In other work, researchers have focused on the influence of hormonal changes on sexual desire and behaviors. For example, testosterone and changes in testosterone were significantly related to timing of first coitus for African American and European American girls, though attendance at religious services moderated the effect (Halpern, Udry, & Suchindran, 1997). In boys, testosterone levels were associated with coital status and predicted transition to nonvirgin status over time (Halpern, Udry, Campbell, & Suchindran, 1993). In general, similar levels of hormone concentration in different individuals do not lead to similar behavior, and correlations between hormone levels and sexual behaviors tend to be weak (Halpern, 2003). In order to determine if the hormonal changes of puberty contribute to changing gender identity and roles, longitudinal studies must follow individuals from childhood through the pubertal transition, and they should include the multiple socialization and environmental variables that are implicated.

The theory behind indirect models is that pubertal status may serve as a signal to parents, peers, and teachers that the adolescent is nearing adulthood and should act in a stereotypically masculine or feminine fashion. Adolescents may experience negative or positive reactions from others about their development when they reach certain stages, or they may think that certain behaviors are expected with increased physical development. Studies indicate that girls and boys interpret their changing pubertal status in psychologically different ways. For girls, there is a good deal of ambivalence regarding the change. For example, in interviews with girls within 2–3 months of menarche, 20% of girls reported only positive reactions, 20% reported only negative reactions, 20% reported

ambivalent feelings, such as “felt same” or “felt funny,” and 40% reported both positive and negative reactions (Brooks-Gunn & Ruble, 1982). In a study of the importance of breast and pubic hair development to adolescent girls in the fifth and sixth grades, the majority of girls (82%) reported that breast growth was more significant to them than pubic hair growth because “other people can tell.” Onset of breast growth was associated with positive peer relationships, greater salience of gender roles linked with reproduction, and a positive body image, whereas the onset of pubic hair growth was not (Brooks-Gunn & Warren, 1988). However, girls were likely to experience teasing by family members and boys about their breast development (Brooks-Gunn, Newman, Holderness, & Warren, 1994; Brooks-Gunn & Warren, 1988).

Girls tend to experience the normal weight changes of puberty negatively, particularly increases in weight and/or body fat. More advanced pubertal development has been associated with less satisfaction with weight and to perceptions of being overweight for girls but not for boys (Tobin-Richards, Boxer, Petersen, & Albrecht, 1990; Tyrka, Graber, & Brooks-Gunn, 2000). Weight-related negative body image, weight dissatisfaction, and weight concerns were associated with increased depressive symptoms in a sample of early adolescent girls, even when researchers controlled for objective weight status (Rierdan & Koff, 1997).

Very little is known about the meaning of pubertal changes for boys. In a small qualitative study, mid-adolescent boys were interviewed about their reactions to their first ejaculation (spermarche), their preparedness for the event, sources of information about it, and the extent to which they had discussed the event with friends (Gaddis & Brooks-Gunn, 1985). Responses from boys were more positive than negative, although two-thirds of the boys reported being a little frightened, which is comparable to girls’ reactions to menarche. The boys were very reluctant to discuss their experience of first ejaculation with parents or peers. This secrecy may stem in part from spermarche’s link with masturbation. Although studies have not focused on boys’ responses to increases in height and weight during puberty, these are probably positive changes for boys. However, it has been suggested that media ideal images of men are becoming as unrealistic and unattainable as media ideal images of women (Leit, Gray, & Pope, 2002). The “pumped up” physique (i.e., men with large shoulders and muscular abdomens) is prevalent in popular culture, and a literature is emerging on the drive for muscularity in adolescent boys. The Drive for Muscularity Scale (DMS) is a 15-item self-report survey that can be completed by boys/men and girls/women (McCreary & Sasse, 2000; McCreary, Sasse, Saucier, & Dorsch, 2004). Although scores on the DMS have not been correlated with stages of puberty, DMS scores have been correlated with measures of masculine-typed gender-role socialization (Mahalik et al., 2003; McCreary, Saucier, & Courtenay, 2005) and negatively correlated with self-esteem in men (Duggan & McCreary, 2004; McCreary & Sasse, 2000). In a study designed to test a dual pathway model for body dissatisfaction among adolescent boys, results indicated that weight and muscularity concerns each made unique contributions to body dissatisfaction and were associated with distinct individual and peer context characteristics (Jones & Crawford, 2005).

Pubertal timing models posit that maturing earlier or later than one’s peers could differentially affect the degree of gender intensification in adolescents. Several hypotheses may explain the association between pubertal timing and psychological development. The “off-time” hypothesis is the most general one; it predicts that both earlier and later development in girls and boys compared to their same-age, same-sex peers are risk factors for problem behaviors (Caspi & Moffitt, 1991). A more specific hypothesis is the “early maturation” hypothesis, which posits that early maturation is a risk factor for adjustment problems among both girls and boys (Petersen & Taylor, 1980). Early maturation may be disadvantageous because early maturers experience social pressure to adopt more adult norms and to engage in adult behaviors, even though they may not be socially, emotionally, or cognitively prepared for the new experiences (Brooks-Gunn, Petersen, & Eichorn, 1985; Caspi & Moffitt, 1991). In contrast, the gendered “deviation” pattern of pubertal timing effects identifies

the most extreme groups across gender. As girls show physical signs of development about 2 years earlier than boys do, early maturation is a risk factor for girls (because they are maturing earlier than other girls or boys their age) and late maturation is a risk factor for boys (because they are maturing later than other boys or girls their age; Brooks-Gunn et al., 1985; Petersen & Taylor, 1980).

If early-maturing girls adopt more feminine identity characteristics earlier than their peers, how would that affect their development of gender identity? Similarly, what are the implications if late-maturing boys do not show as many masculine traits as their peers? Although off-time pubertal maturation has been linked to increased questioning of one's personal identity, including sexual views and occupational plans (Berzonsky & Lombardo, 1983), research that links pubertal timing specifically to gender identity development is scarce. The multiple other influences that affect gender-typing during adolescence, such as cohort-wide age-related expectations, may be more powerful than pubertal timing itself (Galambos et al., 1990). For example, it could be that the new behaviors associated with the entrance into adolescence, such as dating, lead to increased gender-differentiated behaviors (Smith & Leaper, 2005). In fact, as we discuss in subsequent sections, girls who mature and date early are at greater risks for negative behavioral and emotional outcomes (e.g., Cauffman & Steinberg, 1996; Halpern, Kaestle, & Hallfors, 2007). Such findings are indicative of person–context interactions that impact self-development during adolescence.

Family

The pubertal transition coincides with changes in family relationships. From fifth to ninth grade, the time that adolescents spend with parents and other family members drops from about 50% to only about 25% of their non-school free time (Larson & Richards, 1991). This increase in time physically spent apart is accompanied by a concurrent increase in emotional distance between parents and adolescents as well as mild perturbations in family relationships (Holmbeck, 1996; Paikoff & Brooks-Gunn, 1991; Steinberg, 1989). For example, an observational study of seventh grade girls' interactions with their parents showed that conflictive engagement with parents increased shortly after menarche, as did withdrawal of positive affect (Holmbeck & Hill, 1991). Generally, both sons and daughters have similar degrees of closeness and conflict with their parents in adolescence, as well as similar rules and activities (Steinberg & Silk, 2002).

Despite adolescents' attempts to distance themselves from their parents as they strive to attain autonomy, parents remain an important influence on adolescents' behaviors and attitudes. Most research on parental socialization suggests that, on the whole, girls and boys are treated more similarly than differently (Maccoby & Jacklin, 1974), and observational studies show that boys and girls interact with parents in similar ways (Steinberg & Silk, 2002). Adolescents of both genders are closer to their mothers, in that they spend more time alone with their mothers than their fathers and talk to them more frequently about problems and emotions; mothers are also more involved than fathers are in adolescents' lives (Updegraff, McHale, Crouter, & Kupanoff, 2001; Williams & Kelly, 2005). Even though the differences between mothers and fathers are applicable to both female and male adolescents, these differences are likely to affect the development of gender identity and roles. Girls receive the message that they need to develop traits that will allow them to become the more involved and emotionally connected parent later in life. Similarly, boys may observe and seek to emulate a more removed approach to parenting modeled by their fathers. This understanding regarding their potential roles as mothers or fathers may influence adolescents' life decisions (e.g., vocational choice) as they try to adhere to the gender roles demonstrated by their own parents.

Within the marital relationship, parents may serve as models of behavior that affect adolescents' own feelings about engaging in certain behaviors (Galambos, 2004; McHale, Crouter, & Whiteman, 2003). In the 1980s, high school seniors with employed mothers showed more egalitarian views about gender roles and division of household labor than did those with mothers who did not work outside of the home (Gardner & LaBrecque, 1986). Another study showed that early adolescent boys whose fathers worked but whose mothers stayed home had more negative attitudes toward household chores when they were asked to do traditionally feminine tasks; this same pattern was not seen in girls or boys from dual-earner families (McHale, Bartko, Crouter, & Perry-Jenkins, 1990). In recent years, the number of adolescents living in dual-earner households has increased, which makes it less likely that working outside of the home would have a substantial effect on attitudes toward gender roles. Instead, type of work or other household roles may have a greater impact on adolescents' development of gender roles and typicality.

Crouter, Whiteman, McHale, and Osgood (2007) suggested that previous research has not looked closely enough at the more nuanced ways in which various family characteristics, such as parental attitudes, family structure, and birth order, can interact to influence gender development. In an investigation of developmental trends in attitudes toward traditional gender roles across 9 years in late childhood and adolescence, this group found an overall trend of decreasing traditional attitudes until about age 13, but increased traditionality after age 15, a result that lends support to the hypothesis of gender intensification during adolescence. Although there was no main effect of gender on the direction of the developmental trend, a number of distinct differences emerged when family structure and parental characteristics were considered in addition to gender. Boys who had younger brothers and more traditional parents showed both the highest overall levels of traditionality and the least amount of decrease in traditionality in early adolescence. In contrast, girls who had older sisters and less traditional parents had the lowest overall levels of traditional attitudes and did not evidence the same increase in later adolescence as did their peers.

As the study by Crouter and her colleagues suggests, individuals within each gender group seem to have different gender socialization experiences based on parental attitudes and relationships to their siblings. For instance, older brothers from traditional families may not have many experiences that challenge their traditional views of men's dominance in domestic settings, whereas boys from less traditional families who also have older sisters may be exposed to many more examples of girls'/women's assertiveness during childhood and early adolescence. In addition, the fact that boys raised in households with traditional attitudes showed initial declines in traditionality but escalated again in later adolescence, whereas their female counterparts showed more steady declines, may be a result of the increasing influence of the peer group in the lives of adolescents, among whom fewer restrictions seem to be placed on girls in terms of the demonstration of both instrumental and expressive traits, as well as the declining influence of parental attitudes.

Peers

During adolescence, peers play a crucial role in the formation of identity in general by providing models of different types of behavior and feedback about one's behavior and adherence to norms (Brown, 2004). This is true, in part, because the onset of adolescence usually corresponds with an increased desire for more autonomy from parental rules and oversight (e.g., Steinberg, 1990); thus, peers become more prevalent influences within an individual's social world. However, it should be noted that, by late adolescence, individuals typically become more autonomous, not only from parental influence but also from peer influences, as they make independent decisions about their

own behavior, attitudes, and beliefs. For girls especially, time spent with family members at the end of elementary school is replaced with time spent with friends by the end of middle school, although time spent alone also increases for both genders. In addition, peer relationships become more rewarding during this time (Larson & Richards, 1991). Peer groups during early adolescence are mostly segregated by gender (Maccoby, 1990) and tend to be formed based on shared interests.

Although peer “pressure” is often discussed as a major influence on adolescent behavior, in fact, this approach is not the most common means that peers have for influencing one another (Berndt, 1996). Peers provide support, advice, and companionship as well as models of behaviors and attitudes. Expectations about the likelihood of acceptance or rejection may be accurate or based on an individual’s perception of peer norms. As such, peers have a range of means for influencing gender identity and roles. Peer opinions are a significant component of the social pressures that encourage gender typicality in early and mid-adolescence. Boys especially may risk ridicule if they break the mold and partake in activities typical of the other gender (Galambos, 2004). Adolescent girls seem to be given more leeway by peers to display traditionally masculine characteristics and to take part in masculine-typed activities, most likely due to the greater valuation of masculine traits in most cultures (Smith & Leaper, 2005). Though gender atypicality has been shown to be related to poor adjustment outcomes, such as a lowered sense of self-worth, this relationship is influenced by the attitudes of one’s peer group. In a study of adolescents participating in summer sports camps, Smith and Leaper (2005) found that feelings of self-worth in individuals who showed high levels of gender atypicality depended on whether they also experienced peer rejection as a result of that gender atypicality; those who were accepted by peers despite being gender atypical displayed better adjustment than did those who were not accepted.

For adolescents who identify as lesbian, gay, bisexual, or transgender (LGBT), experiences within school and peer group settings can be harsh and unwelcoming. Unfortunately, being labeled as a sexual minority still carries pervasive negative connotations within most adolescent peer groups. LGBT adolescents experience more verbal and physical bullying than their heterosexual peers do, and they are more likely to consider their school to be an unsafe environment (Human Rights Watch, 2001; Swearer, Turner, Givens & Pollack, 2008).

Bullying or harassment that specifically focuses on gender non-conformity may be targeted at heterosexual as well as LGBT youth. Swearer et al. (2008) investigated bullying among boys enrolled in a private high school and found that being labeled as homosexual was one of the most popular forms of verbal bullying; of those students in the sample who had been bullied, 26% reported that accusation of being gay was the main method that they experienced. Boys in this group, which included heterosexual as well as gay and bisexual individuals, had higher rates of anxiety and depression and more negative perceptions of their school than did boys who experienced other forms of bullying. Additional research is needed to determine whether the same outcomes are seen in girls who are bullied in this fashion. It could be that being labeled as a sexual minority is more traumatic for boys because boys and men experience greater social sanctions against gender-atypical behavior than do girls and women.

Peer acceptance of LGBT adolescents may have less to do with actual sexual preferences than with broader impressions of gender typicality or atypicality. Horn (2007) asked high school students to rate their acceptance of hypothetical peers who were either heterosexual or homosexual and who varied in their degree of gender typicality. Across all targets, gender atypicality in appearance and mannerisms was rated as less acceptable than gender typicality in activities; both were less acceptable than appearing gender-typical and doing gender-typical things. However, boys rated a gay male peer who was gender-conforming (e.g., plays baseball and dresses like most of the other male students) as more acceptable than a heterosexual male peer who was gender-nonconforming (e.g., acts effeminate and wears eyeliner and nail polish). For girls, there was no difference in

acceptability between a gender-conforming lesbian peer and a gender non-conforming heterosexual female peer. This suggests that, for boys especially, deviating from gender typicality in appearance and mannerisms may be the most salient factor in the peer rejection experienced by LGBT adolescents.

Gender differences in behavior and values may also have an effect on the quality and characteristics of peer relationships. For example, results of a study by Rose and Rudolph (2006) suggested that gender-based differences in peer relationship processes are associated with different costs and benefits for girls' and boys' adjustment. Feminine relationship processes, such as increased sensitivity to distress in others, may contribute to the development of intimate relationships and inhibit antisocial behavior; however, these same processes may heighten vulnerability to emotional difficulties. Masculine relationship processes, such as emphasis on self-interest and dominance goals, may interfere with the development of intimate relationships. However, these processes may also enhance the development of group-based relationships and protect against emotional difficulties in boys. As peer and intimate relationships increase in significance across adolescence, the gender differences in peer relationship processes become increasingly salient to overall adjustment in adolescents.

Cross-Gender Interactions: Overcoming Gender Segregation and Developing Romantic Relationships

As discussed above, childhood is characterized by considerable segregation between boys and girls during social activities (Larson & Richards, 1991; Maccoby, 1990, 1998). In late childhood and preadolescence, the formation of close friendships nearly always occurs between members of the same-gender group, and when cross-gender interactions occur, they frequently take the form of "borderwork," or interactions that serve to emphasize the distinction between boys and girls in the peer group (Boyle, Marshall, & Robeson, 2003; Maccoby, 1998). For example, children may divide up to play a game into a team of girls and a team of boys; this allows for some interaction with the other gender that is competitive yet keeps most interactions within one's own gender group (Boyle et al., 2003). This pervasive segregation tends to promote the development of two rather distinct interaction styles that take place within same-gender groups: Boys tend to prefer more rough-and-tumble, larger group play, whereas girls tend to prefer less active, more intimate one-on-one or small group activities (Maccoby, 1990, 1998).

Clearly, overcoming gender segregation is one of the key developmental tasks of adolescence. Indeed, the structure of peer networks shows distinct developmental trends across the adolescent years; the main impetus for change appears to be the increasing strength of heterosexual attraction as an influential force in most adolescents' lives (Maccoby, 1998). Early adolescence is characterized initially by much of the same segregation and borderwork as is seen in childhood. However, as heterosexual adolescents grow older, they find themselves wanting to spend more and more time with members of the other gender group and are more likely to rate these interactions as just as enjoyable as interactions with same-gender peers (Strough & Covatto, 2002). However, their increasing attraction to the other sex has to contend with years of learned other-gender avoidance. In early adolescence, both boys and girls indicate that they feel more comfortable interacting with members of the other gender group when same-gender peers are also present (Maccoby, 1998), and, although the size of other-gender networks tends to increase across adolescence, same-gender networks do not usually change in size (Richards, Crowe, Larson, & Swarr, 1998). One development that has been documented in recent decades is the widespread emergence in early and middle adolescence of mixed-gender social groups or "group dates," in which several members of both gender groups

participate in an activity together with the understanding that at least one girl and one boy in the group are interested in one another and may spend some time alone with each other during the outing. These group social activities allow younger adolescents an opportunity to develop cross-gender relationships before the commencement of formal dating, and may persist even after the age when one-on-one dating becomes appropriate behavior. Connolly, Craig, Goldberg, and Pepler (2004) found that, across fifth through eighth grades, dating behavior progressed in a stage-like fashion from near-exclusive association with same-gender peers to mixed-gender group activities to dating within mixed-gender group activities to dyadic dating; however, mixed-gender group activities did not decline as individuals progressed to subsequent stages.

Though heterosexual dating activity becomes quite common by mid to late adolescence (Collins, 2003), dating in adolescence may serve a somewhat different social function than it does in adulthood. For instance, the intimacy, companionship, and long-term commitment goals that characterize late adolescent and adult dating relationships are not as strongly emphasized in middle school and the early years of high school. Instead, dating during this time tends to be more status-oriented (i.e., adolescents are more likely than adults to date people simply because they are popular). In addition, early adolescent relationships tend to be much shorter in duration than adult relationships (Feiring, 1999).

Though the dissimilar characteristics of early adolescent and adult dating suggest that traditional mate-selection theories may not tell us much about relationships during adolescence, research focused specifically on adolescents' romantic and sexual relationships has, until recently, been relatively scarce (Brown, Feiring, & Furman, 1999; O'Sullivan et al., 2001). The lack of research may be due, in part, to the various roadblocks to collecting this type of data in adolescence, such as the shorter nature of these relationships, as well as the fact that research on the romantic characteristics of relationships in adolescence has traditionally been overshadowed by a greater focus on sexual activity (Brown et al., 1999; Collins, 2003; Graber et al., 1998). However, Brown et al. (1999) argued that romantic experiences in adolescence may play a major role in the development of intimacy, emotional expression, and identity. Indeed, many of the strongest experiences of emotion reported by adolescents are due to actual or fantasized romantic relationships (Larson & Asmussen, 1991).

Within most Western cultures, gender-differentiated expectations and scripts or social norms for dating and relationships in adolescence appear to divide along lines similar to those seen in adult relationships. Girls tend to place more emphasis on the importance of love and intimacy (Simon, Eder, & Evans, 1992) and worry more about their own heterosexual attractiveness, which tends to make them more emotionally vulnerable within the relationships. Girls may feel more rejected in their relationships when intimacy and communication decrease, whereas boys may feel more rejected when their status is threatened (i.e., if a girl shows interest in another partner; Downey, Bonica, & Rincón, 1999). These differences may be most distinct in early adolescence as a result of the different socialization patterns that emerge during the highly gender-segregated period of childhood.

Adolescents also expect boys to be sexually active earlier and more frequently than girls; girls are expected to be more passive in pursuing a sexual relationship. Although increased sexual activity among adolescent girls has narrowed the gender differences in the age of onset and the frequency of sexual experiences, the notion of men as "predators" and women as "prey" still remains a salient script for adolescents' dating beliefs, and girls are more likely than boys to report acquiescing to unwanted advances from their relationship partners (O'Sullivan et al., 2001).

Of course, these scripts for dating and sexual behavior do not apply to all adolescents. Dominant models of the development of adolescent romantic relationships assume heterosexual attraction (Diamond, Savin-Williams, & Dubé, 1999). What happens to the 4–7% of adolescents who develop same-sex attractions? For some, the development of a sexual-minority identity can be a difficult and prolonged process. Several stage models of gay and lesbian identity development have been

postulated, most of which include a shift from growing awareness of one's homosexuality to a period of confusion and comparison with one's peers (typically during adolescence) and, ultimately, to an acceptance of and commitment to one's sexual identity (which not all individuals may achieve; Beaty, 1999; Cass, 1979; Troiden, 1989; Zera, 1992).

In a recent study of LGBT individuals attending a gay pride festival, approximately 50% indicated that they had self-identified as gay, lesbian, or bisexual during adolescence. Boys tended to self-identify about 2 years earlier than girls on average (Floyd & Bakeman, 2006). A smaller percentage of LGBT individuals choose to disclose their sexual identities to friends and family members during adolescence; those who do may face greater social challenges than others who wait until adulthood, due to the constraints of potentially disapproving family and school environments. Many non-disclosing LGBT adolescents may experience intense feelings of being two different people: a "true self" when alone, and "someone else" when at school or around others. LGBT adolescents may also report a sense of being isolated from others due to the differences they perceive between themselves and their families or peer groups (Crowley, Harré, & Lunt, 2007). All of these factors are likely to impact the development of romantic relationships for LGBT adolescents and young adults.

Literature on the development of same-sex romantic relationships in adolescence is limited. Not only have adolescent romantic relationships been an overlooked area of research, but it is difficult to identify potential participants, either because they are reluctant to disclose their sexual orientation to researchers or because they simply have not yet self-identified as gay, lesbian, or bisexual. In fact, most sexual-minority youth engage in heterosexual dating and sexual activities, although they report less satisfaction than their heterosexual peers do with their experiences (Diamond et al., 1999).

LGBT adolescents face many hurdles in developing the kinds of relationships considered to be a standard developmental milestone for heterosexual youth. Simply identifying potential partners within their peer group is a difficult and potentially risky task. They may face teasing, harassment, and possibly even physical harm by exposing their sexual orientation to the wrong person. Community youth groups can provide a friendly haven, but groups for high school age and younger adolescents are relatively rare, especially in rural communities (Crowley et al., 2007; Diamond et al., 1999).

An added challenge is that many LGBT adolescents may be unwilling to enter into a romantic relationship with a same-sex partner or insist on keeping the relationship a secret in order to avoid ostracism by family members and/or peers. Gay male adolescents in particular may eschew traditional dating and romantic relationships in favor of short-term sexual relationships with little to no emotional commitment, which they may perceive as less socially risky (Diamond et al., 1999). Lesbian adolescents are less likely to engage in exclusively sexual relationships in part because they tend to value emotional components of same-sex relationships over sexual components. In addition, they may often be able to obtain desired experiences of emotional closeness, without disclosing their sexual preferences, from their platonic friendships with other girls, which tend to be more intimate than friendships between boys (Diamond et al., 1999; Maccoby, 1998). However, the experience of participating in a same-sex romantic relationship can have lasting impacts on LGBT adolescents by providing them with "a crucial sense of being normal [and] demonstrating that a lesbian, gay, or bisexual orientation does not prevent them from enjoying many of the activities and pleasures of a typical adolescence" (Diamond et al., 1999, p. 186).

Culture/Media

In Western cultures, one of the most salient influences on adolescents' opinions and attitudes is the media. Adolescents today live in a "media-saturated" environment. The average adolescent spends

more than 6 hours each day using one or more of the various media sources that are available, including viewing television or movies, listening to music, playing video games, and surfing the Internet. From ages 8 to 18, time spent listening to music and using computers increases significantly and time spent playing video games decreases significantly. Though male and female adolescents participate in similar amounts of media use, boys spend more time playing video games, and girls spend more time listening to music (Rideout, Roberts, & Foehr, 2005; Roberts & Foehr, 2008).

In general, adolescents are portrayed in the media in stereotypical fashions similar to the portrayal of adults. Female characters are more likely to be shown as passive, dependent, more nurturing, less rational, and more concerned with appearance than are male characters, whereas male characters are more likely to be aggressive and active, although differences between female and male adolescent characters have been declining over recent decades. Music videos tend to be the most blatantly stereotypical, have the most lopsided ratio of male to female characters (approximately 2:1), and are most likely to show women, but not men, dressed provocatively (Walsh & Ward, 2008). The media content most relevant to adolescents' gender identity development is content that involves sexual imagery and messages. One of the most common sexual messages is that women are viewed as sex objects by men; unfortunately, adolescents are particularly susceptible to this message (Ward, 1995; Ward & Friedman, 2006).

A review of numerous studies over the past three decades has documented a number of gender stereotypes and sexual beliefs that are associated with sexual and gender-stereotyped media content (Ward, 2003). For instance, a study of exposure to media of varied sexual explicitness and format showed that viewing of sexually explicit movies on the internet was the most significant predictor of male and female adolescents' beliefs that women are sex objects (Peter & Valkenburg, 2007). Ward, Hansbrough, and Walker (2005) assessed media usage by African American high school students and found that individuals who watched greater amounts of music video and sports programming were more likely to endorse traditional gender-role attitudes. In addition, participants were more likely to endorse these attitudes after watching just four sexual stereotype-laden music videos in a lab setting. Other research has shown that effects of media exposure on gender attitudes tend to depend on the extent to which adolescents view the content as realistic (Rivadeneyra & Ward, 2005) or, in older adolescents and young adults, the extent to which individuals identify with particular characters (Ward, 2002).

Portrayals of gender-stereotyped behavior are, of course, important because adolescents (like children and adults) are influenced by these images (Brown, 2000). However, the media do not have a uniform effect on behavior. Brown and Cantor (2000) proposed the media practice model to explain the interaction of individuals with media. In particular, they noted that individuals make active choices about selection, interpretation, and attention to media. In addition, one's current sense of self influences the decisions one makes about media. That is, particular media may be chosen based on an adolescent's current representation of who he or she is or the possible self that she or he wants to be.

It appears that media may affect female and male adolescents differently. Morgan (1982) found that frequent television viewing by early adolescents predicted more traditional gender attitudes 1 year later in girls but not in boys. In addition, television viewing in late adolescence may also influence girls' sexual attitudes more strongly than those of boys (Ward & Rivadeneyra, 1999), and numerous studies have shown a greater impact of media portrayals on girls' body image (McCabe & Ricciardelli, 2001). One hypothesis is that adolescent girls' gender attitudes are more strongly affected by media exposure than are those of boys because boys' attitudes are already more similar to the gender roles being depicted; in other words, individuals who hold gender attitudes that are the most dissimilar to stereotyped media portrayals have the most potential to be influenced by what they see or hear (Morgan, 1982).

Understanding the Role of Gender in the Development of Psychopathology

Despite the fact that most youth navigate the adolescence decade successfully, development of psychopathology during this time period remains a significant concern. In particular, rates of depressive disorders increase dramatically by mid-adolescence (e.g., Graber & Sontag, 2009), and rates of more serious aggressive and delinquent problems also increase during this period (e.g., Moffitt, 1993). Moreover, numerous studies have documented gender differences in depression as well as various types of aggression, although aggressive behaviors have shown more variability. Scholars differ as to whether the processes that underlie boys' and girls' aggression are similar or different (Moffitt, Caspi, Rutter, & Silva, 2001). Zahn-Waxler (1993) has asserted that gender-typed parental practices and broader socialization practices play an important role in the development of vulnerabilities for these problems and disorders beginning in early childhood. In the following sections, we examine gender differences in a selection of internalizing and externalizing behaviors and further elaborate on the potential influence of gender identity and gender roles in the development of psychopathology during adolescence.

Depression and Other Internalizing Behaviors

One of the most consistent findings in the study of gender differences in adolescence is the emergence of different rates of depression. Although rates of depression in girls and boys are nearly indistinguishable up until the pubertal transition (Nolen-Hoeksema & Girgus, 1994), by mid-adolescence, the gender difference in both subclinical levels of depressive symptoms and diagnosable unipolar depression is at the rate of about 2:1 for girls to boys, and this rate persists through adulthood (Nolen-Hoeksema, 2001). Hence, two main questions have predominated studies of depression during adolescence. Why adolescence? And why more girls? Many of the same person and context influences on gender identity and roles that we have already discussed are also linked to potential answers to these questions.

As in other areas of gender research on adolescents, puberty and its associated experiences are thought to play a key role in adolescents' depression gap. When direct effects of pubertal hormones are found on depressive affect (e.g., Brooks-Gunn & Warren, 1989), they generally account for a small portion of the variance in outcome; social factors have a stronger effect. Rapid increases in hormones during pubertal development seem to be the factor that is associated with affect, particularly depressive symptoms. The timing of pubertal development is important: Many studies have found that early-maturing girls tend to experience more negative affect than their on-time and late-maturing peers (Brooks-Gunn et al., 1985; Ge, Conger, & Elder, 1996; Graber, Lewinsohn, Seeley, & Brooks-Gunn, 1997; Graber, Seeley, Brooks-Gunn, & Lewinsohn, 2004; Hayward et al., 1997; Stattin & Magnusson, 1990). For boys, findings are more mixed, although early and late maturers seem to be at some risk for more negative affect than are their on-time peers (Ge, Conger, & Elder, 2001; Graber et al., 1997; Petersen & Crockett, 1985; Susman et al., 1991; Susman et al., 1985).

Depressive symptoms and disorders are strongly associated with body image changes, especially for girls. Moreover, pubertal changes and timing are predictive of body image changes during early and mid-adolescence. Thus, negative body image may be fully or partially explanatory of higher rates of depression among girls. Though differences in body image are prevalent from an early age (girls consistently report more dissatisfaction with their bodies and more desire to be thin), body image becomes even more differentiated in adolescence as puberty increases the physical differences between girls and boys. Moreover, body image and concerns with one's appearance are influenced

by a number of external sources in adolescence that interact or exacerbate influences of puberty on body image. For instance, adolescent girls with mothers who hold traditional gender-role attitudes show more dissatisfaction with their current weight (McHale, Corneal, Crouter, & Birch, 2001). Girls are also more likely than boys to be affected by discussions of appearance with friends (Jones, 2004). Furthermore, girls who consume large amounts of mainstream media show increases in body dissatisfaction and experience more pressure to conform to gender roles regarding physical appearance and sexuality (Ward, 2003). It is likely that girls more often experience increased body size (a part of normal pubertal development) negatively due to the media images in Western cultures that value the thin physique of a prepubertal body over a mature body for girls (Attie & Brooks-Gunn, 1989). An ever-present fixture in adolescents' lives, media sources such as television, movies, and magazines emphasize different physical ideals for male and female adolescents and adults: Boys and men should be "buff," with developed muscles, whereas girls and women should be slender and willowy (Maccoby, 1990; Ward, 2003). The onset of puberty effectively moves girls and boys in opposite directions in their attempts to attain these ideals, as boys view their resulting increases in muscle mass as positive, and girls view their resulting increases in body fat as negative (Maccoby, 1990). As a result, adolescent girls become more vulnerable to self-esteem loss and to eating disorders (Abell & Richards, 1996; Cotrufo, Cella, Cremato, & Labella, 2007), and girls and women who have eating disorders often have co-occurring or subsequent depressive disorders and symptoms (see Tyrka et al., 2000).

Although increases in muscle mass are generally viewed positively by adolescent boys, it has been found that, for boys, drive for muscularity is correlated with higher levels of depressive symptoms and lower self-esteem; the same effect is not observed in girls (McCreary & Sasse, 2000). It seems that, as adolescent boys place higher value on muscularity, the more vulnerable they are to adverse psychological outcomes.

Pubertal timing also influences the extent of body dissatisfaction and may influence depressive symptoms via effects on body image. In a study of the middle school years, both boys and girls showed poorer body image at various times regardless of early or late maturation; however at a follow-up in twelfth grade, only early-maturing girls continued to have poor body image, whereas other girls and boys demonstrated increasingly positive reports of body image (Graber, Petersen, & Brooks-Gunn, 1996). Thus, persistent body dissatisfaction was only a problem for early-maturing girls. Several studies have shown that body dissatisfaction associated with early pubertal timing predicts subsequent onset of depressive pathology (Rierdan, Koff, & Stubbs, 1989; Stice, Hayward, Cameron, Killen, & Taylor, 2000) and increases in depressive symptoms (Stice & Bearman, 2001). When body satisfaction is statistically controlled, the gender difference in depression is substantially reduced (Allgood-Merten, Lewinsohn, & Hops, 1990; Rierdan et al., 1989; Siegel, Yancey, Aneshensel, & Schuler, 1999; Stice, 2003; Wichstrom, 1999), which demonstrates that body dissatisfaction plays a role in mediating links between pubertal change and negative affect in girls.

Another area of research designed to explain gender differences in depression has focused on the experience of stressful life events, especially stress in important relationships such as those with parents and peers. Evidence from longitudinal studies suggests that adolescents experience more life events, both negative and positive, in early adolescence than in later adolescence; the number of events peaks around age 14 (Brooks-Gunn, 1991; Ge, Conger, Lorenz, & Simons, 1994). Findings indicate that girls face more stressful life events than boys do in adolescence (Compas & Wagner, 1991; Ge et al., 1994; Larson & Ham, 1993). In addition, because girls begin puberty earlier than boys do, the stressful events that co-occur with this transition are more difficult for them, especially for early-maturing girls. For example, going through a school change at the same time as one is experiencing peak pubertal development, as early-maturing girls are likely to do, has been identified as

an experience that sets adolescents on course for poorer adjustment (Petersen, Sargiani, & Kennedy, 1991).

Adolescent girls have also been found to report significantly more negative interpersonal events than do adolescent boys, to perceive these events as more stressful (Wagner & Compas, 1990), and to be more vulnerable to stress in peer and family contexts (Greene & Larson, 1991; Rudolph, 2002). For example, girls have been found to be more aware of the threat of conflict in friendships, which intensifies with age (Laursen, 1996). Girls who feel overly responsible for the welfare of others in their relationships, as well as those who experience difficulties being assertive, exhibit more depressive symptoms (Aube, Fichman, Saltaris, & Koestner, 2000). Thus, gender-typed characteristics, such as expressivity and caring for others, seem to place girls at greater risk for relationship-related stress.

For both adolescent girls and boys, sexual orientation is a factor that may contribute to more depressive and internalizing symptomology, due in part to the multiple social challenges that they face. LGBT adolescents are at high risk of emotional distress (D'Augelli & Hershberger, 1993; Rosario, Rotheram-Borus, & Reid, 1996) and suicidality (Rotheram-Borus, Hunter, & Rosario, 1994). However, in a study of the risk factors associated with internalizing and externalizing problems among LGBT youth, risk factors not related to sexual orientation explained 18 and 19% of the variance in internalizing and externalizing problems, respectively, and risk factors related to sexual orientation explained an additional 4 and 1% of the variance in internalizing and externalizing problems, respectively (Elze, 2002). This finding implies that sexual orientation should be considered as one among multiple risk factors that may contribute to depression during adolescence.

A comprehensive "ABC" model has been proposed to elucidate the multiple pathways implicated in the gender differential in depression (Hyde, Mezulis, & Abramson, 2008). This model integrates affective (emotional reactivity), biological (genetic vulnerability, pubertal hormones, pubertal timing, and development) and cognitive (cognitive style, objectified body consciousness, rumination) vulnerability factors that potentially interact with negative life events (e.g., peer sexual harassment, interpersonal events, child sexual abuse) to heighten girls' rate of depression in comparison to boys' rate during adolescence. From the cognitive perspective, girls exhibit more negative cognitive styles, more rumination, and higher objectified body consciousness than boys do. In terms of affect, girls exhibit greater variance on the dimension of negative emotionality and higher levels of anxiety, both of which are linked with increased vulnerability to depression. From the biological perspective, definitive conclusions cannot be reached regarding the effects of hormones or puberty on gender differences in depression. However, findings consistently show that early puberty is disadvantageous for girls. A final gender difference that could contribute to the depression differential is that, overall, girls experience more negative life events than boys do, and there is a large gender gap in appraisals about stressful events. In sum, the model posits that a combination of gender differences at the affective, biological, and cognitive levels contribute to the gender differential in depression.

Aggression and Other Externalizing Behaviors

Unique patterns of gender differences in aggression. Researchers have found clear gender differences in the levels of many externalizing behaviors, such that boys and men have higher rates of these behaviors in comparison to girls and women across the life span. Specifically, adolescent boys score about 0.3 standard deviations higher than girls on measures of physical aggression and delinquent acts such as vandalism and theft; this difference increases to about 0.5 standard deviations by

the age of 21. Boys are also more likely to commit violent crimes and property offenses when these actions become more common in later adolescence (Moffitt et al., 2001).

The aggressive behaviors mentioned above are more serious types of transgressions, which often include illegal acts. Whether or not gender differences are found for aggression often depends on the severity of the behavior or type of aggression. For instance, indirect forms of aggression, which are intended to damage an individual's relationships and social reputation (i.e., exclusion, rumor-spreading, and withholding of friendship), have been a popular area of study in recent years. Based on early studies in which peers perceived girls as higher than boys in these behaviors, some researchers (e.g., Crick, 1997) argued that indirect behavior is a "feminine" form of aggression. Subsequent studies have shown mixed results, however, and two meta-analyses failed to demonstrate significant gender differences in overall levels of indirect aggressive behavior during childhood or adolescence (Archer, 2004; Card, Stucky, Sawalani, & Little, 2008). What this research does suggest, though, is that when girls engage in aggression, they are proportionally more likely than boys to use indirect forms. (This distinction between total levels and proportional levels may be responsible for the continuing confusion in the recent literature over the accuracy of claims that girls are more likely than boys to be indirectly aggressive.)

One explanation for the proportional difference in types of aggression focuses on differences in the salience of peer relationships noted previously. For instance, in light of the gender-specific peer socialization experiences documented in childhood that show that girls' friendships are more intimate and fewer in number than boys', some researchers have argued that girls gravitate toward indirect aggression because attacks on their friendships are more traumatic than they are for boys. Indeed, seventh and tenth grade girls rate indirect aggression as just as hurtful as physical aggression, whereas their male classmates rate physical aggression as the more hurtful type (Galen & Underwood, 1997).

In their meta-analysis, Card et al. (2008) also failed to find any age trends in the different patterns of aggression exhibited by boys and girls; in other words, gender differences in direct aggression and gender similarities in indirect aggression did not show significant changes from childhood to adolescence. However, only the overall linear trends between each study's average sample age and aggression levels were examined; quadratic and other higher-order changes were not investigated. Therefore, it is possible that meaningful fluctuations in aggression levels at certain ages may have been missed. For instance, in a study of urban minority middle school students, girls showed larger increases than did boys in physical and verbal aggression from sixth to seventh grade, such that no significant difference existed between girls' and boys' aggression levels by the end of seventh grade (Nichols, Graber, Brooks-Gunn, & Botvin, 2006). Moffitt et al. (2001) systematically documented levels of aggressive and delinquent behavior from ages 13 to 21 and found that the gender difference was at its narrowest around the ages of 14–15.

In contrast, little debate occurs about the existence of gender differences in the more serious forms of aggression and delinquency we noted previously. In addition, the pattern of emergence of more serious aggressive and delinquent behaviors seems to display gender differences as well. For example, Moffitt et al. (2001) found that, although boys showed a small overall rise in antisocial behavior across adolescence, girls were more likely to experience a temporally constrained bump between the ages of 13 and 16, with a drop-off after age 17. This temporary increase corresponds to an "adolescence-limited" trajectory of antisocial behavior (Moffitt, 1993), and it is thought to arise in part because individuals may seek to engage in behaviors that convey "adult" status as a response to the many physical and social transitions that occur during adolescence (Ehrensaft, 2005; Sampson & Laub, 1993). In contrast, a small minority of individuals display a "life course-persistent" trajectory of antisocial behavior, which is more stable over time, characterized by more severe deviance and physical aggression, and usually identifiable by the age of 5. These trajectories

are not equally represented by both genders: Girls make up almost 40% of the adolescence-limited group but only 3–5% of the life course-persistent group (Lahey et al., 2006; Moffitt et al., 2001).

Gender differences in the etiology of aggression. Given that gender differences vary by severity of outcome, another avenue of research concerns whether different forms of aggression arise from different etiological causes and whether girls and boys share these in unequal ways. For example, in the same way that girls may be more likely to exhibit aggression in relational forms due to salience of relationship issues, Ehrensaft (2005) argued that conduct problems in adolescent girls tend to be more often related to interpersonal relationships than is the case for boys, for example, girls in the juvenile justice system are more likely than boys to be there for offenses committed against family members or romantic partners (Snyder, 2000).

In addition to socialization by peer groups, socialization within the family is also thought to be important. For example, the same parenting strategies may have different effects on male and female children. One study showed that gender moderated the relationship between parenting and levels of indirect aggression, such that high levels of permissiveness were related to equal amounts of overt aggression among both preadolescent boys and girls, but to higher levels of indirect aggression among preadolescent girls only (Sandstrom, 2007). In contrast, parenting behaviors may differ by gender and result in gender differences in outcomes. For example, parents tend to use harsher and more physical punishment with boys, which is linked to greater physical aggression in adolescence (Moffitt et al., 2001).

Silverthorn and Frick (1999) hypothesized that differences in developmental trajectories of anti-social behavior may exist because girls do not respond to risk factors for aggression and delinquency, such as cognitive and neurological dysfunctions, emotional deficits, and dysfunctional family environments, in the same ways as boys do. Subsequent research has not shown much support for this hypothesis, however (Lahey et al., 2006; Martino, Ellickson, Klein, McCaffrey, & Edelen, 2008). Instead, it appears that risk factors for physically aggressive behavior affect girls and boys in the same way, but girls tend to experience them less often and/or less intensely than boys do. For example, as children, girls are less likely to exhibit symptoms of ADHD or cognitive deficits; less likely to display an under-controlled, fearless temperament; and less likely to experience harsh physical punishment, all of which are related to higher levels of physical aggression in adolescence (Moffitt et al., 2001).

Unique patterns of gender differences in substance use. Substance use in adolescence (e.g., illicit use of cigarettes, alcohol, marijuana, and other drugs) is another form of antisocial behavior in which girls tend to show disproportionate adolescence-limited increases. Substance use shows consistently smaller gender differences than aggression or delinquency, to the extent that gender differences effectively disappear during early and mid-adolescence (Moffitt et al., 2001; Wallace et al., 2003). When gender differences do exist, they are likely to be due to greater exposure and usage opportunities among boys rather than to any differences between boys and girls in the inclination to use these substances (Van Etten & Anthony, 1999). Other studies have shown that, during this time, girls are actually more likely than boys to have tried certain kinds of illicit stimulants (Wallace et al., 2003).

Girls and boys may also differ in their experiences of certain risk factors for substance use. For instance, the greater emphasis placed on body size and shape by adolescent girls can lead to increased use of amphetamines and tobacco due to negative self-image and dieting behaviors (Sarigiani, Ryan, & Petersen, 1999). Personality profiles of substance users may also differ by gender. One study (Allen, Page, Moore, & Hewitt, 1994) showed that male high school students who smoke tend to be significantly shyer than female smokers, have higher rates of loneliness and hopelessness than their other classmates, and are more likely to use smoking to cope with social insecurity. By contrast, female smokers had the highest sociability scores of any group and were more self-confident. These results may have implications for smoking prevention programs, which tend to assume that

adolescents who smoke do so to in order fit in with peers due to low self-assurance, a profile that female adolescent smokers may not match (Amaro, Blake, Schwartz, & Flinchbaugh, 2001).

The role of puberty in the emergence of externalizing behaviors. The question of why early and mid-adolescent girls engage in increased rates of several types of antisocial behavior, including aggression and substance use, seems to be directly tied to the onset of puberty (e.g., Graber et al., 1997). Girls who are early maturers (i.e., experience menarche before the age of 12) show the earliest and most drastic increases in symptoms of conduct disorder, whereas on-time and late maturers evidence later and more modest increases (Caspi, Lynam, Moffitt, & Silva, 1993), the result of which is that early maturers are responsible for a disproportionate amount of the antisocial behavior seen in girls during adolescence.

Notably, pubertal stage has a stronger independent association with antisocial behavior than does chronological age; this effect occurs primarily because higher pubertal stages correspond to having a greater number of friends who also engage in these behaviors (Patton et al., 2004). However, pubertal timing appears to be more important in the development of conduct problems for girls than it is for boys (Moffitt et al., 2001; Rowe, Maughan, Worthman, Costello, & Angold, 2004). Girls who mature early are thought to be at particular risk because, at younger ages, girls appear to be more susceptible than boys to being influenced by observations of or pressures from peers (Amaro et al., 2001). For instance, in a study of the association between puberty and substance use, both male and female early maturers were more likely to try cigarettes and alcohol than were non-early maturers. For girls, however, this relationship was partially mediated by relationships with deviant peers (Westling, Andrews, Hampson, & Peterson, 2008), who are most likely older, male adolescents (Moffitt et al., 2001).

It is interesting that affiliative behaviors consistent with higher expressivity potentially place girls at greater risk for both depressive and aggressive problems. In contrast, greater societal tolerance for stereotypically masculine behaviors seems to be associated with increased risk for externalizing behaviors, but may, in some cases, be protective against internalizing behaviors for boys. A better understanding of the construction of gender and the role of gender in risks and vulnerabilities for psychopathology is needed. Several recent initiatives have focused on identifying “gender-specific” prevention programming that targets aggressive, delinquent, and substance use behaviors (e.g., Hanson, 2002; Leschied, Cummings, Von Brunschot, Cunningham, & Saunders, 2001). The assumption is that pathways to these problems have aspects that are unique by gender and connected to gender roles and the contexts in which these roles are expressed and experienced. As such, prevention of unhealthy behaviors and promotion of healthy behaviors during adolescence should be tied to gender.

Future Directions

Adolescence is a time of crucial growth in the formation of one’s unique identity and the construction of an integrated sense of self. As noted, it is impossible to study gender identity and gender development during this time without simultaneously studying changes in biological and cognitive development and in the social contexts that make up adolescents’ environment. Unique gender-differentiated trends are evident in several areas during adolescence, including trajectories of gender traditionality; scripts for friendship, dating, and intimate behaviors; and the onset of depression and antisocial behavior. However, it is important to remember that for most behaviors, female and male adolescents are more similar than different, and, when gender differences do exist, most are relatively modest in effect, so gender differences should not be overstressed (Galambos, 2004).

Cultural and historical contexts continue to shape adolescents' construction of self and gender, and, more important, continue to change. For instance, most research conducted during the 20th century has framed participation in sports as a typical masculine behavior and girls who play sports to be participating in a gender non-conforming behavior. However, since the passage of Title IX legislation in the United States, sports participation for girls has become increasingly common: Whereas in 1972, only 18% of high school athletes were female, this number had increased to 40% by 1996 (Lopiano, 2000). If gender-typical behavior is defined by behavior that is commonly participated in by a large number of that gender, it is questionable whether sports participation can still be included in this category. Other traditional attitudes, such as the belief that boys outperform girls in skills needed for careers in math and science, are also fading as new research suggests that gender gaps in performance disappear when girls and boys enroll in equal numbers in advanced math and science courses during adolescence (Hyde, Lindberg et al., 2008). Similar diminishing gender gaps also have been documented in certain externalizing behaviors, such as aggression and substance abuse: From 1960 to 1990, girls' average age at initiation for alcohol, tobacco, and illicit drug use decreased at a much faster rate than boys' did (Amaro et al., 2001), and violence among adolescent girls has also shown consistent increases during this time that were not matched by their male counterparts (Odgers & Moretti, 2002). Unfortunately, rather than boys becoming more similar to girls in these behaviors, girls seem to have caught up with boys. Overall, these examples indicate the need for new research to identify current definitions of gender-typical behavior for adolescents growing up in the 21st century in diverse families, communities, and societies.

In addition, the study of romantic relationships during adolescence and their impact on the development of gender identity is still an under-researched topic, due, in part, to the transient nature of many of these relationships as well as a tendency by researchers to focus exclusively on sexual activity within this age group (Brown et al., 1999; Graber et al., 1998). This is especially true for same-sex romantic relationships; as noted, the adolescents who take part in these relationships may be a particularly difficult group to study because of social stigmatization as well as potential confusion about or denial of same-sex attractions (Diamond et al., 1999). In particular, more research on the impact of same-sex dating and romantic relationship experiences on the development of a sexual-minority identity is sorely needed. Since the early 1990s, public opinion of LGBT individuals has become increasingly favorable (Hicks & Lee, 2006; Yang, 1997), possibly due to the rising number of positive portrayals of gay and lesbian characters and public figures in media and popular culture (Bonds-Raacke, Cady, Schlegel, Harris, & Firebaugh, 2007). Evidence also indicates that the number of LGBT adolescents who chose to disclose their sexual orientation to others is increasing (Drasin et al., 2008). It would be interesting to investigate how these historical trends are influencing LGBT adolescents' approach to their own identities as sexual-minority individuals, as well as their inclination to engage in same-sex relationships both within and outside of school settings.

In their recent review of the field of gender research, Ruble et al. (2006) concluded that there is a surprising absence of research on gender development during adolescence. Few studies focus on the construction of gender identity; in fact, the study of identity and self-development has not been a focal area for research on adolescent development in recent years (Steinberg & Morris, 2001). When self or gender are considered, it is often with the goal of understanding behavior, especially undesirable or health compromising behaviors. Research on gender differences in behaviors such as depression or aggression has now moved from documenting differences to determining why differences occur. Such investigations examine biological differences, differences in rates of vulnerabilities or risk factors, and whether explanatory models of behavior are comparable for adolescent girls and boys. Hence, we have a better picture of the person-context interactions that result in gender differences in a variety of behaviors. At the same time, few, if any, researchers have considered how the various developmental experiences that result in gender differences in behavior may

actually be part of the construction of gender during adolescence. Adolescents' interpretation of gender norms and their own integration of acceptance of these norms into their sense of self are likely to be important factors in determining not only the likelihood of engaging in particular behaviors but also the likelihood of malleability of the behavior or the strategy being employed to alter a behavior. Hence, addressing the gaps in research on gender development during adolescence has practical application beyond the potential theoretical contributions. Adolescents are clearly immersed in and interacting with a broad array of messages about who they are, who they should be, and who they want to be. Although the concept of gender may be changing with developmental experience as well as shifts in societal norms and cultural ideals, it is well worth the effort to advance the methodology and conceptual framework for understanding the role that gender plays in the lives of adolescents.

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Chapter 26

Gender, Adult Development, and Aging

Abigail J. Stewart and Nicky J. Newton

The subject of gender in adulthood is, on its face, too large for a single chapter. In an attempt to define it so that it is feasible to address, we narrow our focus to three broad issues: gender and lifespan developmental approaches to studying adult personality; gender and the aging mind and body across adulthood; and the implications of gendered social roles for adult development and aging. We chose these issues for several reasons.

First, we wanted to highlight the differences between a “lifespan developmental” approach to understanding gender in adulthood and an “aging” approach (see also Elder & Shanahan, 2006; Fuller-Iglesias, Antonucci, & Smith, 2008). The first emphasizes growth across the lifespan, often includes qualitatively distinct periods or stages, and does not focus on decline or decrements. This approach emphasizes ways that adults of different ages (e.g., in their 20s vs. their 40s) may differ from each other in important ways. The second approach nearly always includes attention to processes of decline and decrements in functioning, but also increasingly notes functions that do not decline or that might even increase. These two approaches are both important and have both been used to study some phenomena, but in many cases only one of them has been employed. For that reason, we have quite different impressions of aging itself according to these different views, and those differences have consequences for our understanding of gender. For example, personality has been examined most thoroughly in developmental terms in adulthood, is often understood in terms of continuities or lack of change, but has rarely been examined in terms of decline or “aging.” In contrast, the cognitive and physical changes associated with adulthood are nearly always conceptualized in terms of broad processes rather than stages and, indeed, usually in terms of decline. Individual researchers who take both approaches to understanding gender in adulthood have advocated attention to contextual issues such as culture, class, or race/ethnicity, but most research has failed to incorporate it. We examine social roles as one set of contextual issues that have been studied in some depth and are often gendered, though men and women both occupy many of them.

Finally, in this chapter we pay attention to those aspects of the psychology of adult persons that seem to be inflected by gender, though we note with interest areas where there has been little research. We assume that some aspects of adult psychology are general to both women and men (e.g., that responsibilities for work and other people generally increase until old age, that there is a switch in focus to “time left” after mid-life), and we do not focus on those. Instead we consider evidence that gender matters in certain psychological experiences of adulthood in the three areas mentioned above: personality, cognitive and physical changes, and social roles. Thus, for example,

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we consider evidence that the hormonal and socially constructed changes that women experience at menopause are qualitatively different in their impact than the more gradual, equally complicated changes men experience. We consider how gendered social expectations and roles matter for men and women differently, for example, the ways in which men are expected to be occupationally successful and family “providers,” whereas women are expected to be care givers (of children, partners, and elders). We note that the impact of gender does not apply only to situations where women and men differ, but also in situations where all men or all women may be subjected to the same expectations and pressures, but individuals respond to them differently. Thus, all women are subject to expectations of maternal interest and pro-natal pressures, but those expectations have different consequences for women who combine career and family in different ways, or only pursue one of them. We therefore examine how internalized gender expectations and social identities matter in the course of adulthood. We note that men and women are equally “gendered,” but in social science research (and psychology research in particular) much more attention has been paid to women’s gendered psychology than to men’s.

Gender and Personality in Adulthood

As noted above, theory and research tend to treat personality in adulthood from a lifespan perspective, that is, to treat adulthood as one or several stages in the course of a lifespan longer than adulthood and to include qualitatively distinct developmental periods. Few, if any, theories of personality in adulthood posit purely quantitative decrements or increments in personality characteristics over the life course. Instead, some theories and research focus mainly on continuities throughout adulthood (Costa & McCrae, 1994), whereas others discuss qualitatively distinct periods of personality development (see, e.g., Freud, 1905/1953; Kegan, 1982; Loevinger, 1987; Sullivan, 1953). None of these theories grapples extensively with how personality is affected by declines or developments in other domains (e.g., cognition, the body, or social roles). We focus mainly on theory and research inspired by Erik Erikson (1950/1963, 1968, 1982; Erikson, Erikson, & Kivnick, 1986).

Erikson’s theory covers the period from birth to death, emphasizes the interplay between individual development and social demands, and includes four major periods during adulthood (those pertaining to identity, intimacy, generativity, and integrity). Its focus is on the internal psychological or personality accomplishments of each period of life. Erikson’s theory has been criticized as too strongly emphasizing sequential stages and as having time-bound notions of gender embedded in it (Barnett & Baruch, 1978; Franz & White, 1985). Nevertheless, the theory provides testable propositions, and has shown itself to be robust to expansion, correction, and refinement. We briefly review each of the adult stages Erikson outlined, and follow this with a consideration of current theoretical and empirical research related to this framework, including some additional proposed stages. We note that researchers have used many different measures in studies of Erikson’s theory. Most of these measures have been demonstrated to intercorrelate and, therefore, may well assess the same underlying construct; it is beyond the scope of this chapter to examine how measurement differences might affect research findings.

Erikson’s Theory of Personality Development

According to Erikson, the sequence of eight stages is universal, in part because the accomplishments of one stage are a necessary foundation for the next. Nevertheless, he argues that developments in

one stage do not end when the next begins; instead, developmental preoccupations emerge, overlap with previous stages, and continue after other stages emerge. His theory covers the entire lifespan, and emphasizes the results of both development and changing social expectations as individuals age. The four childhood stages concern the development of trust, autonomy, initiative, and industry, respectively, prior to the four major concerns of adulthood: identity, intimacy, generativity, and integrity. Each stage focuses on the resolution of developmental dilemmas (e.g., trust vs. mistrust; identity vs. role confusion), but Erikson recognizes that these resolutions are always partial and may even be temporary; thus, developmental preoccupations may re-surface later in life if a previous resolution fails. In this chapter we examine how the four adult stages are associated with gender in theory and according to research evidence.

According to Erikson, all societies demand that young people develop a workable social identity that allows them to function as adults within the social world. This identity, which is highly self-conscious in contemporary developed cultures but may not be in all times and places, includes elements of individual history and personality (where I come from and who I am), as well as elements of occupational (what I do that my society values) and ideological commitment (what I believe in). By the end of the period of focus on identity (the fifth stage in Erikson's epigenetic theory, which typically occurs during late adolescence and early adulthood), the individual has achieved an optimal balance between identity (and the social and personal commitments that follow from it) and role confusion (or ambiguity about "who I am"). Thus Erikson stressed not only the accomplishment of identity, but the fact that it remains somewhat open-ended and plastic (i.e., available for alteration) throughout adulthood.

The set of expectations in early adult development outlined above was, according to Erikson (1968), entirely accurate only for men; he argued that identity development was incomplete for a woman until she had "... commit[ted] herself to the love of a stranger and to the care to be given to his and her offspring" (p. 265). Consequently, Erikson (1968) believed that a woman's identity was defined and completed by her intimate commitment to a life partner (that he assumed would be male). Erikson proposed that for men intimacy, or the sixth developmental stage, occurs when "... the young adult... is eager and willing to fuse his identity with that of others" (p. 263). Thus for men intimacy presupposes a developed identity, but for women identity emerges only through the process of intimate commitment. In this way, for Erikson, adulthood begins in highly gendered terms.

After these two stages of early adulthood in which the individual makes commitments to particular social institutions (e.g., work, religion, marriage), both women and men are preoccupied in the seventh stage with generativity, or the process of creating or producing people, ideas, art, and things. Erikson suggested that this stage peaks in mid-life—at a time when both men and women are concerned with creating a legacy that will outlive them and with contributing to the well-being of future generations. Although Erikson viewed generativity as encompassing procreativity, productivity, and creativity among men (see, for example, his case study of Gandhi; Erikson, 1969), he thought that the primary outlet for generativity among women was the creation and rearing of children. As he saw it, there is a "... psychobiological need for procreation [that] can, it seems, not be ignored" (1982, p. 67). He also emphasized that, because of a woman's anatomy (i.e., because of her internal reproductive organs), her attention was naturally pulled to the "inner space": Hence, women were destined to be nurturing, accommodating, and to fulfill the social demand for generativity through parenting.

The last of the eight stages is ego integrity. Erikson saw this as a period when people attempt "... to reconcile the earlier psychosocial themes... and to integrate them in relation to current, old-age development" (Erikson et al., 1986, p. 55). People in this final stage attempt to accept a past that cannot be altered, to integrate that past with an unknowable future, and to resist potential despair with a sense that their lives possess integrity.

Critiques of Gender in Erikson's Theory and Beyond

Barnett and Baruch (1978), Franz and White (1985), and Vaillant (1977, 1993) offered critical perspectives on two important features of Erikson's theory: (1) the deeply gendered account of much of adulthood, and (2) the organization of adult personality into a fixed (and allegedly complete) set of "stages." It is noteworthy that these critics not only offered revisions, adaptations, and adjustments to the emphases in the theory, but also they affirmed many fundamental insights that are its key elements.

Barnett and Baruch (1978) noted that the proposed gender differences in identity resolution reflect the influences of the era in which Erikson wrote and that "... the centrality of women's reproductive role is assumed and the importance of their work pattern is ignored" (p. 187). They commented that this approach fails to account for the fact that different women adopt and shed different roles at different ages; thus, there is no universal pattern of role sequencing among women.

Franz and White (1985) suggested revisions to Erikson's theory that would address what they viewed as its implicit gender bias. They noted that the theory includes some stages focused on attachment or relationships (which are associated generally with women) and other stages focused on individuation (which are associated generally with men), without mechanisms to account for shifts in preoccupation from one to the other. They suggested that, instead, every stage has elements of attachment and individuation, and these should be balanced better in the theory. Thus, for example, identity is discussed in Erikson's theory entirely in terms of individuation, whereas Franz and White argued that becoming an individual who is connected to other people (e.g., family of origin, teachers, friends, intimates) is the real task and that the task requires attention to both individuation and attachment. Equally, the task of intimacy is how to retain selfhood in the context of a committed close relationship, a task that requires new capacities for both individuation and attachment. Franz and White argued that Erikson's theory builds gender into different stages rather than including the stereotypical strengths of both men and women in each stage.

Gergen (1990) made a different argument. She noted that Erikson focused on reproduction as women's outlet for generativity, whereas men "... achieve generativity through intellectual, occupational, and other public endeavors" (p. 473). She extended this criticism to Erikson's final stage during which, if childless, women are more vulnerable to the despair that is the opposite pole of the ego integrity-despair dilemma.

A related question is whether women and men experience particular and different sequences of development in terms of the stages Erikson outlined. Kroger (1993, 1997) found inconsistent evidence of gender differences in identity development or in the domain ranked most important for self-definition, and she suggested that the context of identity resolution is important for both genders. Similarly, Miner-Rubino, Winter, and Stewart (2004) found no gender differences in relative preoccupation with identity certainty and generativity, whether assessed concurrently (in their 60s) or retrospectively (about past ages). However, in a study of Black and White South African men and women, Ochse and Plug (1986) found that White women resolved identity crises earlier and had higher levels of intimacy than White men did. There were no gender differences in intimacy levels for Black participants, although Black men resolved identity crises as late as age 40, rather than in early adulthood. Ochse and Plug suggested, contrary to Erikson, that men develop identity through the experience of intimacy.

Researchers interested in possible gender differences in Eriksonian development have often examined the influence of social expectations and the difficulty of disentangling social roles and psychosocial development. Schiedel and Marcia (1985) conducted semi-structured interviews and found no gender differences in identity status or outcome (achieved, foreclosure, moratorium, or diffuse) for college students aged 18-24. Matula, Huston, Grotevant, and Zamutt (1992) found that

upper division college women were less likely to commit to a relationship if their identities were defined by vocational rather than marital aspirations, whereas upper division college men showed higher commitment in a relationship if their vocational identity was already defined. In a sequential-design study of psychosocial development in two cohorts of participants in the Rochester Adult Longitudinal Study, Van Manen and Whitbourne (1997) found that levels of industry in college were predictive of both men's and women's education attainment and that, for the older cohort, college psychosocial development scores predicted later life experiences for women, whereas life experiences in the early 30s predicted later psychosocial development scores for men. Based on the dimensions of exploration and commitment associated with Marcia's (1966) approach to examining identity status or resolution, Kroger (1997) found that women were more likely to explore family and career areas than were men, who were less likely to engage in any form of exploration. Skultety and Whitbourne (2004) found that women were more likely to alter their identities as they age, whereas men were more likely to maintain the same identity over time. They also found that, although the process of identity change was negatively associated with self-esteem for both genders, identity stability was positively associated with self-esteem for women.

Critiques of Erikson's Developmental Theory

As noted above, the issue apart from gender that has preoccupied scholars is the question of whether there is a single sequence of stages in development. Some have suggested that Erikson's set of stages is not complete. For example, Vaillant (1977, 1993) proposed two additional stages ("career consolidation" after intimacy and before generativity; "keeper of meaning" between generativity and integrity), and Kegan (1982) proposed an "interpersonal" stage focused on "connection, inclusion and highly invested mutuality" (p. 87) between the childhood stage of industry and the adolescent stage of identity. MacDermid, Franz, and De Reus (1998) suggested that generativity is taken up in two quite different ways: First in terms of "proximal" family issues, and later in terms of other "distal" social roles. An alternative strategy to the addition of "missing" stages is the possibility that adult development should be conceived as made up of elements with different developmental trajectories rather than as occurring in discrete stages (McAdams & de St. Aubin, 1998; Stewart & Vandewater, 1998; Zucker, Ostrove & Stewart, 2002). Finally, some authors (Kroger, 1997; Schiedel & Marcia, 1985) have questioned whether the sequence or process of development is gendered, even if the content of the stages is not. In her discussion of women's personality development, Josselson (2003) stated: "I don't believe there are definable 'stages.' Each woman fits these pieces in place in a sequence and pattern different from those of another" (p. 433). As Josselson commented, to disentangle mid-life women's concerns in terms of identity, intimacy, and generativity is "nearly impossible" (p. 432). Scholars have made similar observations about particular stages. For example, Kotre (1984, p. 264), in discussing generativity in men and women, argued that "generativity appears on and off in different guises through fifty or sixty years of adult life. . . Only on rare occasions does it merit the term stage." In order to account for both the deficits of stage theories and the impulse to create them, McAdams and de St. Aubin (1998) commented on the inherent unpredictability of adult lives, noted that they may not follow a stage pattern, and pointed out that people attempt to impose a structural framework that takes into account not just the present, but also the past and the future.

The timing of Eriksonian preoccupations and their influence by experience in social roles has been examined by many researchers, though they have focused mainly on women; as a result we know less about whether and how men's social role experiences affect their personality development. Ryff and Migdal (1984) noted that commitment to the many social roles women occupy can

influence development, especially women's life trajectories. Stewart and Vandewater (1993) found that women's post-college commitment to different social roles affected their levels of identity and generativity in mid-life: Women who committed to a family were more concerned with generativity in middle age, whereas women who committed to a career were more concerned with identity. Peterson (2002) suggested that the "stage" of generativity may extend across a wider period of adulthood, rather than being confined to mid-life. Kroger (2002) made a parallel argument about identity; she argued that identity preoccupations might not be limited to adolescents and young adults and that older adulthood is also a time of identity reconstruction.

Intimacy and identity. In contrast to the other adult stages and Josselson's (2003) ideas, Erikson's ideas regarding intimacy and its relative chronological restriction in the lifespan have been confirmed by two sets of researchers. Ryff and Migdal (1984) compared levels of intimacy and generativity in younger women and middle-aged women, and found that younger women reported more concurrent focus on issues of intimacy, whereas older women reported more retrospective focus on intimacy. In their study of college students, Schiedel and Marcia (1985) found that, as Erikson theorized, women had higher levels of intimacy than men did and that there were more women than men with a low-identity/high intimacy profile. However, they did not find any difference in overall identity levels between women and men. There is, however, surprisingly little research on intimacy, compared with the volume of research on both identity and generativity. One significant exception is Pals' (1999) study of how women in the Mills Longitudinal Study's different experiences of "identity in marriage" in early adulthood affected their well-being and subsequent development. She found that women with "restricted and confused" identities in marriage (in contrast with women with "anchored and defined" identities in marriage) were lower in well-being and less likely to have "consolidated identities." This study nicely demonstrates that different forms of intimacy (or identity in marriage) among women have different consequences for their subsequent personality development, which suggests that Erikson was certainly right about the important connections between identity and intimacy, but perhaps incomplete in his thinking about how those connections might work.

In a longitudinal case study of an individual from the same study, Mitchell (2007) interpreted the vicissitudes of the woman's close personal relationships (with family and intimate others) in terms of attachment theory. Mitchell's account makes clear that, for this individual, issues of intimacy were revisited throughout adulthood. Divorced after 23 years, in middle age she "wanted an intimate relationship and was hungry for one" (p. 109). At age 52 she viewed her divorce in retrospect as enabling her to "overhaul" her professional identity and to initiate a new intimate relationship with a woman. At 61, she described that relationship as "At its best, playful. . . . Companionable, sensuous, deliciously comforting, loyal, very individualistic" (p. 113). In short, in late middle age this individual achieved the kind of intimacy Erikson defined as arising in early adulthood. Case studies such as this one cannot provide a basis for generalization about common patterns for life courses, but they can provide critical insight into the ways common patterns may vary for individuals, particularly for individuals like this woman, who face major early losses and, as a result, enter into relationships too limited to sustain a lifetime of development.

Generativity. Erikson's focus on parenting as the ultimate expression of generativity, and the closely related assumption that parenting is more important for women than for men, has been examined in several studies. McAdams and de St. Aubin (1992) found that, although adult women had the highest levels of generativity when compared to adult men and college-age women and men, having children was more strongly linked with generativity for men than it was for women: Fathers scored higher on generativity than men without children did, whereas there was no significant difference between women with or without children. Similarly, Snarey, Son, Kuehne, Hauser, and Vaillant (1987), in a study of men's infertility coping patterns and parenting outcomes, found that earlier parenting predicted achievement of mid-life generativity among men. Stewart and

Vandewater (1998) argued that generativity itself has different phases or periods—desire, capacity, and accomplishment—which they saw as creating a developmental arc. The desire for generativity emerges first, capacity increases over adulthood, and accomplishment is achieved only relatively late in life. They commented that generativity may have been misunderstood as existing mainly in middle age, particularly given the biological realities that historically placed reproduction in the earlier adult period for most women. On the other hand, they also noted that Erikson wrote about generativity in the 1940s and 1950s, an era of different gender norms. “Both gender and generation may contribute to the patterns we have observed. . . perhaps men and women differ in the sequencing of timing of the development of generative desires, capacity, or accomplishment in public versus private spheres” (p. 96).

Ego integrity. In Erikson’s final psychosocial stage of ego integrity, gender differences may be less evident than in some previous stages. Indeed Gutmann (1987) viewed old age as permitting a kind of “cross-gender trade-off” of qualities that may result in greater gender similarity at the end of life. Consistent with this view, Kroger (2002), in her interviews with younger-old (65–75 years of age) and older-old (76 and older) women and men, found that both sexes felt the need to “tie up the life package” (p. 92), though they were sometimes dealing with different packages. Thus, for example, the women she interviewed had not had earlier full-time employment, but in their advanced years they wanted more vocational activity, such as volunteer work. Men, on the other hand were facing the need to adjust to the relatively limited power they could exert given the loss of an occupational role.

Critique: Culture, Sexual Orientation, and History in Erikson’s Theory

As we have outlined, Erikson’s theory made a number of questionable assumptions about how gender operates; these assumptions have been thoroughly examined in the literature. In contrast, his theory does not address at all how individuals who differ in terms of social class, race/ethnicity, or sexual orientation might differ in personality development. Although there is little empirical research on Erikson’s theories in different cultures or racial-ethnic groups, there has been some recent work concerning how sexual orientation can affect adult development. Patterson (1995) pointed out that Erikson ignored “. . . nonheterosexual pathways of development” (p. 4), though the issue of sexual orientation and “coming out” is of great import during adolescence, the time of identity formation. Konik and Stewart (2004) found that young adults who were sexual minorities were more likely to reach the achieved identity status than were those with “majority” sexual identities; they suggested that the need to develop a formal understanding of one’s own identity may be prompted earlier and more explicitly for many gay and lesbian young people by their felt difference from the social norm. Schope (2005) found that gay men and lesbians perceived the aging process differently than heterosexuals and differently than each other: Gay men were more ageist than lesbians. Schope’s work highlights not only the diversity of LGBT individuals’ perspectives on aging, but also the different benchmarks that many gay men and lesbians use for aging (e.g., “datability”) as opposed to those commonly used by many heterosexuals (marriage, family). Older gay men and lesbians were the focus of Heaphy’s (2007) interviews concerning aging and the long-term consequences of “living outside the heterosexual norm” (p. 194). Like Schope, Heaphy also underscored the great diversity in this group, as well as the influence of sexual identity on work and family choices, especially in the area of non-gendered household roles.

Finally, little research has examined Erikson’s developmental model explicitly within historical context (apart from Erikson himself, as he did, for example, in his study of Gandhi’s life; Erikson,

1969). Stewart and Healy (1989) examined cohort influences on identity formation and development; they assessed the influence of the Women's Movement of the 1960s/1970s for women who had not yet made marriage and career choices compared with women who already had. The latter group often discussed experiences of divorce or going back to school in terms of their own identity development. Duncan and Agronick (1995) found similar outcomes for two cohorts of women: The cohort that experienced the Women's Movement at a younger age incorporated assertive and self-confident personality characteristics in early adulthood, whereas the cohort that experienced it at a slightly older age developed these same characteristics in mid-life. There is also evidence that social class may moderate the effects of the Women's Movement for women who came of age in the early 1960s (Stewart & Ostrove, 1993). The influence of historical change in shaping personality over time, particularly identity, was investigated by Helson, Stewart, and Ostrove (1995) in their study of three cohorts of women who had been in their early 40s in the 1950s, the early 1960s and the late 1960s, respectively. Societal restriction interacted with personal identity to lead to different outcomes: Those women who accepted societal pressures were more likely in their 40s to be married with children, whereas those women who questioned the societal status quo were more likely in their 40s to be more educated and pursuing a higher status career. Whitbourne and colleagues (Sneed & Whitbourne, 2006; Whitbourne, Zuschlag, Elliot, & Waterman, 1992) did not report gender differences in their analysis of the Rochester Adult Longitudinal study (RALS), but did report differences in levels of ego integrity as a result of historical influences. They posited that the drop in ego integrity scores they found in the 1988–1989 data collection, when the mean age of participants was 42, reflected the rise of materialism in the 1980s, along with an "... erosion of philosophical values" (p. 269). They commented that this is consistent with decreases in freshmen's scores on measures concerning the development of a coherent philosophy of life and on the California Personality Inventory (CPI) measure of responsibility. Sneed and Whitbourne (2006) suggested that the subsequent comparative increase in ego integrity scores for the 2000–2002 follow-up reflected a rise in social values in the 1990s, with a heightened mandate for volunteerism.

In sum, Erikson's theory has generated a rich body of research pertinent to our understanding of how personality development is, and is not, gendered in adulthood. More research has focused on the issues of identity in women's lives than in men's, and researchers have focused unevenly on the different stages. Little work has examined the impact of various social contexts on personality development, an important priority for further research, though some has examined the impact of social roles on various stages and the impact of generation or historical events. Personality development, however, is only one aspect of the psychology of adult women and men.

Gender and the Aging Body and Mind

Adulthood differs from childhood, not only in terms of qualitatively distinct stages, but as the period of life when, at some point, one switches from "developing" to "aging" (see Butler, 1975; Rowe & Kahn, 1998). Of course, people are always doing both, but the ratio seems strongly but decreasingly in favor of developing or "becoming" until mid-life and increasingly in favor of aging thereafter. The self-conscious awareness of this has been defined as a shift to "time left" that occurs around mid-life for most people (Butler, 1974; see also Lang & Carstensen, 2002). Ebner, Freund, and Baltes (2006) showed that this shift is reflected in a parallel shift from "striving for gains" in personal goals to "maintenance and prevention of losses." Researchers, like the popular media, have assumed that declines in physical strength and energy affect men more than women, whereas declining appearance and sexual attractiveness affect women more than men (Chrisler, 2007; Halliwell & Dittmar, 2003).

Are the fewer social expectations about gender differences in cognitive decline associated with aging warranted? There are a few presumed increases as people age; these include wisdom (Gluck, Bluck, Baron, & McAdams, 2005; Takahashi & Overton, 2002; however, see also Baltes & Staudinger, 2000; Staudinger, 1999, and Staudinger & Baltes, 1996, for a nuanced analysis of the role of age in wisdom), judgment (Labouvie-Vief & Blanchard-Fields, 1982; Labouvie-Vief, DeVoe, & Bulka, 1989), maturity (Helson & Wink, 1987), and emotion regulation (Carstensen, Fung, & Charles, 2003). It is not completely clear whether these increases differ in level or trajectory by gender or not.

Gender and Aging Bodies

Adulthood is popularly understood almost entirely in terms of “aging” rather than development in two domains: the physical body and the mind (or cognitive functioning). Neither domain is generally viewed as involving qualitative, stage-like changes in the course of adulthood, with the possible exception of menopause for women. The aging body is viewed generally as declining gradually in strength and attractiveness (Hurd, 2000; Marshall & Katz, 2006), though a few have argued that the metaphor of decline is at least exaggerated (see, e.g., Gullette, 1997), and some have noted evidence of women’s increased “zest” as they age (Silver, 2003). Equally, the aging mind is generally viewed in terms of decrements (see, e.g., Salthouse, 2004), including efforts to fend off those decrements as long as possible (Rowe & Kahn, 1998), though there are some countervailing trends in the literature (Reuter-Lorenz & Mikels, 2006). Thus, most of the strongest cultural beliefs about physical and cognitive changes in adulthood focus not on gender, but age itself.

The main approach psychologists have taken to thinking about gender and the aging body is to examine how people feel about the age-related changes they have experienced in their bodies (Pliner, Chaiken, & Flett, 1990; Saucier, 2004). Women and men have reported about their aging bodies, as well as about their own bodies’ relationship to ideal body images for men and women. Although most of this research emphasizes people’s negative feelings about aging, some have noted that these patterns are often exaggerated in the mainstream media. For example, Zucker, Ostrove, and Stewart (2002) reported that, although women in their 60s had more concerns about their aging bodies than did women in their 40s or 20s, in absolute terms these concerns were not overwhelming. Halliwell and Dittmar (2003) reported that although women noticed a decrease in societal demand for attractiveness as they aged, they also noticed a decrease in social visibility and a loss of power. Men were more concerned with the negative effects of aging on their physical capabilities and function, rather than on their appearance. Similarly, Vaillant (1977) found that some men were preoccupied with their loss of athletic capacity and sexual potency from middle age onward.

According to Feingold and Mazzella (1998), gender differences in body image satisfaction are increasing. Recent studies have shown that men and women have similar concerns about the ideal body image, but the focus of the concern may be different. Boys and men strive for the ideal muscular body, whereas girls and women strive for the ideal thin body (Barlett, Vowles, & Saucier, 2008; Johnson, McCreary, & Mills, 2007; McCreary & Sasse, 2000). Muth and Cash (1997) found that weight has a different relationship to body image among college-age men and women: Heavier women were generally more dissatisfied with their appearance, whereas men were concerned with both being “too skinny” and being “too fat” (p. 1446). McCreary, Sasse, Saucier, & Dorsch (2004) have documented the related “drive for muscularity,” particularly among young men. Both women and men are influenced by the media focus on ideal body images (Barlett et al., 2008; Fredrickson & Roberts, 1997; Giles & Close, 2008). Like the psychological outcome of the drive for thinness

among women, the drive for muscularity among men is also related to lower levels of self-esteem and higher levels of depression (McCreary & Sasse, 2000), as well as to gendered behaviors and personality traits such as agency (McCreary, Saucier, & Courtenay, 2005).

One other preoccupation of the literature on aging bodies has been menopause, which is given particular weight by researchers and by some women because of its symbolic significance as the end-point of reproductive capacity for women. Although considerable research suggests that menopause is experienced by many women as not particularly significant subjectively (see, e.g., Mitchell & Helson, 1990), it has nonetheless been examined extensively in terms of its expected implications for women's sexual desire, sexual attractiveness, and sexual activity, as well as women's self-esteem (Marshall & Katz, 2006; McHugh, 2007). Sometimes the findings have contradicted cultural stereotypes. For example, Dillaway (2005) found that her interviewees reported feeling "sexier" and more "womanly" (p. 407) than before the onset of menopause, perhaps because they had previously ended their reproductive years through the use of contraception. Parallel attention has not been paid to the psychological implications of reproductive system changes men experience as they age.

However, the medical literature has defined a cluster of symptoms that may be comparable to women's menopause for men: Andropause (Brawer, 2004; Charlton, 2004; Lambert, Masson, & Fisch, 2006; Shabsigh, 2003), also known as androgen decline in the aging male (ADAM), partial androgen deficiency in the aging male (PADAM), aging male syndrome (AMS), late onset hypogonadism, or the male climacteric. Onset is more gradual than menopause, given the roughly 1% per year drop in testosterone level after age 30 (Brawer, 2004). Along with physical symptoms (such as decreased libido, lean muscle mass and power, and body hair), andropause allegedly affects psychological function through a loss of motivation, poor concentration, and a general decrease in intellectual activity (Charlton, 2004, p. 56). Lambert, Masson, and Fisch (2006) have commented that, given the decline in men's reproductive hormones over time, age-related fertility and genetic problems are not the sole domain of women. It is not yet clear how significant andropause is for the psychology of men. Although many biological changes are heralded as having psychological importance, the literature on menopause suggests the implications for psychology can be elusive and are certainly highly variable across individuals.

Gender and Aging Minds

Most researchers agree that there are only negative changes in the speed of cognitive processing as people age (e.g., Park et al., 1996; Salthouse, 2000). Little is known about the positive aspects of cognitive aging, although it is acknowledged that crystallized intelligence declines much more slowly than fluid intelligence (Craik & Salthouse, 2000) and that many abilities are stable or show wide variation in performance on multiple occasions as people age (Salthouse, 2007). Historically, most research with a developmental approach to the study of cognition has been limited to children and adolescents; however, Labouvie-Vief (1992) proposed an extension of Piaget's theory of cognitive development to adults. She noted that "... important cognitive developments do continue well beyond the period of formal operations" (p. 205).

Although some researchers (see Salthouse, 2000) have found that men and women show similar patterns of cognitive decline as they age, others have found gender differences in specific cognitive abilities, or in the use of those abilities in everyday practices. Wilson et al. (1996) found that women aged 65 and older participated more than men of the same age in daily cognitive activities, such as reading the newspaper, although men engaged in more cognitively intense activities, such as reading a book or visiting a museum. Norman, Evans, Miller, and Heaton (2000) found that women in three

age-groups (less than 40, 40–60, and over 60) out-performed men in their ability to recall words on the California Verbal Learning Test (CVLT). Hyde and Linn (1988) conducted a meta-analysis of the verbal skill literature, and showed that women's superior verbal skill depended on the type of verbal skill being tested: Men were better at analogies, and women were better at anagrams and speech production. Lowe and Reynolds (1999) found similar results with adults aged 54–89 on the Wechsler Adult Intelligence Scale (WAIS-R): Although men scored higher on the Verbal and Performance IQ subscales, women scored higher on the Digit Symbol and Coding subscales.

Researchers agree that there is "substantial overlap" between women's and men's scores on cognitive tasks (Hyde & Kling, 2001, p. 369; see also Wigfield, Battle, Keller, & Eccles, 2002) and also acknowledge great variance within each of these groups (Canetto, 2001), especially along dimensions such as social class, education, sexual orientation, and ethnicity. However, there is also recognition that social roles greatly influence cognitive development. As Wigfield et al. commented: "... any observed sex differences in cognition... are due in part to... views on what are appropriate activities for males and females" (p. 93). Although this is changing, thanks to increased access for women to education in the last century (Lowe & Reynolds, 1999), older women are generally seen as less competent, less intelligent, and less wise than older men (Canetto, 2001). This situation is partly accounted for by gender stereotypes, but it is also true that women's longer lifespan means that they are, in fact, more likely than men to develop syndromes that involve cognitive decline, such as dementia, and are more likely than men to be nursing home residents (Schaie & Willis, 1996). In an unusual study of residents of Berlin who were 70 to over 100 years of age, Smith and Baltes (1998) noted that although more women live to these ages, the women in the sample were physically frailer than comparable-age men, and had fewer accumulated life resources (e.g., education, money, living spouse). Smith and Baltes argued that gender is implicated in these important differences in life situation, and that the role of life situation in the life course means that men who live a long time (which they are less likely than women to do) "have accumulated more of the advantages and resources to better cope with the demands of aging" (p. 691).

Apart from that study, there is little discussion in the literature about the possible origin of the observed gender differences (or their absence), but Labouvie-Vief (1996) argued that objective thought (seen as masculine, and therefore superior) has been reified by society at the expense of subjectivity (seen as feminine, and therefore inferior). Labouvie-Vief noted that this cultural preference translates into men's overvaluation of their performance achievements and women's underestimation of theirs. She posited that men are also more likely to intellectualize emotions, and women are more likely to turn inward with self-blame and self-doubt. Labouvie-Vief concluded that cultural emphasis on the masculine leads to underdevelopment of (different) psychological resources for both men and women.

Stereotypes are not set in stone, and their effects can be mitigated. This has been demonstrated regarding gender and race stereotypes and no doubt also applies to stereotypes of older adults. Steele (1997) demonstrated how perceived cognitive differences between women and men can be manipulated by priming a negative, shared stereotype such as "women are bad at math." When such a stereotype was not primed, women who identified as proficient in math performed as well as men did. A different aspect of women's expectations was studied by Desmarais and Curtis (1997), who found that, although women generally felt entitled to lower pay than men for the same work, their expectations were raised to equity when their pertinent past work experience was made directly salient. An interesting corollary to stereotype threat for women was provided by Koenig and Eagly (2005) in their study of men and social sensitivity. They found that, when men were threatened with the stereotype of insensitivity, they performed worse than if they were not threatened. Thus cultural stereotypes regarding gendered capacities clearly differ, but it is much less clear that the physical and cognitive changes men and women experience as they age actually differ by gender, once we take

account of other variables (e.g., age, education, income and wealth). In fact Silver (2003) argued that old age may “come close to embodying a feminist utopia of gender equality. In this utopian society, power relations and gender differences become minimized, androgyny becomes the norm, and the self can be actualized in contradictory ways” (p. 392).

Gender and Changes in Social Roles Across the Lifespan

Social roles are gendered just as cognitive capacities, physical characteristics, and personality pre-occupations are. Moreover, normative pressures define not only what roles individuals will occupy, but when and in what order they occupy them (Moen, 2001; Smith & Baltes, 1998). Neugarten, Moore, and Lowe (1965) asked young, middle-aged, and older participants for estimates of the normative timing of life events such as marriage, parenthood, and occupational commitment. Although women and men were in agreement on at least 75% of their responses, there were differences in the timings of particular social roles and responsibilities by gender. Specifically, women were viewed as appropriately marrying relatively early (between ages 19 and 24), as past their period of maximal responsibility at 40, and as having accomplished most of what they would accomplish by 45. In contrast, men were viewed as needing to choose a career between ages 24 and 26 (the question of women and careers was not asked), as being past maximal responsibility at 50, and as having reached maximal accomplishment by 50. Although normative ages for these developmental markers have probably changed since Neugarten and colleagues' study, the social roles themselves and their relative timing (marriage and children more obligatory and sooner for women, occupation more obligatory and sooner for men) and the relative timings (earlier for women and later for men) have changed very little (according to the 2002 Census, the median age at which women marry is 25.1; for men it is 26.7). Diekman and Eagly (2008) explored the influence of gender differences in social roles and how agency and communion differ as a result of a gendered division of labor. They also discussed the notion of role congruity, in which behavior aligns with the demands of the role, and pointed out that both women and men are punished for acting in non-gender-normative ways. This is particularly evident for women in traditionally male-dominated occupations and for men who take an active parenting role rather than single-mindedly pursuing a career.

Gender, Roles, and Well-Being

One focus of the social role literature has been the implications of roles for well-being. For example, performing multiple roles (e.g., work and family) is generally found to be beneficial for both men and women (Barnett & Hyde, 2001; Josselson, 2003) in terms of well-being, although there is evidence that it is unusual for women to focus on employment and for men to focus on family (MacDermid & Crouter, 1995). However, investment in multiple roles can also lead to increased stress (Antonucci, 2001), and there is evidence that well-being derived from multiple roles may be moderated by socioeconomic status and race (Siefert, Finlayson, Williams, Delva, & Ismail, 2007). Gordon, Whelan-Berry, and Hamilton (2007), in their study of working women over the age of 50, found that commitment to family can enhance work performance and satisfaction. Helson and Soto (2005) made the point that middle age can be a crucial time regarding social roles: The number of roles peaks and then declines, roles change in character, status level is highest, and declines in health begin, as does the level of formal social participation. Some women decide to add another role in middle age by returning to school, especially after family and work roles are established (Sweet &

Moen, 2007), or use their multiple roles to buffer distress in periods of transition, such as empty nest, widowhood, or retirement. There is less research on men in this area, but Marks, Huston, Johnson, and MacDermid (2001), in a study of married couples in their 30s, found that role balance, or full cognitive engagement and satisfaction in the performance of all of one's roles, may be greater when men's and women's gender role attitudes are more traditional. Less role conflict was present, for example, for women who were full-time "homemakers" and men who were full-time "breadwinners." However, this may change as couples age and new transitions are negotiated. For example, Whitbourne and Skultety (2006) found that women who emphasized their roles as mothers were more susceptible to "empty nest syndrome," whereas women most defined by their work were often the most affected by retirement. Finally, MacDermid and Crouter (1995) also emphasized the need to analyze how well supported by each other husbands and wives feel as parents of adolescents.

Many researchers have found evidence of the long-term effects of early commitment to a social role or of the impact of a particular social event. Helson, Mitchell, and Moane (1984) extended Neugarten et al.'s (1965) idea of the social clock to the Mills Longitudinal Sample. They found that earlier commitment, or change in commitment, to social roles was related to later changes in personality and labor force participation. Similarly, Roberts and colleagues (Lodi-Smith & Roberts, 2007; Roberts, 1997; Wood & Roberts, 2006) linked social roles to personality development; Roberts (1997), in particular, found that women who were employed in the labor force between the ages of 27 and 43 were more agentic in mid-life than were women who were not employed. Stewart and Vandewater (1993) noted that the Radcliffe Class of 1964 represented a particular intersection of gender, history, and personal development; as a transitional cohort, these women combined the socialization to conservative gendered family values in their childhood with increased graduate education and workforce participation in their adolescence and early adulthood (see also Stewart & Vandewater, 1999). Women who had committed solely to the family clock in their 20s were more concerned with generativity in their 40s, whereas those committed to the career clock in their 20s were more concerned with identity in their 40s. In their study of former female and male activists of the 1960s, Franz and McClelland (1994) found gender differences not only in what was protested (men were more likely than women to have protested only the Vietnam War draft; women more likely to have protested the draft as well as racism and sexism), but in how activism affected them at ages 31 and 41. Female activists were less involved in family life and had better jobs than their female peers, whereas male activists were less well-off than their male peers as far as occupation was concerned.

Changing Work and Family Roles

Much of the literature concerning gendered social roles and how they change in adulthood centers on two broad areas: work and retirement (associated with men and masculinity), and marriage and children (associated with women and femininity). Despite cultural stereotypes, women currently make up 46% of the U.S. labor force (U.S. Department of Labor, 2007) and outnumber men in such occupations as human resources managers and education administrators. Contrary to popular culture's images of overstressed and chronically tired working women, Hartmann, Kuriansky, and Owens (1996) found that African American and European American working women were healthier than their non-working peers, although in general African American women have less favorable health profiles than European American women do. Hartmann et al. also found that Latinas tend to work less during the childbearing years than either African American or European American women do, but Latinas were more likely to be working at age 65 or older, and African American women had

an unusually high rate of full-time employment when married compared with other groups. Barrett (2005) found no evidence that work roles are more salient for men than for women, or that family roles are more salient for women than for men. Although there is still cultural preference for both women and men to have gender-congruent jobs (Diekmann & Eagly, 2008; Eagly, 2007; Simpson, 2004), there is some evidence of a shift away from gendered occupations. Women have entered fields nontraditional for them, and men have also entered nontraditional occupations for them (such as librarian, nurse, or primary school teacher). However, men benefit even in nontraditional occupations from stereotypical gender assumptions regarding leadership abilities and careerist attitudes (Simpson, 2004). Across fields, as a result of higher rates of paid employment, fewer demands for childrearing, and men's increasing acceptance of responsibility for childcare and housework, more women are moving into positions of power (Eagly, 2007). Women are sometimes even preferred as bosses due to their transformational style of leadership, a style thought to combine and bridge elements of more communal and agentic styles (Eagly, 2007). However, tension still exists between women's potential and social reality, as Maureen Dowd (cited in Eagly, 2007) stated: "The sad truth is, women only get to the top of places like the network evening news and Hollywood after those places are devalued" (p. 1).

The concept of marriage has undergone some changes in the last few decades, for both men and women. Gerson (2002) noted that, with the change in attitudes toward women's work roles, women are more financially empowered than in the past, and thus not tied to their husbands as "breadwinners." In her interviews with men and women aged 18–32, she found no gender differences in the ideal of an economically equal marriage where both partners have careers; women said that the home is not the "... sole source of satisfaction or survival" (p. 20), and men questioned the idea that the work domain was the sole source of masculine identity. However, both women and men acknowledged that equality in the work/home balance was often difficult to attain, and both had "worse case scenarios" or fall-back positions for when this goal is not met. As a backup, men preferred alternative arrangements in which women earned equal amounts but took on more of the childcare responsibilities, whereas women preferred financial security through commitment to work. Connidis (2006) found that remarriage for women, especially older women, may not be advantageous, given potential care-giving responsibilities and the prospect of less independence. For these reasons, older women preferred alternative intimate partnerships such as Living Apart Together (LAT) to remarriage, whereas traditional marriages were still seen by older men as advantageous. Similarly, Conway-Turner (1999) found that older women of color were less likely to be married than were older men of color; they were also less likely to be living alone, sometimes engaged in double-duty as a care giver both to the old-old and to grandchildren.

Issues of parenting and grandparenting, and other care-giving obligations, also change over the course of adulthood (Kulik, 2007). As Barnett and Baruch (1978) commented: "In most research, the centrality of women's reproductive role is assumed and the importance of their work pattern is ignored. Thus menopause and the 'empty nest' receive disproportionate attention" (p. 187), although perhaps traditional gender roles becomes less attractive with age (Gerson, Berman, & Morris, 1991). The role of grandparent is a more androgynous role for some; it has been observed to be gendered for others. In her work on aging and Chicanas, Facio (1997) found that Chicana grandmothers have a larger role in family affairs than the common expectations of their European American counterparts. The continued expectation of older African American women to be educators and wisdom keepers was explored by Conway-Turner (1999); she commented that this often leads to older African American women doing double-duty as care givers to both grandchildren and elderly relatives, including husbands.

Due in part to the increase in intentional childlessness, some researchers have examined how involuntary or voluntary childlessness affects adulthood. Gerson et al. (1991), in a study of childless

women and men aged 21–42, found that younger participants expressed more desire than older participants to have children, but older participants identified different costs involved in parenting than younger ones did. In addition, men cited financial considerations, and women cited personal and social considerations. Both Letherby (2002) and Koropecykj-Cox, Pienta, and Brown (2007) pointed out that there is great diversity among women without children in terms of marital and partner status and that women who are not mothers are as diverse as women who are. Koropecykj-Cox et al. also commented on the strong pro-natalist pressures of the 1950s, and noted that women whose reproductive years fell during that time were less likely to choose not to have children. The researchers found that childlessness was not related to mid-life well-being on its own, but only through other factors such as health, socioeconomic, and marital status.

Not only are people more often choosing not to parent, but they are also choosing to parent later. The emphasis on being normatively “on-time” (Neugarten et al., 1965) was explored by Wrosch and Heckhausen (2005), who posited the idea of “developmental deadlines”—optimal times or ages in which to complete life goals—such as having a child. Optimally, an individual’s efforts to meet a goal increase as the individual approaches it, and disengage once the deadline has passed. With the development of new reproductive technologies, however, not only are cultural deadlines for child-birth likely to continue to shift and to change the concept of reproductive capacity, but lesbian and gay adults are more able to parent if they wish.

When it comes to retirement, women are often at a disadvantage both due to a work history that can include part-time or sporadic employment and the fact that women are less likely than men to receive private pensions (Carp, 1997; Rubin, 1997). Older women may continue working rather than retiring, and, if they do retire, they usually take on low-paying jobs or unpaid jobs in family businesses. Retirement is also difficult to define for those women who were either homemakers or employed in family businesses. Women are more likely to stop working for family-related reasons, such as care-giving demands (Carp, 1997; Richardson, 1999) and their husbands’ retirements (Richardson, 1999; Rubin, 1997). Hansson, DeKoekkoek, Neece, and Patterson (1997) summarized the situation for women by commenting that traditional models of retirement “. . . may not apply to the many women who have been restricted to occupations with little opportunity for training, promotion, or mobility, [and] have had to balance family and work goals” (p. 222). Given this, it is not surprising that Winter, Torges, Stewart, Henderson-King, and Henderson-King (2007) found that women who look forward to retirement as a time of enrichment generally had not embraced traditional gendered roles, that is, they had fewer caretaking responsibilities, fewer children, and more liberal social views, than other women did.

Conclusions and Future Directions for Research on Gender and Adulthood

The landscape of adulthood has a few important signposts and markers, but in the end it remains surprisingly uncharted; the place of gender in that landscape is also ambiguous. Theories about adulthood seem to make one of two choices: They define processes (of changes in perception of time; forms of relating; or declines in thinking, feeling, and behaving) that are not anchored to any social context at all, or they define periods or stages in terms of gendered role-linked experiences that arise not for everyone but mainly in conventional work or family lives. As a result these theories seem woefully inadequate to the task of capturing the complexity of lived adult lives, as well as alternately disembodied or overly tied to social scripts. At the same time, there are many studies in psychology that focus on aspects of human behavior that occur in some period of adulthood without conceptualizing it in terms of life stage. Therefore we could know much more than we do about many stages

of adulthood if we examined the literature on certain topics with an eye to lifespan development. Future researchers could and should examine literatures that have implications for understanding identity, intimacy, generativity, and integrity in terms of age and life stage (e.g., work satisfaction and commitment; relationship commitment, marital satisfaction, and couple interactions; parenting approaches and success; regret, life review, and self-transcendence), even when those have not been the researchers' deliberate focus. We need to know and understand more about how age and life stage do and do not matter in the course of adulthood. And we particularly need to examine life courses that deviate from expected patterns. For example, Elder, Shanahan, and Clipp (1994) have shown that military experience can—but does not always—interrupt the process of establishing a work and family life. Early losses can, as Mitchell (2007) showed, constrain individuals' capacities to establish intimate connections. But these interruptions and constraints are often overcome at some point in the life course, and we need to understand much better how the long span of adulthood can be and is used to reconstruct personalities that were hampered at some point.

Clearly we need to understand more about how different kinds of social contexts matter. We are particularly ill-informed about the impact of lifelong poverty on personality development, and we have only a few leads about the impact of historical time via a few researchers who self-consciously consider the meaning of being a member of a particular cohort across time. Whitbourne and Willis (2006) recently reviewed articles based on different studies of the life course of members of the baby boom generation up to mid-life. We need more studies of this sort—particularly projects that compare cohorts. How do members of cohorts that faced serious economic and material deprivations in youth or early adulthood differ in their experience of mid-life and later adulthood from those that did not? How do members of cohorts that faced prolonged periods of life-threatening danger differ from those that did not in coming to terms with death at the end of a long natural life?

And what does gender have to do with these matters—both the gendered expectations experienced by each cohort and internalized or resisted by individuals, and the gendered social constraints that determine life chances and life opportunities? We know that women and men are subject to some different experiences in adulthood, as well as other experiences that are similar. Increasingly both are likely to experience the labor force, but women are much more likely than are men to experience sexual harassment and pay inequity; how does that experience difference matter? And what difference does it make that, although men may not directly suffer from these experiences, some men notice and regret them when they happen to their friends, sisters, colleagues, wives, or daughters? Men are much more likely to experience physical challenges to fight either from individual men or from their country in the context of demands for military service. Though both men and women now can serve in the military, the pressures and opportunities are still quite different, and the consequences for men of a lifetime of being presumed to be the physical defender of others are not well understood. Equally, though men and women both parent, and increasingly the nature of their parenting roles is similar, the cultural demands of motherhood and fatherhood are still understood very differently, and the consequences of those differences at different stages of adulthood are also understudied. Because adult role-related experiences are themselves gendered, the research on women and men has tended to emphasize those with normative life paths—heterosexuals, the married, and parents. We know much less about individuals who lead less conventional lives: sexual minorities, people who remain unattached to a partner throughout adulthood, and people who never parent. We also know little about the role of culture in shaping the way these experiences matter in adulthood. In a study of identity formation among Japanese women, Sugimura (2007) concluded that culture had two important consequences. Specifically, these young women felt a strong need to coordinate their own wishes and goals with those of their parents. Although some individual American adolescents might feel similar needs, Sugimura suggested that this demand is culturally given for all Japanese adolescents. Similarly, she noted that the process of “negotiation” of an occupation must

be conducted entirely internally if harmony with parents is to be maintained and conflict avoided; this cultural pressure for resolution of conflict without overt expression of it is, Sugimura suspected, specific to the Japanese context. We need to understand more not only about subjective consequences of cultural values for adult psychology, but also about their implications for later life and for health and well-being.

Finally, our research must take account not only of the changing social context but of the changing social policies that actually alter the experience of gender in adulthood. Differences by culture and over time in retirement norms and policies have consequences for whether or not grandparents are available to provide assistance to the parenting generation. In turn, when they are available, grandmothers and grandfathers may be faced with joint decisions about care giving, despite their quite different experiences in adulthood to date. Similarly, advancing life expectancy and improved access to healthcare for at least some parts of the population has vastly increased the presence of the “old-old” in the population and the presence of elders in their 80s and 90s in family lives. These patterns are likely to increase, but we do not yet know much about their consequences. Currently a generation of middle-aged women and some men is caring for their older parents, often for many years; what are the consequences of that care giving for their own lives and development and for the lives of their own offspring (e.g., when they are not able to help with that generation’s child care needs)? How do these activities change the processes of aging and development that define the adult life experience of all three generations? And how do all of these policies and changes differentially affect members of particular racial-ethnic groups, sexual orientations, parent statuses, and social classes? These questions are not only of urgent social importance, but would also help us to develop much more adequate models and theories of adulthood, within which to examine the importance of gender and other important human differences and axes of power relations.

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Author Index

A

- Aamodt, M. G., Vol-I: 438
Aaron, D. J., Vol-I: 187
Abbey, A., Vol-II: 283–284, 631
Abdel-Shaheed, J., Vol-I: 240
Abdul-Quader, A. S., Vol-I: 187
Abell, S. C., Vol-I: 544
Aber, J. L., Vol-II: 388, 619
Abraham, S. F., Vol-I: 458
Abrahams, D., Vol-II: 287
Abrahams, S., Vol-I: 225, 328
Abraído-Lanza, A. F., Vol-II: 501, 554
Abramson, L. Y., Vol-I: 545; Vol-II: 96, 136, 142, 146
Abu Odeh, L., Vol-I: 119
Acacio, J. C., Vol-I: 329
Acevedo, E. D., Vol-II: 569
Acierno, R., Vol-II: 316
Acker, J., Vol-II: 452
Ackerman, P. L., Vol-I: 301
Ackerman, S. J., Vol-II: 235
Ackley, M. A., Vol-II: 600
Acock, A. C., Vol-II: 405, 409–410
Acosta, R. V., Vol-II: 566
Acton, W., Vol-I: 471
Adams, A. S., Vol-II: 531
Adams, C., Vol-I: 323
Adams, H. E., Vol-II: 360, 371
Adams, J., Vol-II: 677–678
Adams, M., Vol-II: 402–403, 406, 416
Adams, P. F., Vol-II: 518
Adams, R. B. Vol-I: 431
Adams, S., Vol-II: 141
Aday, L. A., Vol-I: 180
Addis, M. E., Vol-I: 51, 53–55, 136, 145; Vol-II: 135, 137, 223–226, 228, 230, 234–236, 241, 267, 545–546
Ader, D. N., Vol-I: 197, 199
Adler, N. J., Vol-II: 454
Adler, P., Vol-II: 595
Adler, T. F., Vol-II: 383–384, 388
Adler-Baeder, F., Vol-II: 686
Ægisdóttir, S., Vol-II: 360, 362
Affleck, G., Vol-II: 511
Affifi, W. A., Vol-II: 283
Agars, M. D., Vol-II: 448
Agarwal, P., Vol-II: 292
Aggleton, P., Vol-II: 486
Agliata, D., Vol-II: 167, 658
Agnew, C. R., Vol-II: 294
Agostini, L., Vol-I: 496
Agras, W. S., Vol-I: 86
Agronick, G., Vol-I: 19
Agronick, G. S., Vol-I: 566
Ahlers, R. H., Vol-I: 328
Ahluwalia, J., Vol-I: 309
Ahmed, F., Vol-I: 194
Ahrens, C. E., Vol-II: 624
Aiken, L., Vol-II: 621
Aikin, K. J., Vol-I: 144
Aimar, C. M., Vol-II: 570
Ainsworth, B. E., Vol-II: 567
Aitken, L., Vol-I: 180
Akers, J., Vol-I: 107
Akimoto, S. A., Vol-I: 198
Akincigil, A., Vol-II: 478
Akrami, N., Vol-II: 362
Alagna, S. W., Vol-II: 350
Al-Alami, M., Vol-II: 368
Álava, M. J., Vol-I: 322
Albano, S., Vol-II: 686
Albee, G., Vol-II: 633–634
Albert, M. S., Vol-I: 227
Albrecht, R., Vol-I: 535
Albritton, K., Vol-I: 183
Aldarondo, E., Vol-II: 271–272
Alegria, M., Vol-II: 622
Aleman, A., Vol-I: 223
Alexander, A. M., Vol-II: 165
Alexander, G. M., Vol-I: 236–237, 322, 325
Alexander, J. F., Vol-II: 255, 269
Alexander, J. M., Vol-I: 457
Alexander, M. G., Vol-I: 481–482, 487
Alfeld, C. J., Vol-II: 382
Alfieri, A., Vol-I: 530
Alfieri, T., Vol-II: 501
Algoe, S. B., Vol-I: 413
Ali, A., Vol-II: 9, 91–105

- Alibakhshi, G., Vol-I: 390
 Alindogan, J., Vol-II: 173
 Alison, J. A., Vol-I: 54
 Alkon, A., Vol-I: 442
 Allen, A., Vol-II: 67
 Allen, E., Vol-I: 307
 Allen, G. L., Vol-I: 330
 Allen, J. D., Vol-II: 527
 Allen, K. D., Vol-II: 519
 Allen, L., Vol-II: 388
 Allen, L. S., Vol-I: 217, 225
 Allen, M., Vol-I: 440, 475, 479; Vol-II: 21
 Allen, M. J., Vol-I: 319
 Allen, O., Vol-I: 547
 Allen, T. D., Vol-II: 454
 Allgood-Merten, B., Vol-I: 544; Vol-II: 24, 30
 Allik, J., Vol-I: 441
 Allison, D. B., Vol-II: 159, 545
 Allison, M. T., Vol-II: 568
 Allison, S., Vol-II: 48
 Allon, N., Vol-II: 167
 Alloy, L. B., Vol-II: 142, 144, 146
 Allport, G. W., Vol-II: 80, 361
 Allwood, C. M., Vol-I: 163
 Almeida, D., Vol-II: 409
 Almeida, D. M., Vol-I: 87, 530
 Almeida, O. P., Vol-I: 224
 Almeida, R. V., Vol-II: 255, 261–262, 269–270
 Almeida-Filho, N., Vol-II: 195
 Aloisi, A. M., Vol-I: 241–242
 Altabe, M. N., Vol-II: 153
 Altemeyer, B., Vol-I: 194; Vol-II: 362
 Altermatt, E. R., Vol-I: 283
 Altintas, E., Vol-II: 416
 Altman, B. E., Vol-II: 633
 Altmann, D., Vol-I: 220
 Altschuler, J., Vol-II: 410
 Alvarez, J. M., Vol-I: 516
 Amarel, D., Vol-II: 506, 512
 Amaro, H., Vol-I: 548, 549
 Ambady, N., Vol-I: 284, 353, 412–413, 433, 438;
 Vol-II: 451
 Ambwani, S., Vol-II: 204
 Amos, A., Vol-II: 477
 Amparo, E. G., Vol-I: 224
 Amponsah, B., Vol-I: 326
 Amunts, K., Vol-I: 239
 An, C., Vol-II: 228
 Anastasi, A., Vol-II: 80, 605
 Andayani, S., Vol-I: 432
 Anderberg, U. M., Vol-I: 241
 Anderman, E. M., Vol-II: 388–389
 Andersen, A., Vol-I: 54
 Andersen, A. E., Vol-II: 170, 172
 Andersen, J. H., Vol-I: 242
 Anderson, A. S., Vol-I: 456
 Anderson, C., Vol-I: 429
 Anderson, C. A., Vol-I: 198
 Anderson, C. M., Vol-II: 226
 Anderson, D., Vol-I: 505, 510
 Anderson, D. A., Vol-II: 651, 657
 Anderson, D. E., Vol-I: 412
 Anderson, D. R., Vol-I: 505, 511
 Anderson, E., Vol-II: 541
 Anderson, H., Vol-I: 111
 Anderson, J. P., Vol-II: 547
 Anderson, K. J., Vol-I: 414; Vol-II: 338
 Anderson, N., Vol-II: 71
 Anderson, R. N., Vol-II: 228
 Anderson, S., Vol-I: 68
 Andersson, C., Vol-II: 476
 Andersson, L. M., Vol-II: 423–424, 429, 435
 Andrade, A. G., Vol-II: 476
 Andrade, L., Vol-II: 134
 Andreev, E. M., Vol-II: 472
 Andrews, G., Vol-II: 228
 Andrews, H., Vol-II: 620
 Andrews, J. A., Vol-I: 548
 Andrzejewski, S. A., Vol-I: 438
 Aneja, A., Vol-I: 501
 Aneshensel, C. S., Vol-I: 544
 Angelique, H., Vol-II: 613–614, 616, 618, 628–629, 633
 Angold, A., Vol-I: 548; Vol-II: 133, 137
 Anhalt, K., Vol-I: 68
 Annett, M., Vol-I: 325
 Ansell, E. B., Vol-II: 26
 Ansfield, M. E., Vol-I: 412
 Anson, J., Vol-II: 472
 Anstiss, V., Vol-I: 460
 Antes, J. R., Vol-I: 330
 Anthony, J. C., Vol-I: 547
 Anton, S. D., Vol-I: 456
 Antoni, M. H., Vol-II: 547
 Antonovsky, A., Vol-II: 35
 Antonucci, T. C., Vol-I: 559, 570
 Antshel, K. M., Vol-II: 236
 Anuar, K., Vol-I: 328
 Aoki, Y., Vol-I: 436
 Appenzeller, S. N., Vol-II: 116
 Apperlo, M. J., Vol-I: 483
 Applebaum, S., Vol-I: 248
 Apt, C., Vol-I: 485
 Aquilino, W. S., Vol-II: 602
 Aquino, K., Vol-II: 431
 Arad, S., Vol-II: 362
 Aragon, R. S., Vol-II: 328
 Aragon, S. R., Vol-I: 290
 Arai, Y., Vol-I: 236
 Araki, K., Vol-II: 568
 Arbisib, P. A., Vol-II: 76
 Arbretton, A., Vol-II: 383–385
 Archer, D., Vol-I: 412–413, 441; Vol-II: 295
 Archer, J., Vol-I: 14, 147, 168, 193, 546; Vol-II: 15,
 313, 316

- Archibald, A. B., Vol-I: 202
 Arciniega, G. M., Vol-II: 226
 Arczynski, A., Vol-II: 235
 Arden, K., Vol-II: 287
 Arden, R., Vol-I: 302
 Argentino, C., Vol-II: 624
 Arias, E., Vol-II: 228
 Aries, E., Vol-I: 385, 394; Vol-II: 337–338
 Aries, E. J., Vol-I: 380–381, 385, 388, 393–394
 Arieti, S., Vol-I: 352
 Arisaka, O., Vol-I: 236
 Arkowitz, H., Vol-II: 235
 Arluke, A., Vol-I: 396–397
 Armentrout, S. M., Vol-II: 566
 Armstrong, G., Vol-II: 591
 Armstrong, J. D., Vol-I: 368
 Armstrong, J. G., Vol-II: 209
 Armstrong-Stassen, M., Vol-II: 452
 Arnau, R. C., Vol-I: 242
 Arnett, C., Vol-I: 456
 Arnett, J. J., Vol-II: 568
 Arnold, A. P., Vol-I: 217
 Arnold, E., Vol-II: 477
 Arnold, K. D., Vol-I: 350–351
 Aro, H., Vol-II: 548
 Aron, A., Vol-II: 66
 Aron, R. H., Vol-I: 330
 Aronson, J., Vol-I: 84–85, 327, 353, 430; Vol-II: 450
 Aronson, V., Vol-II: 287
 Arras, R. E., Vol-I: 53
 Arredondo, P., Vol-II: 231, 260
 Arriaga, X. B., Vol-II: 294
 Arrighi, B., Vol-II: 406
 Arrindell, W. A., Vol-I: 145
 Arrington-Sanders, R., Vol-II: 547
 Arthur, A. E., Vol-I: 516
 Artiola i Fortuny, L., Vol-II: 605
 Artis, J. E., Vol-II: 410
 Arvey, R. D., Vol-II: 431
 Asch, S. E., Vol-I: 319
 Asci, F. H., Vol-II: 569
 Ashbaker, M., Vol-I: 435
 Asher, S. J., Vol-II: 297
 Ashmore, M., Vol-II: 169
 Ashmore, R. D., Vol-I: 496–497; Vol-II: 166, 289, 293
 Ashworth, P., Vol-I: 103
 Asla, N., Vol-II: 329
 Asmussen, L., Vol-I: 540
 Asrani, S., Vol-I: 236
 Astor, R., Vol-II: 628
 Astur, R. S., Vol-I: 221, 321, 328–329
 Atashili, J., Vol-II: 544
 Atkins, B., Vol-I: 381, 387
 Atkinson, D. R., Vol-II: 200, 233
 Atkinson, J. W., Vol-II: 41–42, 55, 200, 233, 386
 Atkinson, R. C., Vol-II: 386
 Atkinson, R. L., Vol-II: 386
 Atlis, M. M., Vol-II: 78–79
 Atlisa, M. M., Vol-II: 76
 Attie, I., Vol-I: 544
 Atwater, L. E., Vol-II: 448
 Aube, J., Vol-I: 545; Vol-II: 23, 43
 Aubrey, J. S., Vol-I: 97, 475; Vol-II: 645, 647, 655
 Aubry, S., Vol-I: 514
 Aubry, T., Vol-II: 204
 Aubut, J. L., Vol-II: 477
 Auerbach, C. F., Vol-II: 258, 272
 Auerbach, D., Vol-II: 282
 Ault-Riche, M., Vol-II: 255
 Aupont, M., Vol-I: 139; Vol-II: 113
 Aust, C. F., Vol-II: 657
 Austin, D., Vol-I: 111
 Avalos, L., Vol-II: 173
 Avants, B., Vol-I: 307
 Averó, P., Vol-I: 442
 Avery, P. G., Vol-II: 115
 Aviram, O., Vol-I: 242
 Avis, J. M., Vol-II: 255–256
 Avolio, B. J., Vol-I: 418; Vol-II: 459
 Avorn, J., Vol-II: 527
 Axel, R., Vol-I: 247
 Ayala, G., Vol-II: 145
 Ayanian, J. Z., Vol-II: 518
 Aylor, B., Vol-II: 293, 296
 Ayman, R., Vol-II: 460
 Ayotte, V., Vol-II: 31
 Ayrál-Clause, O., Vol-I: 345
 Ayres, M. M., Vol-I: 414; Vol-II: 338
 Azevedo, M. R., Vol-II: 479
- B**
- Ba'tki, A., Vol-I: 309
 Baartmans, B. J., Vol-I: 332
 Babcock, L., Vol-I: 383–385; Vol-II: 347
 Babey, S. H., Vol-II: 30
 Bachman, J. G., Vol-II: 224
 Bachmann, G., Vol-I: 480–481
 Backes, R. C., Vol-I: 269
 Bäckman, L., Vol-I: 240, 248
 Bäckström, T., Vol-I: 459
 Bacue, A., Vol-II: 644–646
 Badenhop, D. T., Vol-II: 547
 Bader, S. M., Vol-II: 322
 Badger, L. W., Vol-II: 523
 Badgett, M. V., Vol-I: 66
 Badgett, M. V. L., Vol-II: 139
 Badia, X., Vol-I: 171
 Badr, H., Vol-II: 501, 551
 Baeninger, M., Vol-I: 308, 326–327
 Baer, J., Vol-I: 349–351, 354
 Baeten, V. L., Vol-II: 460
 Bagley, C., Vol-II: 645
 Bahr, M., Vol-II: 379
 Bahrke, M. S., Vol-II: 162

- Bailey, J. M., Vol-I: 225–226, 510–512
 Bailey, N., Vol-II: 424
 Bailyn, L., Vol-II: 452
 Baird, M. K., Vol-II: 205
 Baird, S. M., Vol-II: 570
 Baird, W., Vol-II: 390
 Bajema, C., Vol-II: 425, 428
 Bakan, D., Vol-I: 135, 415, 421; Vol-II: 56, 549, 678
 Bakeman, R., Vol-I: 541
 Baker, D. P., Vol-I: 307
 Baker, K., Vol-II: 647
 Baker, N. L., Vol-I: 9, 105
 Baker, S., Vol-I: 219
 Baker, S. P., Vol-II: 482–483
 Baker, S. W., Vol-II: 116
 Baker-Sperry, L., Vol-II: 166
 Bakker, F., Vol-II: 655
 Balaban, T., Vol-I: 510
 Balcazar, F., Vol-II: 627
 Bales, R. F., Vol-I: 134; Vol-II: 23, 406, 678
 Ballard, C. G., Vol-II: 97
 Balleine, B. W., Vol-II: 115
 Ballou, M., Vol-II: 64, 73, 83, 198, 202
 Balogun, A. O., Vol-II: 155
 Balogun, J. A., Vol-II: 155
 Balsam, K. F., Vol-II: 138–139, 411
 Baltes, M. M., Vol-I: 569–570
 Baltes, P. B., Vol-I: 566–567
 Bamer, A. M., Vol-II: 546
 Banaji, M., Vol-I: 281
 Banaji, M. R., Vol-I: 35, 196, 198, 497, 517;
 Vol-II: 447, 449
 Bancroft, J., Vol-I: 459, 485
 Bancroft, J. M., Vol-II: 476
 Bandura, A., Vol-I: 84, 474, 508; Vol-II: 64, 70, 573, 643
 Bandura, M. M., Vol-I: 239, 266
 Bane, S., Vol-II: 573
 Banerjee, N., Vol-II: 371
 Bangerter, A., Vol-I: 201
 Bankey, R., Vol-II: 100
 Banks, A., Vol-I: 483
 Banthia, R., Vol-II: 551
 Baranowski, M., Vol-I: 195
 Barban, L., Vol-II: 195
 Barbaranelli, C., Vol-I: 172
 Barbaree, H. E., Vol-I: 367
 Barbee, A. P., Vol-II: 504–505
 Barber, B. L., Vol-II: 382, 573
 Barber, H., Vol-II: 577–578
 Barber, M. E., Vol-II: 322
 Barber-Foss, K. D., Vol-II: 483
 Barbur, J. L., Vol-I: 237
 Barbuto, J. E., Vol-I: 93–94
 Bardwick, J. M., Vol-I: 27
 Barenbaum, N. B., Vol-II: 53
 Bargad, A., Vol-I: 139, 149
 Bargh, J. A., Vol-I: 196; Vol-II: 327, 662
 Barkan, A. L., Vol-I: 459, 464
 Barker, E. T., Vol-II: 134, 164
 Barker, M., Vol-I: 198
 Barker, R. G., Vol-II: 633
 Barker, V. L., Vol-II: 460
 Barkley, C. L., Vol-I: 329
 Barlett, C. P., Vol-I: 567; Vol-II: 658
 Barling, J., Vol-II: 423, 431
 Barlow, D. H., Vol-I: 479
 Barn, R., Vol-II: 195
 Barner, M. R., Vol-II: 645, 649
 Barnes, G. M., Vol-II: 576
 Barnes, M. L., Vol-I: 417
 Barnes, N. W., Vol-II: 144
 Barnes, P. M., Vol-II: 518
 Barnes, R. D., Vol-II: 295
 Barnes-Farrell, J. L., Vol-II: 429
 Barnett, A. M., Vol-I: 221, 323
 Barnett, R. C., Vol-I: 560, 562, 570, 572;
 Vol-II: 65, 414, 631
 Barnfield, A. M. C., Vol-I: 321
 Baron, A. S., Vol-I: 497, 517
 Baron, J., Vol-I: 182, 567
 Baron, R. A., Vol-II: 314, 423, 427, 431
 Baron, R. M., Vol-I: 3, 86; Vol-II: 3
 Baron-Cohen, S., Vol-I: 220, 300, 309
 Barr, L., Vol-II: 30
 Barr, R. F., Vol-II: 651
 Barrett, A. E., Vol-I: 530–531, 572
 Barrett, F. L., Vol-I: 436, 439
 Barrett, K., Vol-I: 186
 Barrett, L., Vol-I: 259
 Barrett, L. F., Vol-II: 294
 Barrett, S. E., Vol-II: 263–264
 Barrios, M., Vol-II: 648
 Barron, F., Vol-I: 350
 Barroso, L. P., Vol-II: 476
 Barry, K., Vol-I: 107
 Barsade, S. G., Vol-II: 349
 Barsky, A. J., Vol-II: 521
 Barsky, J., Vol-II: 43
 Barsky, R. D., Vol-I: 328
 Bart, M., Vol-I: 290
 Barta, W., Vol-II: 662
 Bartels, M., Vol-I: 239
 Bartko, W. T., Vol-I: 537
 Bartky, S., Vol-II: 156, 170–171
 Bartle-Haring, S., Vol-II: 204
 Bartlett, C., Vol-II: 166
 Bartlett, N. H., Vol-II: 125
 Bartley, C., Vol-II: 289
 Bartley, S., Vol-II: 414
 Barton, J. J. S., Vol-I: 221
 Barton, P., Vol-II: 531
 Bartoshuk, L. M., Vol-I: 246
 Bartsch, D., Vol-I: 462
 Baruch, G. K., Vol-I: 560, 562, 572

- Basow, S., Vol-I: 388
 Basow, S. A., Vol-I: 7, 277–291; Vol-II: 7, 296, 360–361
 Bass, B. M., Vol-I: 418; Vol-II: 458–459
 Bastian, L. A., Vol-II: 519
 Batalova, J., Vol-II: 410–411
 Bateman, G., Vol-II: 691–692
 Bates, C. J., Vol-I: 456–457
 Bates, J. E., Vol-I: 140, 151
 Batra, L., Vol-II: 430
 Battle, A., Vol-I: 569
 Baucom, D. H., Vol-II: 265–266, 268
 Bauer, C. F., Vol-I: 317
 Baum, B. J., Vol-I: 246
 Baumeister, R. F., Vol-I: 64, 193, 485, 499; Vol-II: 24, 31, 289, 324
 Baumgarten, P., Vol-II: 456
 Baur, K., Vol-II: 532
 Baxter, J. C., Vol-II: 449
 Bayard, D., Vol-I: 392
 Bayer, B., Vol-II: 671
 Bazelier, F. G., Vol-I: 457, 459
 Beall, A. E., Vol-I: 167; Vol-II: 168
 Beals, J., Vol-II: 619
 Beals, K. A., Vol-II: 575
 Beals, K. P., Vol-I: 66, 480
 Bearden, A. G., Vol-II: 370–371
 Bearman, S. K., Vol-I: 544; Vol-II: 155–156
 Beasley, B., Vol-II: 645
 Beaton, D., Vol-I: 171
 Beattie, T. F., Vol-II: 483
 Beatty, J., Vol-I: 362
 Beatty, W. W., Vol-I: 247, 330
 Beaty, L. A., Vol-I: 541
 Beauchaine, T. P., Vol-II: 138
 Beautrais, A. L., Vol-II: 135
 Beaver, A. S., Vol-II: 103
 Bechtold, K. T., Vol-I: 510
 Beck, A. T., Vol-II: 80
 Beck, R. S., Vol-II: 523
 Beck, S., Vol-I: 330
 Becker, A. E., Vol-II: 167
 Becker, B. J., Vol-I: 318
 Becker, D., Vol-II: 193
 Becker, G., Vol-II: 405
 Becker, J., Vol-I: 226; Vol-II: 385
 Becker, J. B., Vol-I: 534
 Becker, J. R., Vol-I: 307
 Becker, M. W., Vol-I: 330
 Beckjord, E., Vol-II: 82
 Bedini, L. A., Vol-II: 574
 Beehr, T. A., Vol-II: 436
 Beekman, A. T. F., Vol-II: 297
 Beer-Borst, S., Vol-I: 456, 462
 Beere, C. A., Vol-I: 133–134
 Behar, R., Vol-I: 109–111, 117
 Behrendt, G., Vol-II: 290
 Behrendt, R., Vol-I: 517
 Beier, M. E., Vol-I: 301
 Beilock, S. L., Vol-I: 433
 Bein, A., Vol-II: 204
 Bein, E., Vol-II: 145
 Bein, F. L., Vol-I: 330
 Beitel, P. A., Vol-I: 326; Vol-II: 229
 Bekker, M. H. J., Vol-II: 502–503
 Belahsen, R., Vol-II: 160
 Belenky, M., Vol-I: 105
 Belenky, M. F., Vol-I: 32, 198
 Belhekar, V. M., Vol-II: 26
 Belitsky, C. A., Vol-II: 96
 Belk, S. S., Vol-I: 52; Vol-II: 550
 Belkin, A., Vol-II: 691–692
 Bell, A. P., Vol-I: 475
 Bell, B., Vol-II: 318
 Bell, E., Vol-I: 398
 Bell, E. J. E., Vol-II: 451, 454, 458
 Bell, M. P., Vol-II: 502
 Bell, R., Vol-I: 456
 Bell, R. A., Vol-II: 522
 Bell, R. R., Vol-II: 283
 Belle, D., Vol-II: 101, 658
 Bellman, S., Vol-II: 505
 Bem, D., Vol-I: 363
 Bem, D. J., Vol-II: 67
 Bem, S., Vol-I: 192, 366, 382
 Bem, S. L., Vol-I: 14, 28, 47, 50, 52, 84, 134–135, 150, 192, 197, 203, 352, 354, 363–364, 421, 499, 508, 512, 532; Vol-II: 14, 21–22, 287, 294–295, 312, 323, 497, 569, 678, 684
 Benard, S., Vol-II: 447
 Benardete, E., Vol-I: 236
 Ben-Ari, A., Vol-I: 67
 Ben-Ari, E., Vol-II: 674
 Benbenishty, R., Vol-II: 628
 Benbow, C. P., Vol-I: 304, 310, 317; Vol-II: 386
 Bender, P., Vol-II: 677
 Benedetti, F., Vol-I: 240
 Benedict, H., Vol-II: 650
 Bener, A., Vol-II: 482
 Benet-Martínez, V., Vol-I: 160, 166, 170–171
 Benetti-McQuoid, J., Vol-I: 435
 Bengtson, V., Vol-II: 413–414
 Bengtsson, S., Vol-I: 249
 Benjamin, L. T., Vol-I: 25
 Bennett, C. L., Vol-II: 527, 613
 Bennett, G. K., Vol-I: 320
 Bennett, K. C., Vol-I: 117
 Bennett, M., Vol-I: 496, 500
 Bennett, R. J., Vol-II: 423
 Ben-Porath, Y. S., Vol-II: 70, 80–81
 Benson, B., Vol-I: 456
 Bentler, P., Vol-I: 146; Vol-I: 115
 Bentler, P. M., Vol-I: 140, 151; Vol-II: 24
 Benwell, B., Vol-I: 398

- Ben-Zeev, T., Vol-II: 21
 Ben-Zeev, T. A., Vol-I: 284
 Ben-Zur, H., Vol-II: 433
 Bepko, C. S., Vol-II: 94–95, 102, 104, 255, 257
 Berberich, D. A., Vol-II: 74
 Berdahl, J. L., Vol-II: 337–338, 340, 425–426, 429–431, 684
 Beren, S. E., Vol-II: 156
 Berenbaum, S., Vol-I: 501
 Berenbaum, S. A., Vol-I: 140, 219–220, 222, 279, 510, 527; Vol-II: 368, 387
 Berent, S., Vol-I: 227
 Berg, C. A., Vol-II: 501, 510–511
 Berg, G. E., Vol-I: 246
 Berg, K., Vol-II: 144
 Berg, P., Vol-II: 153
 Bergemann, N., Vol-I: 223
 Bergen, E., Vol-II: 410, 412
 Bergen, R. K., Vol-II: 632
 Berger, J. M., Vol-I: 138; Vol-II: 14, 345, 352, 522
 Berger, P. A., Vol-I: 49
 Berger, P. L., Vol-I: 51
 Bergeron, K. B., Vol-I: 458
 Bergeron, M., Vol-II: 208–209
 Bergers, G. P. A., Vol-I: 457
 Berg-Kelly, K., Vol-II: 369
 Berglund, H., Vol-I: 249
 Berglund, M., Vol-II: 476
 Bergman, B., Vol-I: 111, 113
 Bergman, M. E., Vol-II: 428, 433–434, 437
 Bergvall, V., Vol-I: 401
 Berk, S. F., Vol-II: 405–407
 Berkman, L. F., Vol-II: 139, 145
 Berkovic, S. F., Vol-II: 598
 Berkowitz, L., Vol-II: 647
 Berman, E., Vol-II: 575
 Berman, L. S., Vol-I: 572
 Bermúdez, J., Vol-I: 172
 Bernal, G., Vol-II: 233, 273, 616
 Bernal, J. D., Vol-I: 200
 Bernard, J., Vol-II: 225
 Bernat, J., Vol-II: 360
 Berndt, A., Vol-II: 509
 Berndt, T. J., Vol-I: 530, 538
 Bernieri, F. J., Vol-I: 413, 438
 Bernstein, J., Vol-I: 328–329
 Bernstein, K. T., Vol-II: 553
 Bernstein, S., Vol-I: 508
 Berquist, B. E., Vol-II: 113
 Berry, J. W., Vol-I: 161–164, 326
 Berscheid, E., Vol-II: 69, 281
 Berson, Y., Vol-I: 418
 Berthiaume, F., Vol-I: 240, 320
 Berthoz, A., Vol-I: 329
 Bertjan, D., Vol-II: 348
 Bertoni, A. G., Vol-II: 528
 Bertrand, R., Vol-I: 227
 Bertsch, T., Vol-I: 113
 Berzonsky, M. D., Vol-I: 536
 Bessenoff, G. R., Vol-II: 167
 Best, D. I., Vol-II: 312, 343; Vol-I: 133, 150, 169–170, 173
 Best, L. A., Vol-I: 202
 Bettencourt, B. A., Vol-I: 440; Vol-II: 313, 315
 Bettinger, M., Vol-I: 64; Vol-II: 257
 Bettner, L. G., Vol-I: 238
 Betz, N. E., Vol-I: 43, 51; Vol-II: 24, 155, 380
 Beuter, A., Vol-II: 573
 Beutler, L. E., Vol-II: 221
 Bevington, D., Vol-I: 191
 Bharadwaj, R., Vol-I: 347
 Bhatia, S., Vol-I: 106, 109
 Bhattacharya, G., Vol-II: 457
 Bhavnani, K., Vol-I: 106
 Bianchi, S. M., Vol-II: 405, 407, 409, 445
 Biblarz, T., Vol-II: 410, 413
 Bickham, D. S., Vol-II: 651, 657
 Bieber, I., Vol-I: 61
 Biehl, H., Vol-II: 691
 Biehl, M., Vol-I: 441
 Biernat, M., Vol-II: 344, 460
 Bies, R. J., Vol-II: 431
 Bieschke, K. J., Vol-II: 64
 Biggar, H., Vol-II: 554
 Biggart, A., Vol-II: 390
 Biggs, E., Vol-I: 198
 Bigler, R. S., Vol-I: 282, 500, 503, 512, 516–517; Vol-II: 385
 Biglia, B., Vol-I: 118
 Bijl, R. V., Vol-II: 135, 224
 Bikos, L. H., Vol-II: 383
 Bilash, I., Vol-I: 246
 Billings, A. C., Vol-II: 647
 Billson, J. M., Vol-II: 227
 Billy, J. O. G., Vol-II: 65
 Bimbi, D. S., Vol-I: 64
 Bimler, D., Vol-I: 237
 Binder, K. S., Vol-II: 299
 Bing, J., Vol-I: 401
 Binns, J., Vol-II: 478
 Binson, D., Vol-I: 186
 Binsted, G., Vol-I: 221, 323
 Birch, L. L., Vol-I: 544
 Bird, C. E., Vol-II: 414, 529
 Birk, T. S., Vol-II: 347
 Birkby, J., Vol-I: 241
 Birkett, M., Vol-I: 290
 Birmingham, C. L., Vol-II: 473
 Birnbaum, M. H., Vol-II: 602
 Birrell, P., Vol-II: 214
 Birren, J. E., Vol-I: 348
 Bischof, W. F., Vol-I: 329
 Bishop, F., Vol-I: 110
 Bitan, T., Vol-I: 245

- Bittman, M., Vol-II: 409
 Bjorklund, D. F., Vol-I: 263, 265, 473
 Bjorkqvist, K., Vol-II: 315, 429
 Black, D., Vol-I: 187; Vol-II: 477
 Black, K. N., Vol-I: 195
 Blackburn, V. B., Vol-II: 456
 Blaine, B., Vol-I: 497
 Blair, J., Vol-I: 186
 Blair, S. L., Vol-II: 405, 407, 409, 414
 Blaisure, K., Vol-II: 410, 414
 Blake, J., Vol-I: 141
 Blake, S. M., Vol-I: 548
 Blakemore, J. E. O., Vol-I: 144, 501;
 Vol-II: 340
 Blakeney, R., Vol-II: 621
 Blanch, R. J., Vol-I: 330
 Blanchard, R., Vol-I: 483–484; Vol-II: 117
 Blanchard-Fields, F., Vol-I: 567
 Blanchette, I., Vol-I: 200, 202
 Blanck, H. M., Vol-II: 473
 Blankenship, V., Vol-II: 50, 53
 Blanton, C., Vol-II: 567
 Blanton, P., Vol-II: 414
 Blascovich, J., Vol-II: 460
 Blatt, S. J., Vol-II: 139
 Blau, F. D., Vol-II: 446
 Blauwkamp, J. M., Vol-II: 170
 Blazer, D. G., Vol-II: 134
 Blazina, C., Vol-I: 145; Vol-II: 225–226, 229
 Bleeker, M. M., Vol-II: 380, 384
 Blevins, N., Vol-II: 161
 Blinde, E. M., Vol-II: 574
 Bliss, G. K., Vol-II: 295
 Blix, A. G., Vol-II: 160
 Blix, G. G., Vol-II: 160
 Block, C. J., Vol-II: 346
 Block, J., Vol-II: 95
 Blood, R., Vol-II: 405
 Bloom, B. L., Vol-II: 297
 Bloomfield, K., Vol-II: 480
 Blouin, A. G., Vol-II: 474
 Blow, F. C., Vol-II: 188, 193–194
 Bluck, S., Vol-I: 567
 Blum, J. E., Vol-I: 238
 Blum, R. W., Vol-II: 156
 Blum, S. A., Vol-II: 200
 Blumberg, F. C., Vol-II: 228
 Blumberg, H., Vol-I: 396
 Blumberg, R., Vol-II: 405
 Blumenfeld, P., Vol-II: 389
 Blumstein, P., Vol-I: 64, 66, 390
 Blumstein, P. W., Vol-II: 292, 363, 412
 Blundell, J. E., Vol-I: 458–459, 464
 Blyth, D. A., Vol-II: 389
 Bobak, M., Vol-II: 482
 Boca, S., Vol-I: 440
 Bochner, A., Vol-I: 114
 Bockting, W. O., Vol-II: 111–112
 Bodenmann, G., Vol-II: 551
 Bodine, A., Vol-I: 195
 Bodo, C., Vol-I: 218
 Boehmer, A. L., Vol-I: 218
 Boehmer, U., Vol-I: 7, 179–188; Vol-II: 7, 113–114, 553
 Boesch, E. E., Vol-I: 163
 Boffetta, P., Vol-II: 481
 Bogaert, A. F., Vol-I: 367
 Bogart, K., Vol-II: 624
 Bogat, G., Vol-II: 619
 Boggiano, A. K., Vol-II: 385
 Boggs, C. D., Vol-II: 73, 193
 Bograd, M., Vol-II: 255–256, 262
 Bohan, J., Vol-I: 103, 401
 Bohan, J. S., Vol-I: 32, 60, 72, 103, 108; Vol-II: 64,
 66, 73
 Bohon, L. M., Vol-I: 327
 Boismier, A. D., Vol-II: 340
 Boldizar, J. P., Vol-I: 135
 Boldy, J., Vol-II: 677
 Bolen, J. C., Vol-II: 473
 Boles, D., Vol-I: 325
 Bolger, N., Vol-II: 497, 506, 512
 Bolin, A., Vol-II: 115
 Bolino, M. C., Vol-II: 340, 452
 Bolks, H. N., Vol-II: 501, 552
 Bombardier, C., Vol-I: 171
 Bond, B. J., Vol-II: 659
 Bond, J. T., Vol-II: 402
 Bond, M. A., Vol-II: 613–636
 Bond, M. H., Vol-II: 311
 Bond, S., Vol-II: 160
 Bonds-Raacke, J. M., Vol-I: 549; Vol-II: 166, 656
 Boneva, B., Vol-II: 282
 Boney-McCoy, S., Vol-II: 316
 Bonica, C., Vol-I: 540
 Bonifazi, M., Vol-I: 242
 Bono, J. E., Vol-II: 448, 459
 Bonu, S., Vol-II: 481
 Bonvicini, K. A., Vol-II: 553
 Boone, K. B., Vol-II: 605
 Booraem, C., Vol-I: 382
 Boorstin, D. J., Vol-I: 344
 Booth, J. R., Vol-I: 245
 Booth, M. L., Vol-II: 480
 Borden, K. A., Vol-I: 323
 Borders, L. D., Vol-I: 135, 151
 Borghetti, D., Vol-I: 239
 Borgida, E., Vol-II: 647, 660
 Boring, E. G., Vol-I: 20, 24, 25
 Borkenau, P., Vol-I: 412–413
 Borke, R., Vol-I: 385–386, 389
 Born, M., Vol-II: 71
 Bornstein, B. H., Vol-II: 322
 Bornstein, K., Vol-I: 369; Vol-II: 123, 366
 Boroah, V. K., Vol-II: 481

- Boroughs, M., Vol-II: 156, 163
 Borowiecki, J., Vol-I: 53
 Borowiecki, J. J., Vol-II: 166, 172
 Borus, J. F., Vol-II: 521
 Bosak, J., Vol-I: 421; Vol-II: 448
 Bosco, A., Vol-I: 330
 Bosold, C., Vol-II: 484
 Bosson, J., Vol-I: 397
 Bostock, Y., Vol-II: 477
 Both-Orthman, B., Vol-I: 458
 Botta, R., Vol-II: 167, 172, 658, 660
 Botvin, G. J., Vol-I: 546
 Bouchard, T. J., Vol-II: 19
 Boucher, M., Vol-II: 235
 Bound, J., Vol-II: 510
 Bourg, C., Vol-I: 90; Vol-II: 686–689, 692
 Bourgois, P., Vol-II: 591
 Bourgon, L., Vol-II: 672–673, 676, 686
 Bowen, C., Vol-II: 457
 Bowen, D. J., Vol-I: 7, 179–188, 246, 464; Bowen, D. J., Vol-II: 114
 Bowen, G. L., Vol-II: 686
 Bowen, K. R., Vol-I: 301
 Bower, J. E., Vol-II: 434
 Bowers, A. M. V., Vol-II: 64
 Bowers, C. A., Vol-II: 347–348
 Bowers, K. S., Vol-I: 354
 Bowker, G. C., Vol-II: 112
 Bowlby, J., Vol-II: 281
 Bowlby, J. W., Vol-I: 329
 Bowleg, L., Vol-II: 461
 Bowles, H. R., Vol-II: 347
 Bowling, N. A., Vol-II: 436
 Bowman, M., Vol-I: 329
 Box, T. L., Vol-II: 533
 Boxer, A. W., Vol-I: 535
 Boyatzis, R., Vol-II: 49–50
 Boyce, L. A., Vol-II: 677–679
 Boyce, W. T., Vol-I: 442
 Boyd, N., Vol-II: 633
 Boyd-Franklin, N., Vol-II: 259
 Boyle, D. E., Vol-I: 539
 Boyle, P. A., Vol-II: 141
 Boysen, G. A., Vol-I: 194; Vol-II: 231
 Bozionelos, G., Vol-II: 23
 Bozionelos, N., Vol-II: 23
 Brabeck, M. M., Vol-I: 35, 317, 325
 Brackbill, R. M., Vol-II: 533
 Brackenridge, C. H., Vol-II: 579
 Brackett, M. A., Vol-I: 439; Vol-II: 454
 Bradbard, M., Vol-I: 515
 Bradbard, M. R., Vol-I: 511, 515
 Bradbury, H., Vol-I: 118, 122
 Bradford, J., Vol-I: 66, 186; Vol-II: 114
 Bradley, S. J., Vol-II: 112–114, 116–118, 122
 Bradley, D. B., Vol-I: 164
 Bradley, D. W., Vol-I: 147
 Bradley, K., Vol-I: 278
 Bradley, R. H., Vol-II: 225
 Bradley, S. J., Vol-I: 141–142, 495, 510–511
 Brady, K. L., Vol-I: 285
 Brady, M., Vol-II: 487
 Brain, M., Vol-II: 644
 Braithwaite, V. A., Vol-I: 265, 325
 Brajuha, M., Vol-II: 591–592
 Brake, B., Vol-I: 263, 312
 Brammer, M. J., Vol-I: 247, 464
 Brand, G., Vol-I: 248
 Brand, P., Vol-II: 50
 Brandes, J. L., Vol-I: 241
 Brandimonte, M. A., Vol-I: 330
 Brannon, L., Vol-II: 686
 Brannon, R., Vol-I: 44, 52, 136, 145, 150, 286
 Brasfield, T., Vol-II: 626
 Brass, D. J., Vol-II: 454
 Brathwaite, A., Vol-II: 226
 Braun, L., Vol-I: 64
 Braun, V., Vol-I: 201, 392
 Braunwald, K. G., Vol-II: 338
 Brausch, A. M., Vol-II: 153
 Braverman, L., Vol-II: 255
 Brawer, M. K., Vol-I: 568
 Bray, P., Vol-I: 243
 Brayfield, A., Vol-II: 410
 Brebner, J., Vol-I: 435
 Breda, C., Vol-II: 340
 Breedlove, S. M., Vol-I: 217, 270, 323
 Breen, N., Vol-II: 544
 Breggin, P., Vol-II: 97
 Brehany, K., Vol-I: 456
 Brehm, S. S., Vol-II: 323
 Breivik, K., Vol-II: 599
 Brener, N. D., Vol-II: 65
 Brennan, D., Vol-I: 330
 Brennan, P., Vol-II: 481
 Brescoll, V., Vol-I: 194–195
 Brescoll, V. L., Vol-I: 431
 Bretherton, D., Vol-II: 202, 205
 Bretschneider, J. G., Vol-I: 481
 Brett, J. F., Vol-II: 448, 452
 Brett, J. M., Vol-II: 448, 452
 Brewer, H., Vol-II: 158
 Brewer, M. B., Vol-I: 516
 Brewis, A. A., Vol-II: 160
 Bricheno, P., Vol-I: 288
 Brickman, D., Vol-I: 507
 Bridgeman, B., Vol-I: 304; Vol-II: 379, 388
 Bridgest, S. T., Vol-I: 284
 Briere, J., Vol-II: 70, 80, 208–209, 214
 Briggs, P. T., Vol-I: 219
 Brigham, F. J., Vol-II: 385
 Brignone, B., Vol-I: 239
 Brines, J., Vol-II: 405, 409–410
 Bringer, J. D., Vol-II: 579

- Brink, J., Vol-II: 604
 Brinkmann, S., Vol-I: 106
 Brinsmead-Stockham, K., Vol-II: 287
 Brislin, R. W., Vol-I: 161–163, 169–173
 Briton, N. J., Vol-I: 430–432
 Britt, T. W., Vol-II: 687
 Broad, K. L., Vol-II: 578
 Broaddus, M., Vol-I: 505
 Broadnax, S., Vol-I: 497
 Brod, H., Vol-I: 51
 Brodsky, A., Vol-II: 191
 Brodsky, A. M., Vol-I: 29–30
 Brody, C., Vol-I: 390
 Brody, L. E., Vol-I: 304
 Brody, L. R., Vol-I: 8, 429–448; Vol-II: 314
 Brody, N., Vol-II: 68
 Broidy, L., Vol-II: 329
 Brolese, A., Vol-I: 329
 Broman, C., Vol-II: 412
 Bronfenbrenner, U., Vol-I: 528; Vol-II: 287
 Bronk, E., Vol-I: 223
 Brooker, R. J., Vol-I: 445
 Brooks, G., Vol-I: 43, 46
 Brooks, G. R., Vol-I: 45; Vol-II: 222, 224–225, 229, 232, 253–273
 Brooks, R. C., Vol-II: 411
 Brooks, W. M., Vol-I: 227, 264
 Brooks-Gunn, J., Vol-I: 527–550
 Broomer, R. K., Vol-II: 481
 Brophy, J. E., Vol-II: 385
 Broverman, D. M., Vol-I: 28; Vol-II: 64, 188, 678
 Broverman, I. K., Vol-I: 28; Vol-II: 64, 73, 104, 188, 192–193, 678
 Broverman, N., Vol-II: 370
 Brown, A. F., Vol-II: 531
 Brown, B. B., Vol-I: 537, 540, 549; Vol-II: 384
 Brown, C., Vol-I: 352
 Brown, C. E., Vol-I: 389, 414; Vol-II: 168, 338–339, 343
 Brown, C. S., Vol-I: 282; Vol-I: 497–499, 516
 Brown, D. J., Vol-II: 51, 343, 451, 660
 Brown, D. K., Vol-I: 243
 Brown, D. M., Vol-I: 457
 Brown, G. K., Vol-II: 70
 Brown, J. D., Vol-I: 542; Vol-II: 30
 Brown, L., Vol-I: 68, 138
 Brown, L. M., Vol-I: 105
 Brown, L. S., Vol-I: 30, 35; Vol-II: 64, 83, 92, 94–95, 191–192, 196, 209, 234
 Brown, M., Vol-I: 60, 71
 Brown, M. L., Vol-II: 367
 Brown, N. J., Vol-II: 598
 Brown, R., Vol-I: 516
 Brown, R. D., Vol-II: 573
 Brown, S. D., Vol-II: 387
 Brown, S. J., Vol-II: 346
 Brown, S. L., Vol-I: 323; Vol-II: 599
 Brown, S. P., Vol-II: 205
 Brown, T. H., Vol-I: 573
 Brown-Collins, A., Vol-I: 192
 Browne, P., Vol-II: 672
 Brownell, K. D., Vol-II: 167
 Brownlee, K., Vol-II: 75
 Brownmiller, S., Vol-II: 157
 Brubaker, B. S., Vol-I: 264
 Bruch, M. A., Vol-II: 24, 233
 Brucken, L., Vol-I: 516
 Bruggeling, E. C., Vol-I: 239
 Brummett, B. H., Vol-II: 29
 Bruns, C. M., Vol-II: 187–215
 Brunstein, J. C., Vol-II: 43–44, 48, 53, 57
 Brunswick, E., Vol-I: 416
 Bryan, A., Vol-II: 371
 Bryan, A. I., Vol-I: 20, 24
 Bryan, J., Vol-I: 528, 532
 Bryant, A., Vol-II: 170
 Bryant, K. J., Vol-I: 329
 Bryant, K., Vol-II: 112, 123, 125
 Bryant, W. M., Vol-II: 365
 Bryanton, O., Vol-II: 318
 Bryden, M. P., Vol-I: 218, 221, 263, 300, 318, 325
 Brydon-Miller, M., Vol-I: 113
 Bryk, K. L., Vol-II: 387
 Bub, K., Vol-I: 87
 Buch, E. D., Vol-I: 106
 Buchanan, C. M., Vol-I: 534
 Buchanan, T., Vol-II: 602
 Buchanan, W., Vol-II: 370
 Buck, C. L., Vol-II: 686
 Buck, L., Vol-I: 247
 Buck, M., Vol-I: 195
 Buckley, P., Vol-II: 474
 Buckley, T., Vol-II: 169
 Buckner, C., Vol-I: 150
 Buckner, J. P., Vol-I: 437, 446
 Buckwalter, J. G., Vol-I: 244
 Budd, J. D., Vol-II: 431
 Buddeberg-Fischer, B., Vol-II: 337
 Buechel, C., Vol-I: 195, 197, 199, 202, 204, 372–373
 Bugental, D. E., Vol-I: 438
 Buhrke, R. A., Vol-II: 284
 Bui, U., Vol-II: 233
 Bukatko, D., Vol-II: 337
 Bukowski, W. M., Vol-II: 122
 Bulik, C. M., Vol-I: 460; Vol-II: 473
 Bulka, D., Vol-I: 567
 Buller, D. J., Vol-I: 260–262, 272
 Bullis, J., Vol-I: 433
 Bullock, H. E., Vol-II: 101
 Bunk, J. A., Vol-II: 11, 423–437
 Buntaine, R. L., Vol-I: 435
 Bunting, A. B., Vol-I: 52
 Burchard, E. G., Vol-I: 179
 Burchinal, M., Vol-I: 87

- Burg, A., Vol-I: 236
 Burgess, C., Vol-II: 368
 Burgess, L. H., Vol-I: 226
 Burgess, M. C. R., Vol-I: 97
 Burgess, S. E., Vol-II: 485
 Burgess, S. R., Vol-I: 97
 Burggraf, K., Vol-II: 167, 648
 Burghauser, R., Vol-I: 246
 Burgoon, M., Vol-I: 392; Vol-II: 340, 346–347
 Burke, B. L., Vol-II: 235
 Burke, M. E., Vol-I: 183
 Burke, M. J., Vol-II: 344, 447
 Burke, P., Vol-II: 118
 Burke, R. J., Vol-I: 437; Vol-II: 502
 Burkhardt, K. J., Vol-I: 163
 Burkitt, J., Vol-I: 223, 330
 Burleson, B. R., Vol-II: 23, 253
 Burleson, M. H., Vol-II: 287
 Burman, D. D., Vol-I: 245
 Burman, E., Vol-I: 117, 198, 203; Vol-II: 66
 Burn, S. M., Vol-II: 281
 Burnam, M. A., Vol-II: 137
 Burns, J. W., Vol-I: 443
 Burns, N. R., Vol-I: 223
 Burns, S. M., Vol-II: 528
 Burns, T., Vol-II: 633
 Burrell, N., Vol-I: 475
 Burridge, A., Vol-II: 226
 Burriss, L., Vol-I: 442
 Burriss, R. P., Vol-II: 286
 Bursik, K., Vol-I: 435
 Bursoff, D. N., Vol-II: 590
 Burton, L. A., Vol-I: 442
 Burton, L. C., Vol-II: 524–525
 Burwell, R. A., Vol-II: 167
 Busby, L., Vol-II: 171
 Busby, R. A., Vol-I: 323
 Busch, H., Vol-II: 43
 Bush, D., Vol-II: 389
 Bushman, B. J., Vol-II: 657
 Bushnell, M. C., Vol-I: 240, 243
 Buss, A. H., Vol-II: 154, 312, 427
 Buss, D. M., Vol-I: 49, 84, 167–168, 194, 201–202, 259, 261, 473, 481; Vol-II: 253, 281, 284–286, 300
 Buss, K. A., Vol-I: 445
 Busselle, R. W., Vol-II: 654
 Bussey, K., Vol-I: 84, 474, 508; Vol-II: 643
 Buswell, B. N., Vol-I: 299, 431; Vol-II: 30
 Butcher, J. N., Vol-I: 14, 135; Vol-II: 15, 70, 76–79
 Butler, D., Vol-II: 339, 341
 Butler, J., Vol-I: 120, 194, 201, 260, 368
 Butler, R., Vol-I: 345, 566
 Butler, S., Vol-I: 330
 Butryn, T. M., Vol-II: 568
 Butterfield, D. A., Vol-II: 448
 Butterworth, M., Vol-I: 368
 Buttner, E. H., Vol-II: 340, 346
 Buunk, A. P., Vol-II: 288
 Buunk, B. P., Vol-II: 548
 Buysse, A., Vol-II: 501
 Byars-Winston, A. M., Vol-II: 383
 Byers, E. S., Vol-II: 299
 Byers, S. E., Vol-II: 299
 Bylund, C. L., Vol-II: 523
 Byne, W., Vol-I: 217, 225
 Byrne, B. M., Vol-I: 172
 Byrne, G. J. A., Vol-II: 477
 Byron, K., Vol-I: 438

C
 Cabaj, R. P., Vol-I: 64
 Cabanac, M., Vol-I: 458
 Cabe, N., Vol-II: 230
 Cabrera, N. J., Vol-II: 229
 Cacioppo, J. T., Vol-I: 239
 Cadinu, M., Vol-I: 433
 Cady, E. T., Vol-I: 549; Vol-II: 565
 Cafri, G., Vol-I: 54; Vol-II: 99, 153, 156–157, 160–163, 172
 Cain, D. P., Vol-I: 221
 Cain, V. A., Vol-II: 228
 Cairney, J., Vol-II: 476
 Cairns, B., Vol-I: 397
 Cairns, R., Vol-I: 397
 Calás, M. B., Vol-II: 452
 Caldera, Y., Vol-I: 502
 Caldwell, L. D., Vol-II: 227, 236
 Caldwell, M. A., Vol-II: 282
 Caldwell, N. D., Vol-II: 144
 Caldwell-Colbert, A. T., Vol-II: 460
 Cale, E. M., Vol-II: 96
 Calhoun, L. G., Vol-II: 297
 Calkins, M. W., Vol-I: 21–27
 Callaghan, M., Vol-II: 382, 391
 Callanan, C., Vol-II: 485
 Callanan, M. A., Vol-I: 307, 445
 Calloway, D. H., Vol-I: 458
 Calogero, R. M., Vol-I: 10, 86, 91; Vol-II: 10, 153–174
 Calvert, S. L., Vol-I: 515; Vol-II: 327, 651–652
 Calvo, M. G., Vol-I: 442
 Camara, W. J., Vol-II: 72
 Camarata, S., Vol-I: 301
 Camargo, C. A., Vol-II: 474
 Cameron, B. A., Vol-I: 457
 Cameron, C. E., Vol-I: 21
 Cameron, D., Vol-I: 118, 195, 381, 387, 397–398
 Cameron, J. A., Vol-I: 516
 Cameron, L., Vol-I: 517
 Cameron, R. P., Vol-I: 544
 Camfield, T. M., Vol-I: 21
 Camic, P. M., Vol-I: 103, 121–122
 Cammarota, J., Vol-II: 272
 Campbell, A., Vol-I: 396–397, 496
 Campbell, B., Vol-I: 534

- Campbell, D. T., Vol-I: 81, 161, 164–165, 171–173
 Campbell, I. C., Vol-I: 247, 464
 Campbell, J. D., Vol-II: 24
 Campbell, K. L., Vol-II: 54
 Campbell, R. T., Vol-I: 187
 Campbell, R., Vol-II: 614, 624, 629, 634
 Campbell, T. L., Vol-I: 172
 Campos, D., Vol-II: 43
 Campos-Flores, A., Vol-II: 369–370
 Canada, K., Vol-I: 285
 Canary, D. J., Vol-II: 283, 293, 296
 Canetto, S. S., Vol-I: 569
 Canner, R., Vol-II: 475
 Cannon, L. W., Vol-I: 108
 Cánovas, R., Vol-I: 328
 Cantor, J., Vol-I: 68, 542; Vol-II: 166
 Cantrill, J. G., Vol-II: 291
 Canyock, E., Vol-II: 603
 Cao, F., Vol-II: 430
 Capdevila, R., Vol-I: 365
 Capitano, J. P., Vol-II: 340
 Capitano, J., Vol-I: 68
 Caplan, J., Vol-I: 403
 Caplan, J. B., Vol-I: 84; Vol-II: 91
 Caplan, P., Vol-I: 403
 Caplan, P. J., Vol-I: 9, 29, 84, 318; Vol-II: 9, 64, 73, 91–105, 192, 196
 Capodilupo, C., Vol-II: 227
 Capotosto, L., Vol-I: 285
 Cappelleri, J. C., Vol-II: 76
 Capranica, L., Vol-II: 572
 Caprara, G. V., Vol-I: 172
 Capshew, J. H., Vol-I: 24
 Capstick, M., Vol-II: 690
 Carach, C., Vol-II: 484
 Caradoc-Davies, T., Vol-II: 483
 Card, N. A., Vol-I: 546
 Carey, C. M., Vol-II: 290
 Carey, M., Vol-I: 485, 487
 Carlat, D. J., Vol-II: 474
 Carli, L., Vol-I: 380, 383, 387
 Carli, L. L., Vol-I: 411, 419; Vol-II: 10, 337–352
 Carlson, E. R., Vol-I: 31
 Carlson, L., Vol-II: 50
 Carlson, R., Vol-I: 31
 Carlson, T. S., Vol-II: 271
 Carlsson, I., Vol-I: 353
 Carlton-Ford, S., Vol-II: 389
 Carney, D. R., Vol-I: 417
 Carnot, E., Vol-II: 648
 Carp, F. M., Vol-I: 573
 Carpenter, C., Vol-II: 171
 Carpenter, D., Vol-I: 479
 Carpenter, K., Vol-II: 159
 Carpenter, L. J., Vol-II: 566
 Carr, D. S., Vol-II: 296, 410
 Carranza, E., Vol-I: 198
 Carrere, S., Vol-II: 265
 Carrico, A., Vol-II: 21
 Carrier, B., Vol-I: 243
 Carrington, B., Vol-II: 382
 Carrington, C., Vol-II: 411–412
 Carroll, J., Vol-II: 9, 174
 Carroll, J. B., Vol-I: 263
 Carroll, R., Vol-I: 487
 Carroll, S. A., Vol-I: 439
 Carson, D. K., Vol-I: 457
 Carson, J. L., Vol-II: 478
 Carson, K. A., Vol-I: 219
 Carstensen, L. L., Vol-I: 437, 566–567; Vol-II: 499
 Carter, B., Vol-II: 255
 Carter, C. S., Vol-I: 249
 Carter, D. A., Vol-II: 351, 456
 Carter, D. B., Vol-I: 515
 Carter, G., Vol-I: 330; Vol-II: 228
 Carter, J. D., Vol-I: 411, 413, 415, 446
 Carter, P., Vol-I: 319
 Caruso, C., Vol-II: 573
 Caruso, D. R., Vol-I: 418, 439
 Caruthers, A., Vol-II: 171, 660
 Carvajal, S., Vol-II: 618
 Carve, C. E., Vol-II: 286
 Carver, C. S., Vol-II: 434, 547
 Carver, P. R., Vol-I: 142, 498–499, 512
 Carver, R. A., Vol-II: 43, 53
 Casanova, E. M., Vol-II: 160
 Casas, J. F., Vol-II: 319–320
 Casas, J. M., Vol-II: 236
 Case, P., Vol-II: 552–553
 Case, S-E., Vol-I: 119
 Caselles, C. E., Vol-II: 360
 Casey, K. L., Vol-I: 242, 243
 Casey, M. B., Vol-I: 317, 325, 332
 Cash, T. F., Vol-I: 150, 567; Vol-II: 153–154, 156, 158–160, 163, 173
 Casper, L. M., Vol-II: 446
 Caspi, A., Vol-I: 535, 543, 548
 Cass, D. T., Vol-II: 482
 Cass, V. C., Vol-I: 541
 Cassidy, A., Vol-I: 195, 202
 Cassidy, C., Vol-II: 510
 Cassidy, J. W., Vol-I: 243
 Casswell, S., Vol-II: 480
 Castelli, L., Vol-I: 517
 Castle, D. J., Vol-II: 161
 Castro, C., Vol-II: 673, 690
 Catanese, K. R., Vol-II: 289
 Catrell, A. K., Vol-II: 69
 Catsambis, S., Vol-I: 310
 Cattarin, J. A., Vol-II: 162
 Cattell, H. E. P., Vol-II: 69, 80
 Cattell, R. B., Vol-II: 80
 Cauffman, E., Vol-I: 536; Vol-II: 329
 Caviness, V. S., Vol-I: 217

- Caws, P., Vol-II: 94
 Caygill, L., Vol-I: 496
 Ceccarelli, I., Vol-I: 241
 Ceci, S. J., Vol-I: 283, 300
 Cecil, J. S., Vol-II: 589
 Ceder, I., Vol-I: 332
 Cejka, M. A., Vol-II: 448
 Cella, K., Vol-II: 260
 Cella, S., Vol-I: 544
 Cellerino, A., Vol-I: 239
 Center, B. A., Vol-II: 414
 Cermele, J., Vol-II: 103
 Cerone, L. J., Vol-I: 239, 325
 Cervantes, C. A., Vol-I: 445
 Cetin, K., Vol-II: 546
 Chabanne, V., Vol-I: 330
 Chagnon, N., Vol-I: 269
 Chaiken, S., Vol-I: 457, 460, 567
 Chaikin, A. L., Vol-II: 294
 Chakraborty, P., Vol-II: 98
 Chalifoux, B., Vol-II: 101
 Chamberlain, K., Vol-II: 228
 Chambless, D. C., Vol-II: 221
 Chambless, D. L., Vol-II: 197, 202–203
 Chan, C., Vol-I: 64, 65; Vol-II: 288, 293
 Chan, C. W., Vol-I: 236
 Chan, N., Vol-I: 247, 462
 Chan, R., Vol-I: 67
 Chan, R. W., Vol-II: 411
 Chan, S. S. H., Vol-II: 477
 Chang, E. L., Vol-I: 328
 Chang, G., Vol-II: 416
 Chang, K. T., Vol-I: 330
 Chang, L., Vol-I: 241
 Chang, S., Vol-II: 288, 293
 Chang, T., Vol-II: 226, 228, 232, 234
 Chang, Y. F., Vol-I: 187
 Chang-Schneider, C., Vol-II: 31
 Channer, K. S., Vol-I: 242
 Chantala, K., Vol-I: 530
 Chaplin, T. M., Vol-I: 435, 437, 445
 Chapman, D., Vol-II: 620
 Chapman, M., Vol-I: 45
 Chapman, T. K., Vol-I: 114
 Charles, M., Vol-I: 278
 Charles, R., Vol-I: 350
 Charles, S. T., Vol-I: 567
 Charleston, S. I., Vol-I: 328
 Charlton, K., Vol-I: 413
 Charlton, R., Vol-I: 568
 Charmaz, K., Vol-I: 111
 Charyton, C., Vol-I: 351
 Chase, C., Vol-I: 194
 Chase, S. E., Vol-I: 108, 111
 Chase, T. N., Vol-I: 226
 Chasiotis, A., Vol-II: 43
 Chatman, C. M., Vol-I: 497
 Chatman, J. A., Vol-II: 340, 349
 Chattha, H. K., Vol-II: 75
 Chavous, T. M., Vol-I: 285, 496
 Chawla, P., Vol-I: 438
 Cheater, F., Vol-II: 228
 Check, J. V., Vol-II: 660
 Chen, C., Vol-I: 307
 Chen, H. S., Vol-II: 412
 Chen, J. T., Vol-I: 179
 Chen, J. Y., Vol-II: 286
 Chen, Y., Vol-I: 438
 Chen, J. J., Vol-II: 345
 Cheney, M. M., Vol-I: 247, 462
 Cheng, J. H. S., Vol-I: 288
 Chentsova-Dutton, Y. E., Vol-I: 435, 437–438, 442
 Cherney, I., Vol-I: 263
 Cherney, I. D., Vol-I: 320, 322, 515
 Chernovetz, M. E., Vol-II: 24
 Cherrier, M. M., Vol-I: 223
 Cherry, D. K., Vol-II: 518–519
 Chesler, P., Vol-I: 27, 347; Vol-II: 73, 188, 192
 Chesley, N., Vol-II: 653
 Chesney, G. L., Vol-I: 238
 Chester, A., Vol-II: 202, 205
 Chester, N. L., Vol-II: 42, 45–46, 49, 53
 Cheung, A., Vol-II: 352
 Cheung, B. M. Y., Vol-II: 543
 Cheung, F. M., Vol-I: 166, 170; Vol-II: 460
 Cheung, P., Vol-I: 369
 Chevrier, E., Vol-I: 319, 322
 Chew, J., Vol-II: 205
 Chhin, C. S., Vol-II: 380, 384
 Chi, I., Vol-II: 485
 Chi, Q., Vol-I: 248
 Chia, S., Vol-I: 475
 Chiappa, K. H., Vol-I: 243
 Chiarello, C., Vol-I: 324
 Child, P., Vol-I: 497
 Childs, E., Vol-II: 633
 Childs, G., Vol-I: 289
 Chin, J., Vol-I: 30
 Chin, J. L., Vol-II: 224, 462
 Chiolerio, A., Vol-II: 476
 Chipman, K., Vol-I: 222
 Chiu, C., Vol-I: 160; Vol-II: 70, 460
 Chiu, W. T., Vol-II: 473
 Chivers, M. L., Vol-I: 225
 Chodorow, N., Vol-I: 32, 473; Vol-II: 117
 Chodorow, N. J., Vol-I: 50
 Choi, E., Vol-I: 420
 Choi, J., Vol-I: 222, 263, 265, 318–319, 321, 328–329
 Choi, N., Vol-I: 135
 Choi, P., Vol-II: 158, 478, 575
 Choi, P. Y. L., Vol-II: 570, 573
 Choo, P., Vol-II: 297
 Choprac, A., Vol-I: 246
 Chovil, N., Vol-I: 438

- Chrisler, J. C., Vol-I: 1–15, 110, 348, 352, 361–374, 433, 444, 566; Vol-II: 1–15, 97–98, 104, 159, 161, 167–168, 174, 205, 521, 551, 648, 692
 Christensen, A., Vol-II: 499
 Christensen, M., Vol-II: 553
 Christensen, P. N., Vol-I: 446; Vol-II: 168
 Christenson, A., Vol-II: 265–267
 Christians, C. G., Vol-I: 106
 Christofides, T. C., Vol-II: 603
 Christova, P. S., Vol-I: 239
 Chrousos, G. P., Vol-I: 534
 Chrysochoou, X., Vol-I: 199
 Chu, C., Vol-II: 534
 Chu, J. Y., Vol-I: 137, 150
 Chubb, N. H., Vol-II: 30
 Chuck, S. K., Vol-II: 534
 Chun, C., Vol-II: 620
 Chung, W. C. J., Vol-II: 116
 Chung, Y. B., Vol-II: 509
 Church, A. T., Vol-I: 166, 170
 Church, J., Vol-I: 327
 Chusmir, L., Vol-II: 44, 46
 Chusmir, L. H., Vol-I: 354
 Cialdini, R. B., Vol-II: 343, 347
 Cianni, M., Vol-II: 451, 453
 Ciarlo, J. A., Vol-II: 224
 Ciarrochi, J., Vol-I: 439; Vol-II: 236, 242
 Cimadevilla, J. M., Vol-I: 328
 Cini, M. A., Vol-II: 292
 Citera, M., Vol-I: 96
 Civello, D., Vol-II: 543
 Claes, M. E., Vol-II: 281
 Clapp, S. K., Vol-II: 692
 Clark, E. V., Vol-I: 361
 Clark, H. H., Vol-I: 197; Vol-I: 361
 Clark, J., Vol-I: 241
 Clark, M., Vol-I: 187
 Clark, M. D., Vol-II: 104, 192–193
 Clark, M. P., Vol-I: 25
 Clark, M. S., Vol-II: 282, 295, 414
 Clark, R. A., Vol-II: 282
 Clark, S., Vol-II: 486
 Clarke, J., Vol-II: 478
 Clarke, L. H., Vol-II: 174
 Clarke, P. G., Vol-I: 222
 Clarke, S., Vol-I: 390
 Clarkson, F. E., Vol-I: 28; Vol-II: 104, 188, 678
 Clarkson, R. F., Vol-II: 72
 Claus, R. E., Vol-II: 295
 Clayton, P. J., Vol-II: 477
 Clay-Warner, J., Vol-II: 337
 Clegg, D. J., Vol-I: 247
 Clements, K., Vol-II: 329
 Clements-Nolle, K., Vol-II: 120–122
 Clendenen, V. I., Vol-I: 462
 Cleveland, E., Vol-II: 644
 Cleveland, J. N., Vol-II: 425
 Clifton, A. K., Vol-II: 339
 Clifton, A., Vol-I: 380
 Clinchey, B. M., Vol-I: 32
 Clinchy, B., Vol-I: 105
 Clinchy, B. M., Vol-I: 198
 Clipp, E. C., Vol-I: 574
 Clore, G. L., Vol-I: 434, 436, 439
 Close, J., Vol-I: 567; Vol-II: 658
 Clossick, M. L., Vol-II: 255
 Cloud, J., Vol-I: 290
 Cloutier, J., Vol-II: 285
 Coates, J., Vol-I: 117, 385, 390, 394
 Coats, E. J., Vol-I: 416, 421, 438, 444
 Cochran, S. D., Vol-I: 63, 65, 69, 480; Vol-II: 103, 133, 137–138, 144, 224, 229, 232, 234–236, 486, 552
 Cochran, S. V., Vol-I: 6, 43–55; Vol-II: 6, 135, 230, 232–235
 Cochrane, G. H., Vol-II: 172
 Code, L., Vol-I: 32
 Cody, M. J., Vol-II: 295
 Coffee, A., Vol-I: 241
 Coffman, C. J., Vol-II: 519
 Cogan, J., Vol-I: 67, 69
 Cogan, J. C., Vol-II: 161, 362–363
 Cohane, G., Vol-I: 53
 Cohane, G. H., Vol-II: 225
 Cohen, D., Vol-II: 91, 96
 Cohen, D. S., Vol-I: 330
 Cohen, E., Vol-I: 249; Vol-II: 624
 Cohen, E. L., Vol-II: 409–410, 412
 Cohen, G. L., Vol-II: 342
 Cohen, I. T., Vol-I: 458–459, 464
 Cohen, J., Vol-I: 298, 309, 477
 Cohen, L., Vol-I: 393
 Cohen, L. L., Vol-I: 147, 151; Vol-II: 170
 Cohen, P. N., Vol-II: 446
 Cohen, R. M., Vol-II: 385
 Cohen, R. S., Vol-I: 142–143
 Cohen, S., Vol-II: 501, 504–505
 Cohen-Kettenis, P. T., Vol-I: 222, 224–225, 270, 324; Vol-II: 115–116, 367
 Cohn, L., Vol-I: 54; Vol-II: 170
 Coie, J., Vol-I: 397
 Coker, A. L., Vol-II: 485
 Coker, D. R., Vol-I: 514
 Cokley, K. O., Vol-I: 285
 Colapinto, J., Vol-I: 260; Vol-II: 366
 Colburne, K. A., Vol-I: 501
 Cole, C. M., Vol-I: 224
 Cole, E. R., Vol-I: 193
 Cole, J. R., Vol-I: 345, 354
 Cole, K. L., Vol-II: 209
 Cole, P. M., Vol-I: 435
 Cole, S. W., Vol-II: 141, 553
 Cole-Harding, S. F., Vol-I: 483
 Cole-Kelly, K., Vol-II: 255
 Coleman, E., Vol-I: 72, 368; Vol-II: 112

- Coleman, M., Vol-II: 289, 405
 Coleman, R. R. M., Vol-II: 644, 658
 Coleman, S. M., Vol-II: 113
 Collaer, M. L., Vol-I: 225, 320, 322
 College, G., Vol-II: 385
 Colley, A., Vol-I: 394
 Collins, A., Vol-I: 244
 Collins, C. A., Vol-II: 546
 Collins, D. L., Vol-II: 507
 Collins, D. W., Vol-I: 221, 319
 Collins, K. A., Vol-II: 485
 Collins, K. E., Vol-II: 578
 Collins, N. L., Vol-II: 326
 Collins, P. A., Vol-I: 511
 Collins, P. H., Vol-I: 32, 105, 108–109
 Collins, W. A., Vol-I: 540
 Collinsworth, L. L., Vol-I: 282
 Collman, P., Vol-I: 506
 Colom, R., Vol-I: 322
 Colön, D., Vol-I: 325
 Colson, Y., Vol-II: 529
 Colten, M. E., Vol-I: 186
 Coltrane, S., Vol-II: 11, 401–416, 647–648
 Coluccia, E., Vol-I: 265, 330
 Colvin, C. R., Vol-I: 413, 417
 Colwill, N., Vol-II: 295
 Comas-Díaz, L., Vol-I: 30, 35; Vol-II: 192–193, 261–262, 627
 Combe, B., Vol-II: 545
 Combs, R., Vol-II: 368
 Compas, B., Vol-I: 544
 Compas, B. E., Vol-I: 545; Vol-II: 82
 Conception, R. Y., Vol-II: 574
 Condit, D., Vol-II: 603
 Condon, B., Vol-I: 330
 Conforti, K., Vol-II: 235
 Conger, J., Vol-I: 59, 70
 Conger, J. C., Vol-II: 283
 Conger, J. J., Vol-II: 386
 Conger, K. J., Vol-II: 619
 Conger, R. D., Vol-I: 543, 544; Vol-II: 139, 619
 Conkright, L., Vol-I: 515
 Conn, S. R., Vol-II: 80
 Connell, R. W., Vol-I: 51; Vol-II: 169, 225–227
 Connellan, J., Vol-I: 309
 Connelly, S., Vol-I: 143
 Conner, M., Vol-I: 456
 Connidis, I. A., Vol-I: 572
 Connolly, C. M., Vol-II: 258
 Connolly, J., Vol-I: 540; Vol-II: 320
 Conrad, P., Vol-I: 194
 Conradi, P., Vol-II: 471
 Conroy, D., Vol-II: 48
 Constable, R. T., Vol-I: 328
 Constantian, C. A., Vol-II: 50
 Constantine, M. G., Vol-I: 34
 Constantinople, A., Vol-I: 150, 192, 204, 366; Vol-II: 22
 Contreras, M. J., Vol-I: 322
 Conway, L., Vol-II: 113–115
 Conway, M., Vol-II: 144
 Conway-Turner, K., Vol-I: 572
 Cook, C. M., Vol-I: 221, 323
 Cook, E. P., Vol-II: 94
 Cook, J., Vol-I: 285
 Cook, J. A., Vol-I: 105, 109
 Cook, K., Vol-II: 339
 Cook, M., Vol-II: 616
 Cook, S., Vol-I: 139
 Cook, S. W., Vol-II: 321
 Cook, T. D., Vol-I: 81, 161, 164
 Cooke, D. J., Vol-II: 74
 Cooke, E. P., Vol-I: 14; Vol-II: 15
 Cooke, L. L., Vol-II: 347
 Cooke, L. P., Vol-II: 413
 Cooley-Quille, M., Vol-II: 619
 Coolidge, F. L., Vol-II: 67
 Coombes, L., Vol-I: 117
 Cooper, C. L., Vol-II: 424, 429, 502, 505
 Cooper, H., Vol-I: 413
 Cooper, J., Vol-I: 510, 515
 Cooper, K., Vol-II: 120
 Cooper, L. A., Vol-II: 520
 Cooper, M. L., Vol-II: 23
 Cooper, R. M., Vol-I: 246
 Cooper, R. S., Vol-I: 179
 Cooper, S. P., Vol-II: 195
 Copeland, C. L., Vol-II: 340
 Coquillon, E., Vol-I: 118
 Corballis, M. C., Vol-I: 239
 Corbett, S., Vol-II: 680
 Corbin, J., Vol-I: 111
 Corby, B. C., Vol-I: 498, 512–513
 Cordova, J., Vol-I: 437, 439
 Corenlius, L., Vol-I: 180
 Corker, M., Vol-I: 32
 Cormier, H., Vol-II: 170
 Cormier, J. F., Vol-II: 164–165
 Corneal, D. A., Vol-I: 544
 Cornell, D. G., Vol-II: 384
 Cornell, D. P., Vol-II: 295
 Cornuz, J., Vol-II: 476
 Cornwell, J. M., Vol-II: 449
 Correll, S. J., Vol-II: 447
 Corrigan, E. A., Vol-I: 95
 Corrigan, S. A., Vol-I: 458
 Cortina, L. M., Vol-II: 423, 425–426, 429, 433–437
 Cosgrove, L., Vol-I: 103, 108, 362, 364, 381–382, 400–401, 403–404; Vol-II: 64, 73, 92, 94–95, 98–100, 192, 196, 633
 Costa, P., Vol-I: 442
 Costa, P. T. Jr., Vol-I: 560; Vol-II: 25–28, 81, 447
 Costa, P. T. J., Vol-I: 170
 Costanzo, M., Vol-I: 412–413
 Costello, E. J., Vol-I: 548; Vol-II: 133, 137, 144

- Costenbader, V. K., Vol-I: 435
 Costrich, N., Vol-I: 383
 Cote, S., Vol-II: 313
 Cotrufo, P., Vol-I: 544
 Coulter, M. L., Vol-II: 319
 Counts, M., Vol-I: 330
 Couper-Leo, J., Vol-I: 323
 Coupland, J., Vol-I: 394
 Courchesne, E., Vol-I: 217
 Cournoyer, R. J., Vol-II: 137
 Courtenay, W. H., Vol-I: 48, 53, 535, 568; Vol-II: 170, 224, 228, 522
 Courtois, C., Vol-II: 195, 208
 Cousins, A. J., Vol-II: 286
 Covatto, A. M., Vol-I: 539
 Coverman, S., Vol-II: 405
 Covinsky, K. E., Vol-II: 546
 Cowan, G., Vol-I: 387, 510
 Cowan, R. L., Vol-I: 237
 Cowie, C. C., Vol-II: 531
 Cox, B., Vol-II: 574
 Cox, B. D., Vol-I: 319
 Cox, D., Vol-I: 263
 Cox, R. S., Vol-II: 502
 Coyle, A., Vol-I: 192
 Coyne, J. C., Vol-II: 139, 496, 498–501, 505, 511, 551–552
 Coyne, J., Vol-I: 146
 Coyne, S. M., Vol-II: 313, 644, 649
 Cozby, P. C., Vol-II: 295
 Cozza, T. M., Vol-I: 137
 Craeynest, M., Vol-I: 497
 Craft, R. M., Vol-I: 241–242
 Craig, D., Vol-I: 388
 Craig, J. M., Vol-II: 341
 Craig, P., Vol-II: 477
 Craig, W., Vol-I: 540
 Craig, W. M., Vol-II: 319–320
 Craik, F. I. M., Vol-I: 568
 Cramer, P., Vol-I: 432
 Cramond, B., Vol-I: 7, 343–355
 Crandall, C. S., Vol-II: 167
 Crandall, V. C., Vol-II: 387
 Crane, D. R., Vol-II: 272
 Crane, M., Vol-I: 508
 Crawford, J., Vol-I: 115
 Crawford, J. K., Vol-I: 535; Vol-II: 165
 Crawford, M., Vol-I: 20, 33, 103, 198, 327, 361–365, 381–383, 388, 484
 Crawford, M. S., Vol-II: 34, 64–65, 67, 71, 73, 168, 448, 615, 672, 680, 682, 685, 691
 Cremato, F., Vol-I: 544
 Crerand, C. E., Vol-II: 162
 Crespo, C. J., Vol-II: 567
 Creswell, J. W., Vol-I: 112, 123
 Crick, N. R., Vol-I: 546; Vol-II: 312, 319–320
 Crimmel, B. L., Vol-II: 518
 Cristofaro, T. N., Vol-I: 500, 505
 Crittenden, N., Vol-I: 439
 Crocker, J., Vol-I: 194, 496–497
 Crocker, P. R. E., Vol-II: 576
 Crockett, L. J., Vol-I: 543
 Crombez, G., Vol-I: 497
 Crompton, R., Vol-II: 410
 Cronbach, L. J., Vol-I: 349
 Crooks, R., Vol-II: 532
 Croom, G., Vol-I: 65
 Cross, S. E., Vol-I: 429; Vol-II: 294–295, 297
 Crossley, M. L., Vol-I: 114, 116, 118
 Crossman, J., Vol-II: 647
 Crouch, I., Vol-I: 381
 Crouter, A. C., Vol-I: 143, 144, 501, 511, 536–537, 544, 570–571; Vol-II: 296, 384, 413, 415
 Crowe, P. A., Vol-I: 539
 Crowley, C., Vol-I: 541
 Crowley, K., Vol-I: 307
 Crowley, M., Vol-II: 326
 Crowne, D. P., Vol-II: 602
 Crusco, A. H., Vol-I: 458
 Cruz, Z., Vol-II: 361
 Crystal, S., Vol-II: 478
 Csank, P. A. R., Vol-II: 144
 Csikszentmihalyi, M., Vol-II: 232, 282
 Csillag, C., Vol-II: 527
 Cuddy, A. J. C., Vol-II: 352, 450
 Cui, L., Vol-I: 249
 Cullen, K. A., Vol-II: 533
 Cullen, P. C., Vol-II: 97
 Culley, M., Vol-II: 616, 618, 628–629
 Cummings, A. L., Vol-I: 548
 Cummings, T. G., Vol-II: 350
 Cunningham, A., Vol-I: 548
 Cunningham, G. B., Vol-II: 647
 Cunningham, J. G., Vol-I: 431
 Cunningham, M. R., Vol-II: 409–410
 Cunningham, S. J., Vol-II: 21
 Currie, C. E., Vol-II: 483
 Curtis, J., Vol-I: 569
 Curtis, L., Vol-II: 282
 Cusack, J., Vol-II: 242
 Cusak, J., Vol-II: 236
 Custer, H., Vol-I: 438
 Custer, L., Vol-II: 412
 Cutler, S. E., Vol-II: 137
 Cutmore, T. R. H., Vol-I: 328
 Cutrona, C. E., Vol-II: 501, 507
 Czaja, S. J., Vol-II: 137
- D**
 D'Agostino, H., Vol-II: 156
 D'Alessandro, L. M., Vol-I: 244
 d'Anna, S., Vol-I: 236
 D'Arcy, C., Vol-II: 228

- D'Augelli, A. R., Vol-I: 68, 545; Vol-II: 120, 136, 138, 367–368
 D'Elia, L. F., Vol-II: 605
 Dabbs, J. M. Vol-I: 328, 330; Vol-I: 226
 Dabul, A. J., Vol-II: 347
 Dadds, M., Vol-I: 436
 Dahl, S., Vol-II: 207
 Dahlerup, D., Vol-II: 444
 Dahlheimer, D., Vol-I: 67
 Dahlstrom, L. E., Vol-II: 76
 Dahlstrom, W. G., Vol-II: 70
 Dahms, T. L., Vol-II: 201
 Dailey, R. M., Vol-II: 295
 Daily, C. M., Vol-II: 602
 Dainton, M., Vol-II: 293, 296
 Daiuto, A. D., Vol-II: 266
 Dalton, D. R., Vol-II: 602
 Dalton, J. H., Vol-II: 613
 Dalvit, S. P., Vol-I: 458
 Dalvit-McPhillips, S., Vol-I: 459, 464
 Daly, J., Vol-I: 117
 Damasio, H., Vol-I: 217
 Dana, M., Vol-II: 168
 Dance, L., Vol-II: 414
 Daniel, S., Vol-II: 271
 Daniels, C., Vol-II: 566
 Daniels, J. A., Vol-II: 383
 Danish, S. J., Vol-II: 576
 Dankoski, M. E., Vol-II: 255
 Danner, C. C., Vol-II: 206, 208
 Danoff-Burg, S., Vol-II: 12, 541–555
 Danseco, E. R., Vol-II: 282
 Dansky, B. S., Vol-II: 685
 Danziger, K., Vol-I: 204
 Darcy, C. M., Vol-II: 483
 Dargel, A., Vol-II: 51
 Dark, L., Vol-I: 68
 Darlega, V. L., Vol-II: 326
 Darley, J. M., Vol-II: 447, 647, 661
 Darling, N., Vol-II: 623, 633
 Dar-Nimrod, I., Vol-I: 194, 374
 Darroch, J. E., Vol-II: 532
 Darrow, C. N., Vol-I: 44
 Dasgupta, N., Vol-II: 661
 Dasgupta, S. D., Vol-II: 292–293
 Dash, A. S., Vol-I: 238
 Dash, X., Vol-I: 238
 Dasti, J., Vol-II: 124
 Daubenmier, J. J., Vol-II: 544, 575
 Daughtridge, R., Vol-II: 523
 Davalos, D. B., Vol-II: 646, 648
 Davalos, R. A., Vol-II: 646
 David, D., Vol-I: 44, 136, 145, 150
 David, L., Vol-I: 47, 48, 145
 Davids, R., Vol-II: 486
 Davidson, J., Vol-I: 49
 Davidson, K., Vol-I: 431
 Davidson, L., Vol-II: 272
 Davidson, L. R., Vol-II: 294
 Davidson, M. J., Vol-II: 452
 Davidson, R. J., Vol-I: 242; Vol-II: 54
 Davies, A. P., Vol-I: 193
 Davies, D. C., Vol-I: 216–217
 Davies, I. J., Vol-I: 218
 Davies, K., Vol-I: 505
 Davies, P. G., Vol-II: 450, 661
 Davis, A. J., Vol-II: 141, 290
 Davis, A. M., Vol-I: 119
 Davis, B., Vol-I: 83
 Davis, B. J., Vol-II: 228
 Davis, C., Vol-II: 158, 574
 Davis, D. D., Vol-II: 460
 Davis, E., Vol-I: 368
 Davis, G. A., Vol-I: 350
 Davis, J. H., Vol-I: 108–109, 113–115
 Davis, K. D., Vol-II: 672, 674, 676, 679–684
 Davis, K. E., Vol-II: 233
 Davis, M. H., Vol-I: 438; Vol-II: 295
 Davis, P. J., Vol-I: 445
 Davis, R. H., Vol-I: 49
 Davis, R., Vol-II: 70, 81, 97
 Davis, S., Vol-I: 483
 Davis, S. N., Vol-I: 108–109, 113–115, 505; Vol-II: 407, 409–411
 Davis, W. N., Vol-II: 171
 Davis-Kean, P., Vol-II: 384
 Davison, G., Vol-I: 62
 Davison, H. K., Vol-II: 344, 447
 Davitz, J. R., Vol-I: 438
 Davy, B., Vol-I: 456–457, 464
 Dawber, T., Vol-II: 484
 Dawes, R. M., Vol-II: 94, 193
 Dawkins, N., Vol-II: 543
 Dawson, C. R., Vol-II: 687
 Day, A. L., Vol-I: 439
 Day, R., Vol-II: 50
 De Amicis, L., Vol-I: 517
 de Andrade Stempluk, V., Vol-II: 476
 de Andrade, A. G., Vol-II: 476
 De Backer, C., Vol-I: 398
 de Bosset, V., Vol-II: 544
 De Bourdeaudhuij, I., Vol-I: 497
 de Castro, J. M., Vol-I: 456–457, 462
 De Dreu, C. K. W., Vol-II: 350
 de Graaf, H., Vol-II: 655
 de Graaf, R., Vol-II: 135, 224, 369
 De Haan, E. H. F., Vol-I: 321
 De Jesus, M., Vol-II: 627
 de la Motte, D., Vol-I: 348
 De Lisi, R., Vol-I: 319, 328
 De Pater, I. E., Vol-II: 455
 De Paul, J., Vol-II: 329
 de Perrot, M., Vol-II: 529
 De Reus, L. A., Vol-I: 563

- de Ridder, D., Vol-II: 546
 de St. Aubin, E., Vol-I: 563–564
 De Vries, G. J., Vol-II: 116
 de Wied, M., Vol-I: 242
 Deacon, S. A., Vol-II: 255
 Dean, C., Vol-II: 97
 Dean, J. T., Vol-II: 195
 Dean, L., Vol-I: 69
 Deane, F. P., Vol-II: 236, 242
 Deary, I. J., Vol-I: 301–302
 Deaux, K., Vol-I: 28, 84, 88, 197, 364–365, 429, 496;
 Vol-II: 67, 69, 71, 75–76, 296, 360, 447–449, 570,
 631
 deBeauvoir, S., Vol-I: 197
 DeBono, K. G., Vol-II: 283
 DeBord, K. A., Vol-II: 226
 DeBro, S. C., Vol-II: 68
 Deci, E. L., Vol-II: 297, 388
 Decker, S. H., Vol-II: 595
 Deeb, S. S., Vol-I: 237
 Deeg, D. J. H., Vol-II: 297
 Deer, B., Vol-II: 598
 Deeter, T. E., Vol-II: 569
 DeFilippis, J. A., Vol-II: 598
 Deforche, B., Vol-I: 497
 DeFrances, C. J., Vol-II: 520, 533
 Degelman, D., Vol-I: 194
 Degenholtz, H., Vol-II: 525
 DeGraffinreid, C. R., Vol-I: 184
 DeHart, P. H., Vol-II: 390
 Deinhart, A., Vol-II: 255–256
 Deiss, V., Vol-I: 463
 Dekkers, H., Vol-II: 390
 DeKoekkoek, P. D., Vol-I: 573
 del Campo, R., Vol-II: 412
 Del Zotto, M., Vol-I: 239
 DeLamater, J. D., Vol-I: 431
 Delaney, J., Vol-II: 169
 DeLaria, L., Vol-II: 292
 Delbridge, R., Vol-I: 395, 397
 Delnevo, C. D., Vol-II: 478
 DeLoache, J. S., Vol-I: 509
 DeLongis, A., Vol-II: 495–512
 Delon-Martin, C., Vol-I: 249
 Delva, J., Vol-I: 570
 DeMaris, A., Vol-II: 137, 407
 DeMeis, D., Vol-II: 409, 411
 DeMers, S., Vol-I: 354
 Demo, D., Vol-II: 405, 409
 Demolar, G. L., Vol-I: 247
 DeMoss, K., Vol-I: 354
 Dempsey, D., Vol-I: 64
 Demuth, C., Vol-I: 110
 Demuth, S., Vol-II: 599
 DeNardo, M., Vol-II: 426
 DeNavas-Walt, C., Vol-II: 123
 Dengel, D. W., Vol-II: 365
 Denham, B. E., Vol-II: 647
 Denislic, M., Vol-I: 240
 Denmark, F. L., Vol-I: 20, 27
 Denmark, F., Vol-I: 371
 Denney, R. L., Vol-II: 598
 Denney-Wilson, E., Vol-II: 480
 Dennis, W. D., Vol-II: 225
 Denny, D., Vol-II: 119, 368
 Dent, R., Vol-II: 472
 Denzin, N. K., Vol-I: 106, 108, 119, 122
 Deo, S., Vol-II: 26
 Deogracias, J. J., Vol-I: 141
 Deosarasingh, K., Vol-II: 484
 DePaulo, B. M., Vol-I: 412, 413
 Depner, C., Vol-II: 43
 Dépret, E., Vol-I: 418
 Derbyshire, S. W., Vol-I: 242
 Derbyshire, S. W. G., Vol-I: 242
 Derlega, V. J., Vol-II: 294–295, 509
 Dernier, O., Vol-II: 473
 Derogatis, L. R., Vol-II: 209
 Deruiter, W. K., Vol-II: 476
 Desaulniers, J., Vol-II: 21
 Desertrain, G. S., Vol-II: 570
 Desmarais, S., Vol-I: 569
 DeSouza, E., Vol-II: 425
 DeSouza, M. J., Vol-II: 575
 Despres, J. P., Vol-I: 457
 Desrosiers, E., Vol-II: 347
 Desvaux, G., Vol-II: 456
 Deutsch, F. M., Vol-II: 299
 Devaud, L. L., Vol-I: 365
 DeVault, M., Vol-II: 407, 415
 Devillard-Hoellinger, S., Vol-II: 456
 Devine, P. G., Vol-I: 418, 431
 Devineni, T., Vol-I: 323
 Devlin, A. S., Vol-I: 328–329; Vol-II: 692
 DeVoe, M., Vol-I: 567
 DeVore, I., Vol-I: 267
 Devos, T., Vol-I: 196, 198
 Dew, M. A., Vol-II: 338
 Dey, A. N., Vol-II: 519
 deZwaan, M., Vol-I: 86
 Dhillon, P. K., Vol-I: 347
 Dhindsa, M. K., Vol-II: 554
 Di Ceglie, D., Vol-II: 115, 125
 Di Dio, L., Vol-II: 23
 Di Marco, F., Vol-II: 547–548
 Diala, C. C., Vol-II: 478
 Diamant, A. L., Vol-II: 552
 Diamond, L., Vol-I: 368, 480
 Diamond, L. M., Vol-I: 64, 66, 72, 262, 540–541, 549;
 Vol-II: 140, 366, 645
 Diamond, M., Vol-I: 194, 367; Vol-II: 366
 Diaz, R. M., Vol-I: 187; Vol-II: 145–146
 Diaz, S. F., Vol-II: 162
 Dibble, S. L., Vol-II: 486

- DiBerardinis, J. P., Vol-II: 339
 Dick, R., Vol-II: 575
 Dickens, G., Vol-II: 604
 Dickens, M. N., Vol-II: 384
 Dickson, M. W., Vol-II: 348
 DiClemente, R., Vol-II: 626
 DiDomenico, L., Vol-II: 172
 Diekman, A. B., Vol-I: 84, 90, 421, 570, 572; Vol-II: 448, 678
 Diener, E., Vol-I: 434, 436
 Diener, M. L., Vol-I: 431
 Dietz, T. L., Vol-II: 645
 DiFranco, W., Vol-I: 487
 Dijksterhuis, A., Vol-I: 418
 Dill, K. E., Vol-II: 649, 651, 657
 Dillard, J. P., Vol-II: 340
 Dillard, J., Vol-I: 392
 Dillaway, H., Vol-II: 174, 412
 Dillaway, H. E., Vol-I: 568
 Dilworth, J. E., Vol-II: 415
 Dimah, A., Vol-II: 318
 Dimah, K. P., Vol-II: 318
 DiMare, L., Vol-II: 448
 DiMatteo, M. R., Vol-I: 413, 441; Vol-II: 295
 Dimberg, U., Vol-I: 434, 438
 Dinda, K., Vol-II: 21
 Dindia, K., Vol-I: 440; Vol-II: 282–283, 294, 300, 327
 Dingstad, G. I., Vol-I: 463
 Dinno, A., Vol-II: 546
 Dion, K. K., Vol-II: 157, 292, 301, 347
 DiPlacido, J., Vol-I: 63, 68
 DiQuinzio, P., Vol-II: 117
 Dischinger, P., Vol-II: 483
 Ditrano, C., Vol-II: 272
 Dittmar, H., Vol-I: 566–567; Vol-II: 154
 Ditty, K. M., Vol-I: 243
 Diver, M. J., Vol-I: 242
 Diversi, M., Vol-I: 110–111, 119
 Dixon, T. L., Vol-II: 650
 Dixon, W. A., Vol-II: 24, 483
 Dixon-Woods, M., Vol-II: 532
 Dixson, A. D., Vol-I: 114
 Dobbins, T., Vol-II: 480
 Dobie, T. G., Vol-I: 245
 Dobson, K. S., Vol-II: 141
 Dobson, S. H., Vol-I: 330
 Docherty, K. J., Vol-I: 226
 Dochin, E., Vol-I: 238
 Docter, R., Vol-I: 486
 Dodd, G. H., Vol-I: 248
 Dodder, R. A., Vol-I: 135
 Dodge, K. A., Vol-II: 70
 Doherty, R. W., Vol-I: 434
 Dohrenwend, B. P., Vol-II: 137–138
 Doig, W., Vol-II: 370
 Dokecki, P., Vol-II: 272
 Dolan-Del Vecchio, K., Vol-II: 262, 269–271
 Dolezal, C. L., Vol-I: 140
 Don, M., Vol-I: 243
 Donaghy, E., Vol-I: 183
 Donahue, L. M., Vol-II: 348
 Donahue, M., Vol-I: 445
 Donaldson, J. S., Vol-I: 194
 Donaldson, M., Vol-I: 51
 Donnerstein, E., Vol-II: 647, 660
 Donovan, J. M., Vol-II: 529
 Donzella, B., Vol-I: 242
 Doorn, C. D., Vol-I: 224
 Doran, N., Vol-I: 392
 Doran, N. E., Vol-II: 340
 Döring, N., Vol-II: 646
 Dorn, L. D., Vol-I: 534
 Dorner, G., Vol-I: 217
 Doroszewicz, K., Vol-I: 167
 Dorsch, K. D., Vol-I: 535, 567
 Dosanih, N., Vol-I: 117
 Doss, B. D., Vol-II: 225
 Dottl, D. A., Vol-I: 242
 Dottolo, A. L., Vol-I: 20, 36
 Doty, R. L., Vol-I: 248
 Double, K. L., Vol-I: 244
 Doucet, A., Vol-II: 229
 Doucet, J., Vol-II: 101
 Dougherty, J., Vol-II: 501
 Dougherty, T. W., Vol-II: 454
 Douglas, S. C., Vol-II: 427, 431
 Douglas, S. J., Vol-II: 647
 Douvan, E., Vol-II: 43
 Dovidio, J. F., Vol-I: 389, 414, 416–417; Vol-II: 147, 338–339, 447, 661
 Dow, K. L., Vol-II: 380
 Downey, G., Vol-I: 540; Vol-II: 140–141
 Downey, J., Vol-I: 226
 Downey, R., Vol-I: 463
 Downing, N. E., Vol-I: 146, 148–149
 Downs, A. C., Vol-I: 52, 143; Vol-II: 287
 Doyle, A., Vol-I: 501, 531
 Doyle, J. A., Vol-I: 47, 52; Vol-II: 104
 Dozier, D. M., Vol-II: 644
 Dozois, D. J., Vol-II: 141
 Dracup, K., Vol-II: 543
 Dragowski, E. A., Vol-II: 195
 Draguns, J. G., Vol-II: 338
 Draijer, N., Vol-II: 100
 Drake, R., Vol-II: 650
 Drakich, J., Vol-I: 388–389, 393–394
 Drapeau, V., Vol-I: 457
 Drasgow, F., Vol-II: 423, 428, 430, 685
 Drasin, H., Vol-I: 549
 Dreger, A. D., Vol-I: 194
 Dreifus, C., Vol-II: 523
 Drentea, P., Vol-II: 414
 Drescher, J., Vol-I: 61
 Drewnowski, A., Vol-I: 457; Vol-II: 156

- Drigotas, S. M., Vol-II: 294
 Driscoll, A. K., Vol-II: 138
 Driscoll, I., Vol-I: 227, 264
 Driska, A., Vol-II: 566
 Driskell, J. E., Vol-II: 340, 343, 459
 Droit-Volet, S., Vol-I: 463
 Drummond, K. D., Vol-I: 142
 Drummond, M. J. N., Vol-II: 124, 169–170
 Druss, B., Vol-II: 519
 Dsurney, J., Vol-II: 598
 Du, R., Vol-I: 238
 Duan, C., Vol-I: 1; Vol-II: 1
 Dubas, J. J. S. D., Vol-I: 414
 Dubas, J. S., Vol-I: 327
 Dubb, A., Vol-I: 307
 Dubbs, S. L., Vol-II: 288
 Dubé, E. M., Vol-I: 540
 Duberman, L., Vol-II: 294
 Dubois, B., Vol-I: 380–381
 DuBois, C. L. Z., Vol-II: 349
 Dubow, E., Vol-II: 645
 Duck, R. J., Vol-II: 362
 Duckers, S., Vol-I: 456
 Duda, J. L., Vol-II: 568, 570, 573
 Dudek, S. Z., Vol-I: 350
 Duehr, E. E., Vol-II: 448, 459
 Duff, S. J., Vol-I: 323
 Duffy, J., Vol-I: 283
 Duffy, S. M., Vol-I: 64
 Duffy, V. B., Vol-I: 246–247
 Duggan, S. J., Vol-II: 158
 Duggan, S. L., Vol-I: 535
 Dugger, M., Vol-I: 328
 Duka, T., Vol-I: 224
 Duke, M. P., Vol-I: 414
 Dumont, A., Vol-I: 27
 DuMont, K., Vol-II: 137, 628
 Dunbar, K., Vol-I: 200, 202
 Dunbar, R., Vol-I: 396
 Dunbar, R. I. M., Vol-I: 259
 Duncan, G. H., Vol-I: 240, 243
 Duncan, L., Vol-I: 327
 Duncan, L. E., Vol-I: 9, 566; Vol-II: 9, 41–58
 Duncan, M. C., Vol-II: 571
 Duncan, S., Vol-I: 388
 Duncan, T., Vol-II: 622
 Duncombe, D., Vol-II: 173
 Dunham, Y., Vol-I: 497
 Dunkel-Schetter, C., Vol-II: 294, 495
 Dunlop, L., Vol-II: 169
 Dunn, C., Vol-II: 235
 Dunn, E., Vol-I: 497
 Dunn, M. A., Vol-II: 589
 Duntley, J. D., Vol-II: 285
 Dupuy, P., Vol-II: 94
 Durbin, R. G., Vol-II: 296
 Durik, A. M., Vol-I: 431, 485; Vol-II: 48, 381, 388
 Durkee, A., Vol-II: 312
 Durrant, J. D., Vol-I: 243
 Dutch, S. E., Vol-II: 521
 Duxbury, L. E., Vol-II: 415, 687
 Dweck, C. S., Vol-I: 284, 307; Vol-II: 67, 70
 Dworkin, S. F., Vol-I: 241
 Dworkin, S. H., Vol-II: 161
 Dye, L., Vol-I: 458–459, 464
 Dyke, L. S., Vol-II: 323
 Dykes, J., Vol-I: 515
 Dyrenfurth, I., Vol-I: 226
- E**
- Eagle, B., Vol-II: 415
 Eagly, A., Vol-I: 106, 402
 Eagly, A. H., Vol-I: 11, 35, 84, 89–90, 167–168, 195, 198, 201, 203, 262, 313, 411, 415, 419–422, 430, 438, 475, 481, 569, 570, 572; Vol-II: 11, 13, 20–21, 33, 68, 153, 168, 170, 282, 288, 311, 313, 324–326, 329, 338–339, 341, 343, 346–347, 350–351, 387, 427, 433–462
 Eakins, B., Vol-I: 390; Vol-II: 295
 Eakins, G., Vol-I: 390
 Eakins, R. G., Vol-II: 295
 Eals, M., Vol-I: 221, 263, 265, 321, 325
 Easterbrooks, M. A., Vol-II: 383
 Eastin, M., Vol-II: 167
 Eastman, R. C., Vol-II: 531
 Eastman, S. T., Vol-II: 647
 Easton, A., Vol-I: 187
 Eastwick, P. W., Vol-I: 168; Vol-II: 287–288
 Eaton, W., Vol-II: 134
 Ebbeck, V., Vol-II: 574
 Eberhardt, M. S., Vol-II: 531
 Eberl, R., Vol-II: 482
 Ebersole, P., Vol-I: 352
 Ebner, N. C., Vol-I: 566
 Eby, L. T., Vol-II: 454
 Eccles, J., Vol-I: 281, 284, 297, 310
 Eccles, J. S., Vol-I: 143, 306, 374, 497, 510, 528, 531–532, 534, 569; Vol-II: 379, 381–385, 387–390, 394
 Echeverri, F., Vol-I: 247
 Echeverría, S. E., Vol-II: 554
 Eck, B. A., Vol-II: 154, 170
 Eckel, L. A., Vol-I: 218; Vol-II: 74
 Eckenrode, J., Vol-II: 76
 Eckert, P., Vol-I: 385, 390
 Eckes, T., Vol-I: 517
 Ecuyer-Dab, I., Vol-I: 263, 267, 269–270, 325–326, 330
 Eddins, R., Vol-II: 226
 Edelen, M. O., Vol-I: 547
 Edelsky, C., Vol-I: 388–390
 Eder, D., Vol-I: 395–396, 540
 Edgar, M. A., Vol-I: 225
 Ediger, E., Vol-II: 99
 Edison, M. I., Vol-I: 285

- Edleson, J. L., Vol-II: 632
 Edmondson, C. B., Vol-II: 283
 Edwards, D., Vol-II: 621
 Edwards, J. N., Vol-II: 318
 Edwards, K., Vol-I: 435
 Edwards, P. C., Vol-I: 267
 Edwards, R., Vol-I: 106
 Edwards, S., Vol-I: 53
 Edwards, T., Vol-I: 368
 Egan, J., Vol-II: 225
 Egan, S. K., Vol-I: 142, 150, 192, 497–499, 512, 529, 531
 Egan, T. D., Vol-II: 350
 Egede, L. E., Vol-II: 546
 Egeland, G. M., Vol-II: 487
 Egerton, M., Vol-II: 404
 Eggermont, J. J., Vol-I: 243
 Eggins, S., Vol-I: 396
 Eglan, K. L., Vol-II: 283
 Egsmose, C., Vol-II: 545
 Ehde, D. M., Vol-II: 546
 Ehrbar, R. D., Vol-II: 111
 Ehrenfeld, J., Vol-II: 204
 Ehrenreich, B., Vol-II: 523
 Ehrensaft, M. K., Vol-I: 546–547
 Ehrhardt, A. A., Vol-I: 140, 260; Vol-II: 116
 Ehrlich, S. B., Vol-I: 318
 Eibach, R., Vol-I: 198
 Eichenfield, E., Vol-II: 222
 Eichenfield, G. A., Vol-I: 45
 Eichorn, D., Vol-I: 535
 Eichstedt, J. A., Vol-I: 500–501
 Einarsen, S., Vol-II: 424, 429
 Einon, D., Vol-II: 169
 Einstein, A., Vol-II: 187
 Eisenberg, M. E., Vol-II: 140
 Eisenberg, N., Vol-I: 242, 435; Vol-II: 174
 Eisenbud, L., Vol-I: 511
 Eisenhardt, K. M., Vol-II: 350
 Eisler, R., Vol-I: 53–54, 145
 Eisler, R. M., Vol-I: 51–52, 146, 285; Vol-II: 123
 Eisner, E., Vol-I: 120
 Eiswirth-Neems, N., Vol-II: 626
 Ekehammar, B., Vol-II: 362
 Ekins, R., Vol-II: 112
 Ekman, P., Vol-I: 412
 Ekman, R., Vol-II: 483
 Ektor-Andersen, J., Vol-I: 241
 Elasmár, M., Vol-II: 644, 647
 Elder, G., Vol-II: 46, 619
 Elder, G. H. Vol-I: 532–543, 559, 574; Vol-II: 139
 Eldridge, G., Vol-II: 626
 Eldridge, K. A., Vol-II: 500
 Eldridge, N. S., Vol-II: 263–264
 Elhai, J. D., Vol-II: 76
 Elias, L., Vol-I: 221, 264, 321, 328–329
 Elias, L. J., Vol-I: 222
 Elias, M. J., Vol-II: 613
 Eliason, M. J., Vol-II: 340, 363, 365
 Eliason, M., Vol-I: 68
 Elinson, L., Vol-II: 519
 Ellemers, N., Vol-II: 348, 461
 Ellermeier, W., Vol-I: 241
 Ellickson, P. L., Vol-I: 547
 Elliot, A. J., Vol-II: 44
 Elliot, L. B., Vol-I: 566
 Elliott, A. N., Vol-I: 482; Vol-II: 318
 Elliott, D., Vol-I: 322
 Elliott, G., Vol-I: 533
 Elliott, M. R., Vol-II: 476
 Elliott, R. H., Vol-II: 431
 Ellis, A., Vol-I: 299
 Ellis, A. B., Vol-I: 262, 531; Vol-II: 386
 Ellis, C., Vol-I: 107, 114–115
 Ellis, J., Vol-I: 186–187
 Ellis, J. B., Vol-I: 151
 Ellis, J. M., Vol-I: 186
 Ellis, L., Vol-I: 483
 Ellsworth, P. C., Vol-I: 435; Vol-II: 432
 Ellyson, S. L., Vol-I: 389, 414, 416; Vol-II: 338–340, 347
 Elms, A. C., Vol-I: 29
 Else-Quest, N. M., Vol-I: 445
 Elston, D., Vol-I: 462, 464
 Ely, R., Vol-II: 461
 Elze, D. E., Vol-I: 545; Vol-II: 114, 125
 Embaye, N., Vol-I: 71
 Ember, C. R., Vol-I: 160, 162, 167, 269; Vol-II: 311
 Ember, M., Vol-I: 160, 164, 167, 269; Vol-II: 311
 Embretson, S. E., Vol-II: 76, 81–82
 Emery, B. C., Vol-II: 319
 Emmerich, W., Vol-I: 503
 Emory, L. E., Vol-I: 224
 Emrich, C. G., Vol-II: 448
 Emslie, C., Vol-I: 51; Vol-II: 475
 Emswiller, T., Vol-I: 28
 Enchautegui-de-Jesus, N., Vol-II: 616
 Enck, P., Vol-I: 245
 Endicott, J., Vol-II: 98
 Endo, S., Vol-I: 246
 Endresen, I. M., Vol-II: 328
 Endsley, R., Vol-I: 511
 Endsley, R. C., Vol-I: 511, 515
 Eng, E., Vol-II: 633
 Engelgau, M. M., Vol-II: 531
 Engeln-Maddox, R., Vol-II: 166
 England, P., Vol-II: 405, 409
 Englar-Carlson, M., Vol-I: 10, 45; Vol-II: 10, 221–243
 Engleson, S. A., Vol-I: 52
 Englis, B. G., Vol-II: 166
 English, D., Vol-II: 523

- English, K. M., Vol-I: 242
 English, L., Vol-I: 363
 Enke, J., Vol-I: 395–396
 Enns, C. Z., Vol-II: 191, 197, 201–202, 205
 Enriquez, V. G., Vol-I: 34
 Epitropaki, O., Vol-II: 347
 Epley, M. L., Vol-I: 329
 Epp, J. R., Vol-I: 226
 Epperson, D. L., Vol-II: 196, 312, 427, 431
 Epstein, C., Vol-I: 381–382, 401
 Epstein, M., Vol-I: 6, 133–152
 Epstein, N. B., Vol-II: 6, 265, 268
 Epstein, R., Vol-I: 382
 Epstein, S., Vol-I: 193
 Epting, F., Vol-II: 231
 Epting, L. K., Vol-I: 224
 Erb, M., Vol-I: 239
 Erdoğan, N., Vol-II: 382
 Erhardt, M. L., Vol-II: 351
 Erhardt, N. L., Vol-II: 456
 Erickson, M. J., Vol-II: 531
 Erickson, R., Vol-II: 413
 Erickson, S. J., Vol-II: 141
 Erikson, E., Vol-I: 528, 560
 Erikson, E. H., Vol-I: 560–562, 565–566; Vol-II: 56, 58
 Erikson, J. M., Vol-I: 560
 Erikson, K. B., Vol-II: 193, 196
 Erkanli, A., Vol-II: 133, 137
 Erkut, S., Vol-I: 332; Vol-II: 576–577
 Erly, A. M., Vol-II: 265
 Ernst, D., Vol-I: 197
 Ernst, M., Vol-I: 219
 Eron, L., Vol-II: 645
 Erskine, J. A. K., Vol-I: 460, 462, 464
 Ersland, L., Vol-I: 324
 Ervin, K. S., Vol-II: 652
 Escobar, O., Vol-II: 550
 Esdaille, J., Vol-II: 507
 Esnil, E. M., Vol-II: 460
 Espelage, D. L., Vol-I: 290; Vol-II: 329
 Espey, D. K., Vol-II: 526
 Espila, A. M., Vol-I: 224
 Espin, O. M., Vol-I: 34, 35
 Espínola, M., Vol-I: 328
 Espinoza, P., Vol-I: 198
 Espiritu, Y. L., Vol-II: 412
 Esses, V., Vol-I: 195
 Esses, V. M., Vol-II: 656
 Esseveld, J., Vol-I: 107
 Essex, M. J., Vol-II: 97
 Essick, G. K., Vol-I: 246
 Estep, K. M., Vol-II: 324
 Etcoff, N., Vol-II: 156, 164
 Ethier, K. A., Vol-I: 429
 Evaldsson, A., Vol-I: 397
 Evans, C., Vol-I: 540
 Evans, E., Vol-II: 478
 Evans, E. M., Vol-I: 531
 Evans, J. D., Vol-I: 568
 Evans, L., Vol-I: 505
 Evans, M., Vol-II: 225
 Evans, P. C., Vol-II: 166
 Evans, W. J., Vol-I: 249
 Evardone, M., Vol-I: 322
 Eve, R. A., Vol-I: 330
 Everson, H. T., Vol-II: 72
 Ewashen, C., Vol-II: 205
 Exner, J. E. Jr., Vol-II: 70
 Eyal, K., Vol-II: 658
 Eyre, H. L., Vol-I: 435
 Eysell, K. M., Vol-I: 436
 Eyster, S., Vol-II: 412–413
- F**
- Fabes, R. A., Vol-I: 219, 500
 Fabrigar, L. R., Vol-I: 151
 Fabunmi, R., Vol-II: 543
 Facio, E., Vol-I: 572
 Factor, R. J., Vol-I: 369
 Faeh, D., Vol-II: 476
 Fagot, B. I., Vol-I: 504–505, 510–511
 Fahey, J. L., Vol-II: 434, 553
 Fairbank, J. A., Vol-II: 137
 Fairchild, K., Vol-II: 298
 Faith, M. S., Vol-II: 159, 164
 Fajen, B. R., Vol-I: 266
 Falbo, T., Vol-I: 383; Vol-II: 340, 346
 Falkner, A., Vol-I: 66
 Fallon, A. E., Vol-II: 649
 Fallon, E., Vol-II: 575
 Fallon, M. A., Vol-II: 570
 Fallows, D., Vol-II: 652
 Falomar-Pichastor, J. M., Vol-I: 194
 Fansler, A. G., Vol-II: 425
 Faraday, M. M., Vol-I: 457
 Farage, M. A., Vol-I: 223
 Faragher, B., Vol-II: 429
 Fargo, J. D., Vol-I: 288
 Farkas, G., Vol-II: 405
 Farley, K., Vol-II: 690
 Farmer, H. S., Vol-II: 384, 387
 Farragher, E., Vol-II: 644, 646
 Farrar, K., Vol-II: 662
 Farrell, M. P., Vol-II: 576
 Farrington, D. P., Vol-II: 328
 Fassinger, R. E., Vol-II: 205
 Fasteau, M. F., Vol-I: 44
 Fasting, K., Vol-II: 579
 Fauldi, S., Vol-II: 117
 Faulkner, G., Vol-II: 476
 Faulkner, S. L., Vol-II: 283, 289, 299–300
 Faust, D., Vol-II: 588, 600
 Fausto-Sterling, A., Vol-I: 83, 194; Vol-II: 366
 Fay, C., Vol-II: 162

- Fazio, R. J., Vol-II: 576
 Featherstone, L., Vol-II: 453
 Febbraro, A. R., Vol-II: 12, 671–692
 Fechner, P. Y., Vol-I: 533
 Fedigan, L. M., Vol-I: 200
 Fedoroff, I. C., Vol-I: 456
 Feeney, A., Vol-II: 475
 Fehr, B., Vol-II: 282, 297, 327
 Feigal, J., Vol-I: 67
 Feil, L. A., Vol-II: 383
 Fein, E., Vol-II: 290
 Feinberg, D. R., Vol-II: 286
 Feinberg, L., Vol-II: 366–367
 Feine, J. S., Vol-I: 240
 Feingold, A., Vol-I: 150, 300–303, 305, 318, 567; Vol-II: 139, 155, 386
 Feingold, J., Vol-II: 27, 30
 Feinman, J., Vol-II: 388
 Feinstein, J., Vol-I: 383
 Feiring, C., Vol-I: 527, 529, 540
 Feist, G. J., Vol-I: 354
 Feld, S., Vol-II: 43, 55
 Feldbaum, M., Vol-I: 194
 Feldlaufer, H., Vol-II: 388
 Feldman, C. M., Vol-II: 210
 Feldman, J. F., Vol-I: 140
 Feldman, R., Vol-II: 621
 Feldman, R. S., Vol-I: 421, 438
 Feldman, S., Vol-I: 533
 Feldman-Summers, S., Vol-II: 340
 Feldt, T., Vol-II: 27, 35
 Félix-Ortiz, M., Vol-I: 165
 Feller, R. P., Vol-I: 246
 Felmlee, D., Vol-II: 297
 Felson, R. B., Vol-II: 316, 323, 435
 Feng, B., Vol-II: 253
 Feng, J., Vol-I: 307, 328; Vol-II: 70, 651
 Fennell, M. L., Vol-II: 339
 Fennema, E., Vol-I: 303, 317, 531; Vol-II: 386
 Fenstermaker, S., Vol-II: 406–407
 Fenwick, G. D., Vol-II: 347, 349
 Ferguson, A. D., Vol-I: 65
 Ferguson, L., Vol-I: 397
 Ferguson, M., Vol-I: 393
 Ferguson, M. J., Vol-II: 170
 Ferguson, T. J., Vol-I: 435
 Fergusson, D. M., Vol-II: 135–136
 Fernandez, E., Vol-II: 120
 Fernandez, L. C., Vol-I: 20
 Ferraro, K. J., Vol-II: 317
 Ferree, M. M., Vol-II: 372, 406–407, 414
 Ferrell, J., Vol-II: 595
 Ferrera, D., Vol-I: 134
 Ferrera, D. L., Vol-I: 47
 Ferris, A., Vol-II: 543
 Fertman, C. I., Vol-II: 30
 Fessler, D. M. T., Vol-II: 649
 Festchieva, N., Vol-II: 473
 Feurer, I. D., Vol-II: 631
 Fichman, L., Vol-I: 545
 Fidell, L., Vol-I: 88
 Field, E. F., Vol-I: 220
 Fielden, S. L., Vol-II: 452, 502
 Fielding, N., Vol-I: 123
 Fields, A. W., Vol-I: 329
 Fields, J. P., Vol-II: 576
 Filardo, A. K., Vol-II: 339, 341, 351
 Filipek, P. A., Vol-I: 217
 Fillingim, R. B., Vol-I: 241
 Finch, S., Vol-I: 456
 Fine, E., Vol-I: 114
 Fine, M., Vol-I: 35, 103, 106, 108, 110, 114, 118; Vol-II: 272, 631
 Fine, M. G., Vol-I: 392
 Finegan, J. K., Vol-I: 220
 Finemore, J., Vol-II: 156
 Finer, L. B., Vol-II: 532
 Finger, T. E., Vol-I: 246, 248
 Fingerhut, A., Vol-I: 480
 Fink, B., Vol-II: 286
 Fink, P. J., Vol-II: 111
 Finkel, E. J., Vol-II: 287–288
 Finkelhor, D., Vol-II: 317, 319, 631
 Finkelstein, E. A., Vol-II: 530
 Finkelstein, J. S., Vol-I: 35
 Finken, L. L., Vol-II: 383
 Finlay, F., Vol-I: 398
 Finlay, L., Vol-I: 109
 Finlayson, T. L., Vol-I: 570
 Finley, S., Vol-I: 119
 Finn, S. E., Vol-II: 197
 Firebaugh, L., Vol-I: 549
 Firestein, B., Vol-I: 66, 72; Vol-II: 193
 Firestone, J. M., Vol-II: 430
 Firestone, L., Vol-I: 242
 Fisch, H., Vol-I: 568
 Fischer, A. H., Vol-I: 430, 434–435, 441–442; Vol-II: 282, 453, 455
 Fischer, A. R., Vol-I: 136, 149; Vol-II: 200, 226, 238
 Fischer, C. S., Vol-II: 297
 Fischer, E., Vol-II: 292
 Fischer, H., Vol-I: 240
 Fischer, R., Vol-I: 172, 246
 Fisek, M. H., Vol-II: 345
 Fish, J., Vol-I: 186
 Fish, S., Vol-II: 366
 Fish, V., Vol-II: 95
 Fishbein, M., Vol-II: 533
 Fisher, B., Vol-II: 526
 Fisher, D. A., Vol-II: 655
 Fisher, H., Vol-I: 480
 Fisher, K., Vol-II: 404
 Fisher, L. A., Vol-II: 568
 Fisher, M., Vol-II: 232, 285

- Fisher, M. L., Vol-I: 398
 Fisher, T. D., Vol-I: 481–482, 487
 Fishman, P. M., Vol-II: 295
 Fiske, A. P., Vol-I: 1; Vol-II: 1
 Fiske, D. W., Vol-I: 173, 388
 Fiske, S., Vol-I: 485
 Fiske, S. T., Vol-I: 1, 144, 147–148, 168, 198, 418;
 Vol-II: 1, 70, 137, 290, 352, 450
 Fitting, S., Vol-I: 322
 Fitts, M. L., Vol-II: 660
 Fitzgerald, L., Vol-I: 43, 51
 Fitzgerald, L. F., Vol-II: 228, 230, 423–424, 426, 428,
 430, 433, 685
 Fitzgerald, R. W., Vol-I: 266
 Fitzpatrick, J. A., Vol-II: 296
 Fivush, R., Vol-I: 70, 437, 445–446; Vol-II: 141
 Flaherty, J. A., Vol-II: 436
 Flanagan, M. B., Vol-I: 245
 Flannagan, D., Vol-I: 515
 Flannery-Schroeder, E., Vol-II: 159
 Fleeson, W., Vol-II: 29, 34
 Flegal, K. M., Vol-II: 531
 Fleischmann, R. M., Vol-II: 545
 Fleishman, J. A., Vol-II: 533
 Fleming, A. S., Vol-I: 548
 Fleming, E. C., Vol-II: 173
 Fleming, J., Vol-II: 47–48
 Fletcher, G. J. O., Vol-II: 21, 284, 293, 325
 Fletcher, J. K., Vol-II: 452, 454, 462
 Flett, G., Vol-I: 457
 Flett, G. L., Vol-I: 567; Vol-II: 99
 Flick, U., Vol-I: 113
 Flinchbaugh, L. J., Vol-I: 548
 Flink, C., Vol-II: 385
 Flitter, J. M. K., Vol-II: 76
 Floor, E., Vol-II: 54
 Flores, E., Vol-II: 301
 Flores, Y. L., Vol-II: 392
 Flowers, J., Vol-I: 382
 Floyd, F. J., Vol-I: 541
 Floyd, K., Vol-II: 282
 Flynn, M., Vol-II: 139
 Fodor, E. M., Vol-II: 43, 53–54
 Fodor, I. G., Vol-I: 382
 Foehr, U. G., Vol-I: 542
 Foels, R., Vol-II: 459
 Fogarty, A., Vol-II: 530
 Fogel, G. I., Vol-I: 50
 Folbre, N., Vol-II: 409
 Foley, L. A., Vol-II: 196, 322
 Folkman, S., Vol-II: 432, 495–497, 499, 503–504, 511
 Fonda, S. J., Vol-I: 227
 Fong, G., Vol-II: 624
 Fong, K. T., Vol-II: 616
 Fonow, M. M., Vol-I: 105, 109
 Fontaine, K. R., Vol-II: 545
 Foote, F. H., Vol-II: 432
 Forbes, G. B., Vol-I: 159–173
 Forcey, L. R., Vol-II: 416
 Ford, G., Vol-II: 474
 Ford, J. G., Vol-I: 183–184
 Ford, M. J., Vol-II: 385
 Ford, P., Vol-II: 485
 Ford, R. S., Vol-II: 339
 Ford, T. W., Vol-II: 339
 Fordham, S., Vol-I: 290
 Forest, K. B., Vol-II: 453
 Formoso, D., Vol-II: 621
 Forouzan, E., Vol-II: 74
 Forret, M. L., Vol-II: 454
 Forster, N., Vol-II: 505
 Foschi, M., Vol-II: 342–344
 Foster, R. A., Vol-I: 195
 Foti, R. J., Vol-II: 451
 Fouad, N. A., Vol-II: 382–383, 387–389, 392
 Foucault, M., Vol-I: 32, 108, 202, 368, 402–403;
 Vol-II: 112
 Fouts, G., Vol-II: 167, 644–645, 648
 Fox, C. J., Vol-I: 221
 Fox, D., Vol-I: 31, 35
 Fox, K. V., Vol-I: 107, 119
 Fox, M., Vol-II: 282, 284
 Fox, R., Vol-I: 63, 65
 Fox-Keller, E., Vol-I: 30
 Fox-Rushby, J., Vol-I: 171
 Fraley, R. C., Vol-I: 484
 Frances, A., Vol-II: 95, 116
 Frank, A. W., Vol-I: 115
 Frank, K. A., Vol-II: 281
 Franklin, A. J., Vol-II: 227
 Fransson, P., Vol-I: 240
 Franz, B. T., Vol-II: 138
 Franz, C., Vol-II: 46, 56
 Franz, C. E., Vol-I: 560, 562–563, 571
 Franzoi, S. L., Vol-II: 154
 Frazier, P., Vol-II: 297
 Frederick, D. A., Vol-II: 157, 164, 649
 Fredericks, J. A., Vol-II: 573
 Fredricks, J. A., Vol-I: 531; Vol-II: 382, 388
 Fredrickson, B., Vol-I: 567
 Fredrickson, B. L., Vol-I: 91; Vol-II: 117, 153–157,
 170–171, 575, 647–648, 659
 Freed, A., Vol-I: 401
 Freedman, E. G., Vol-I: 202
 Freedman, R., Vol-II: 167
 Freedman-Doan, C. R., Vol-II: 390
 Freedy, J., Vol-II: 620
 Freels, S., Vol-II: 436
 Freeman, D., Vol-I: 159, 259
 Freeman, N. J., Vol-II: 604
 Freidl, W., Vol-II: 473
 Freire, P., Vol-II: 635
 Freitas, A. L., Vol-II: 140–141
 French, D. C., Vol-II: 312

- French, J. R. P., Vol-I: 416
 French, S. A., Vol-II: 156, 479
 French, S., Vol-II: 619
 Frenkel, M., Vol-II: 446
 Frenzel, A. C., Vol-I: 444; Vol-II: 385, 388–389
 Freud, S., Vol-I: 61, 199–200, 471–472, 560
 Freund, A. M., Vol-I: 566
 Freund, H. J., Vol-I: 244
 Frey, K. S., Vol-I: 496, 503, 510–511
 Freyd, J., Vol-II: 214
 Freyne, A., Vol-II: 474
 Frick, K. M., Vol-I: 321
 Frick, P. J., Vol-I: 547
 Fridell, S. R., Vol-I: 510–511; Vol-II: 117
 Friedan, B., Vol-I: 361
 Frieden, G., Vol-II: 272
 Friederici, A. D., Vol-I: 244–245
 Friedman, B. N., Vol-II: 164
 Friedman, C. K., Vol-I: 280
 Friedman, H., Vol-II: 75
 Friedman, K., Vol-I: 542; Vol-II: 171
 Friedman, L., Vol-II: 386
 Friedman, R. C., Vol-I: 50
 Friesen, M., Vol-II: 284
 Frieze, I., Vol-I: 10, 88, 381
 Frieze, I. H., Vol-I: 193, 371, 391; Vol-II: 10, 290–292, 311–330, 648
 Frijda, N. H., Vol-I: 225, 324
 Frijters, J. E. R., Vol-I: 457
 Frisco, M. L., Vol-II: 413–414
 Frisen, A., Vol-II: 156, 165
 Friskopp, A., Vol-II: 449
 Fritschy, J. M., Vol-I: 365
 Fritz, H. L., Vol-II: 295, 549–550
 Fritz, S. M., Vol-I: 93
 Frohlich, D., Vol-II: 282
 Frombach, I., Vol-II: 548
 Frome, P., Vol-II: 384
 Frome, P. M., Vol-I: 306; Vol-II: 382
 Frost, J. A., Vol-I: 245
 Frost, J. J., Vol-II: 532
 Frost, L. A., Vol-II: 386
 Frye, C. A., Vol-I: 247
 Frye, V., Vol-II: 626
 Frytak, J. R., Vol-II: 524
 Fuchs, D., Vol-II: 346, 450
 Fuiman, M., Vol-II: 283
 Fujimoto, T., Vol-II: 414
 Fujino, D., Vol-II: 623
 Fujioka, T., Vol-I: 497
 Fujishiro, K., Vol-II: 436
 Fukuyama, M. A., Vol-I: 65
 Fulcher, M., Vol-II: 411
 Fulkerson, J. A., Vol-II: 161, 479
 Fuller-Iglesias, H., Vol-I: 559
 Fullerton, S. M., Vol-I: 186
 Fung, H. H., Vol-I: 567
 Funk, S. J., Vol-II: 337
 Funkhouser, S. W., Vol-II: 487
 Fuqua, D. R., Vol-I: 135; Vol-II: 284
 Furlong, A., Vol-II: 390
 Furlong, J., Vol-II: 652
 Furman, W., Vol-I: 540
 Furneaux, E. C., Vol-I: 246
 Furnham, A., Vol-II: 160, 644, 646, 649
 Furumoto, L., Vol-I: 20–21
 Futterman, R., Vol-II: 388
 Fyfe, B., Vol-II: 360
- G**
- Gaab, N., Vol-I: 244
 Gabbard, G. O., Vol-II: 20
 Gabhainn, S. N., Vol-II: 477
 Gable, R., Vol-I: 47
 Gable, R. K., Vol-I: 145, 280
 Gabriel, K. I., Vol-I: 329
 Gabriel, S., Vol-I: 499; Vol-II: 323–324
 Gabriel, S. L., Vol-I: 285
 Gabrieli, J. D. E., Vol-II: 66
 Gaddis, A., Vol-I: 535
 Gade, P., Vol-II: 690
 Gaertner, S. L., Vol-II: 147, 447
 Gager, C. T., Vol-II: 414
 Gagné, F. M., Vol-II: 294
 Gagne, P., Vol-II: 111, 114, 123
 Gagnon, J. H., Vol-I: 478; Vol-II: 289, 321
 Gaier, E. L., Vol-II: 383
 Gainor, K. A., Vol-I: 59–60, 70–71
 Gajarsky, W. M., Vol-II: 631
 Galaburda, A. M., Vol-I: 239
 Galambos, N., Vol-II: 409
 Galambos, N. L., Vol-I: 87, 147, 530–532, 536–538, 548; Vol-II: 134, 164
 Galdas, P. M., Vol-II: 228
 Gale, E., Vol-II: 290–291
 Gale, W., Vol-I: 380
 Gale, W. S., Vol-II: 339
 Galea, L. A., Vol-I: 221, 329
 Galen, B. R., Vol-I: 527, 546
 Galena, E., Vol-II: 532
 Galibois, N., Vol-I: 391, 399–400
 Galinsky, A. D., Vol-II: 460
 Galinsky, E., Vol-II: 402
 Gallagher, A. M., Vol-I: 304, 308
 Gallagher, R., Vol-I: 180
 Gallant, S., Vol-II: 98
 Gallop, R., Vol-II: 95
 Gallus, J. A., Vol-II: 11, 423–437
 Galton, F., Vol-I: 204, 344, 348
 Galupo, P. M., Vol-II: 365
 Gammell, D. J., Vol-II: 96
 Gamson, J., Vol-I: 108
 Gan, S., Vol-II: 661
 Gandara, B., Vol-I: 241

- Ganderton, S. L., Vol-II: 686–689
 Gandevia, S. C., Vol-I: 242–243
 Gandolfo-Berry, C., Vol-II: 430
 Gandossy, T., Vol-II: 369–370
 Gange, S. J., Vol-II: 542
 Gangestad, S. W., Vol-I: 168; Vol-II: 285–286
 Ganis, G., Vol-I: 328
 Ganley, A. L., Vol-II: 201
 Gannon, L., Vol-I: 195, 197, 199, 372–373
 Ganong, L. H., Vol-II: 289, 291, 299
 Gant, L. M., Vol-II: 652
 Gao, M., Vol-II: 473
 Garber, J., Vol-I: 66
 Garcia, C., Vol-I: 398
 Garcia, P. A., Vol-II: 295
 Gard, D. E., Vol-II: 35
 Gard, M. G., Vol-II: 35
 Gardiner, J. P., Vol-II: 482
 Gardiner, M., Vol-II: 168
 Gardner, C., Vol-I: 393
 Gardner, H., Vol-I: 345
 Gardner, K. E., Vol-I: 537
 Gardner, P. D., Vol-II: 652
 Gardner, R. M., Vol-II: 164, 173
 Gardner, W. L., Vol-I: 499; Vol-II: 323–324
 Garfinkel, P. E., Vol-I: 165
 Garfinkel, R., Vol-II: 620
 Garipey, J., Vol-I: 397
 Garle, M., Vol-II: 474
 Garner, D. M., Vol-I: 165; Vol-II: 159
 Garner, P. W., Vol-II: 324
 Garnets, L., Vol-I: 50; Vol-II: 139
 Garnets, L. D., Vol-I: 64–66, 72
 Garofalo, R., Vol-I: 69; Vol-II: 138
 Garrel, D., Vol-I: 458
 Garrick, D., Vol-II: 205
 Gartlehner, G., Vol-II: 97
 Gartner, R. B., Vol-II: 230
 Gartrell, N., Vol-I: 483
 Gartrell, N. K., Vol-I: 226
 Garver-Appar, C. E., Vol-II: 286
 Gary, T. L., Vol-I: 10
 Gastil, J., Vol-II: 459
 Gates, G., Vol-I: 187
 Gates, G. J., Vol-I: 187
 Gaulin, S. J., Vol-I: 325
 Gaulin, S. J. C., Vol-I: 266, 268–269, 323
 Gault, U., Vol-I: 115
 Gauthier, R., Vol-I: 511
 Gautier, T., Vol-I: 218, 529
 Gauvin, L., Vol-II: 165
 Gavey, N., Vol-I: 103, 117
 Gaze, C. E., Vol-I: 308, 319, 328
 Gazzaniga, M. S., Vol-I: 222
 Ge, X., Vol-I: 543–544; Vol-II: 139
 Geary, D. C., Vol-I: 263, 265–266, 317, 326
 Gebo, K., Vol-II: 534
 Gecas, V., Vol-II: 384
 Geddes, D., Vol-II: 431
 Gee, J., Vol-I: 307
 Geen, R. G., Vol-II: 311, 314
 Geenen, R., Vol-II: 546
 Geertz, C., Vol-I: 104
 Geiger, J. F., Vol-I: 323
 Geiger, W., Vol-II: 371
 Geis, F. L., Vol-II: 339, 341, 450
 Geisler, J. S., Vol-II: 295
 Gelberg, L., Vol-II: 552
 Gelfand, M., Vol-I: 384
 Gelfand, M. J., Vol-II: 301, 423, 428
 Geller, T., Vol-II: 365
 Gelles, R. J., Vol-II: 318
 Gelman, S. A., Vol-I: 502, 505–506, 515–516
 Gelso, C. J., Vol-II: 231
 Gencoz, T., Vol-II: 511
 Genero, N. P., Vol-II: 213
 Gentile, D., Vol-II: 229
 Gentile, D. A., Vol-I: 364–365
 Gentry, M., Vol-I: 280
 George, J. M., Vol-II: 428
 George, T., Vol-II: 551
 Georgopoulos, A. P., Vol-I: 239
 Gerbner, G., Vol-II: 167, 644
 Gergen, K. J., Vol-I: 103, 116, 119–120, 122, 151
 Gergen, M., Vol-I: 103, 107–110, 113, 116–117, 120, 122, 167
 Gergen, M. M., Vol-I: 33, 103–123, 562
 Gerhardtstein, R., Vol-II: 660
 Geronimus, A. T., Vol-II: 510
 Gerrard, M., Vol-II: 76, 340
 Gerschick, T. J., Vol-I: 112
 Gershkovich, I., Vol-II: 43
 Gershuny, J. I., Vol-II: 404–405, 478
 Gerson, K., Vol-II: 401–402, 452
 Gerson, M., Vol-I: 572
 Gerstmann, E. A., Vol-I: 148–149
 Geschwind, N., Vol-I: 239
 Gesn, P. R., Vol-I: 438; Vol-II: 21, 325
 Gessert, C. E., Vol-II: 525
 Gettman, H., Vol-I: 384
 Gevens, A., Vol-I: 238
 Ghiz, L., Vol-II: 174
 Giacalone, R. A., Vol-II: 347
 Giacomini, M., Vol-I: 198
 Gianetto, R. M., Vol-I: 438
 Giannopoulos, C., Vol-II: 144
 Giaschi, D., Vol-I: 221
 Gibb, B. E., Vol-II: 146
 Gibbon, A. E., Vol-II: 103
 Gibbons, F. X., Vol-II: 340
 Gibbons, J. L., Vol-II: 225
 Gibbons, L. E., Vol-II: 546
 Gibbons, M. B. C., Vol-II: 234
 Gibbs, J., Vol-II: 195

- Gibbs, M., Vol-II: 282
 Gibson, E. L., Vol-I: 456
 Gibson, P. R., Vol-II: 94
 Gidycz, C. A., Vol-II: 137
 Gifford, R., Vol-I: 412
 Gilbert, A. N., Vol-I: 248
 Gilbert, L. A., Vol-I: 29; Vol-II: 201–202, 211–212, 223, 237, 414
 Gilbert, P., Vol-II: 35
 Gilboa, E., Vol-II: 141
 Gilenstam, K., Vol-II: 570
 Giles, D. C., Vol-I: 567; Vol-II: 658
 Gill, D. L., Vol-II: 12, 563–580
 Gill, K., Vol-II: 362
 Gill, R. M., Vol-II: 671–692
 Gillespie, B. L., Vol-I: 146; Vol-II: 123
 Gillespie, C., Vol-II: 473
 Gillespie, J. M., Vol-I: 240
 Gillespie, W. T., Vol-I: 328–329
 Gilliam, F. D., Vol-II: 650
 Gillian, G. T., Vol-II: 527
 Gilligan, C., Vol-I: 31–32, 105, 113, 198, 528, 531; Vol-II: 117, 188, 253, 266
 Gilligan, T. D., Vol-II: 527
 Gillihan, S. J., Vol-II: 253
 Gillis, J., Vol-I: 67, 69
 Gillis, J. R., Vol-II: 362–363
 Gillon, E., Vol-II: 236
 Gillum, B. S., Vol-II: 520
 Gilman, S. E., Vol-I: 63, 68; Vol-II: 135, 167, 224
 Gilmartin, P. P., Vol-I: 330
 Gilmore, A. C., Vol-II: 385
 Gilmore, D. D., Vol-I: 133, 150
 Gilstrap, C. M., Vol-II: 23
 Giltay, E. J., Vol-I: 224
 Ginsburg, H. J., Vol-I: 392–393
 Ginter, E., Vol-II: 479
 Giordani, B., Vol-I: 227
 Giordano, J., Vol-II: 255
 Girdler, S. S., Vol-I: 436
 Girelli, L., Vol-I: 323
 Girus, J. S., Vol-I: 543; Vol-II: 297
 Girshick, L., Vol-II: 604, 608
 Gitelson, I. B., Vol-I: 147
 Givens, J. E., Vol-I: 538
 Gjerde, P. F., Vol-I: 203
 Gjerdingen, D. K., Vol-II: 414
 Gladstone, T., Vol-II: 142
 Gladue, B. A., Vol-I: 226
 Glanville, E. V., Vol-I: 246
 Glascock, J., Vol-II: 644, 646–647, 649, 662
 Glaser, B. G., Vol-I: 111
 Glaser, D., Vol-II: 484
 Glass, B., Vol-I: 1; Vol-II: 1
 Glass, J., Vol-II: 414
 Gleason, J. H., Vol-II: 165
 Gleason, M. E. J., Vol-II: 327
 Glebova, T., Vol-II: 204
 Gleitman, H., Vol-II: 386
 Glenn, E. N., Vol-II: 416
 Glick, P., Vol-I: 144, 147–148, 151, 168, 198; Vol-II: 137, 290, 352, 449–450
 Glidden, C. E., Vol-II: 197, 212
 Glomb, T. M., Vol-II: 427–428, 431, 436
 Gluck, J., Vol-I: 322, 567
 Gluckman, M., Vol-I: 396
 Glucksberg, S., Vol-I: 200
 Glunt, E., Vol-I: 69
 Glunt, E. K., Vol-II: 362
 Gmel, G., Vol-II: 480
 Gnisci, A., Vol-I: 321
 Go, B. K., Vol-II: 483
 Godbey, G., Vol-II: 404–405, 407–409
 Goekoop-Ruiterman, Y. P., Vol-II: 545
 Goetz, A. T., Vol-II: 286
 Goetz, T., Vol-I: 444; Vol-II: 385, 388
 Goff, S. B., Vol-II: 388
 Goffin, R. D., Vol-II: 498, 502–503, 510
 Goffman, E., Vol-II: 647
 Gohm, C. L., Vol-I: 439
 Gokee-Larose, J., Vol-II: 166
 Golbeck, S. L., Vol-I: 319–320
 Gold, D., Vol-I: 349, 531
 Gold, S. N., Vol-II: 76
 Goldberg, A., Vol-I: 540; Goldberg, A., Vol-II: 407, 411
 Goldberg, H., Vol-I: 44
 Goldberg, L. R., Vol-II: 28
 Goldberg, W. A., Vol-II: 413–414
 Goldberger, N., Vol-I: 105
 Goldberger, N. R., Vol-I: 32, 198
 Golden, A. M., Vol-I: 194
 Golden, C., Vol-I: 364, 368–369
 Goldenberg, J. L., Vol-II: 169
 Goldfield, A., Vol-II: 167
 Goldfield, G. S., Vol-II: 474
 Goldfried, A. P., Vol-II: 140
 Goldfried, M. R., Vol-I: 63; Vol-II: 141
 Golding, J., Vol-II: 412
 Golding, J. M., Vol-II: 98
 Goldin-Meadow, S., Vol-I: 318
 Goldner, E. M., Vol-II: 473
 Goldner, V., Vol-II: 255
 Goldsmith, H. H., Vol-I: 445
 Goldsmith, R., Vol-II: 384
 Goldstein, D., Vol-I: 319
 Goldstein, G., Vol-I: 322
 Goldstein, J. S., Vol-II: 675
 Golombok, S., Vol-I: 70
 Gomez, G., Vol-I: 277
 Gong, E. J., Vol-I: 458, 464
 Gonsiorek, J., Vol-I: 62, 64, 69
 Gonzales, M. H., Vol-II: 285
 Gonzales, N., Vol-II: 621
 Gonzalez, J., Vol-II: 633

- Gonzalez, Z., Vol-I: 459
 Gonzalez-DeHass, A. R., Vol-II: 384
 Gonzalez-Morales, G., Vol-II: 503–504, 510
 Good, G., Vol-I: 45
 Good, G. E., Vol-I: 45, 49, 51, 53, 136, 150; Vol-II: 123, 135, 137, 222–226, 228–229, 237–238, 241
 Good, L., Vol-II: 170
 Good, R. H., Vol-I: 83
 Good, T., Vol-II: 385
 Goode, E., Vol-II: 595
 Gooden, A. M., Vol-I: 281, 505
 Gooden, M. A., Vol-I: 281, 505
 Goodenow, C., Vol-I: 290
 Goodman, E., Vol-I: 69; Vol-II: 138
 Goodrich, T. G., Vol-II: 263
 Goodrich, T. J., Vol-II: 253–255, 260, 263
 Goodwin, M. H., Vol-I: 385, 396–397
 Goodwin, M. P., Vol-II: 319
 Goodwin, R. D., Vol-I: 445; Vol-II: 133
 Goodwin, S. A., Vol-I: 418
 Goodwin, T. M., Vol-I: 246
 Goodwin-Watkins, C., Vol-II: 289
 Gooren, L. G. J., Vol-II: 113
 Gooren, L. J. G., Vol-I: 224–225, 324; Vol-II: 115–116
 Gootjes, L., Vol-I: 239
 Goral, F. S., Vol-II: 511
 Gorard, S., Vol-II: 652
 Gordon, A. H., Vol-I: 242, 432, 442
 Gordon, D. A., Vol-I: 110–111
 Gordon, E., Vol-I: 392
 Gordon, J. H., Vol-I: 483
 Gordon, J. R., Vol-I: 570
 Goris, Y., Vol-I: 325
 Gorman, B. K., Vol-II: 553
 Gorski, R., Vol-I: 218
 Gorski, R. A., Vol-I: 217, 225, 483; Vol-II: 115
 Gosling, A. L., Vol-II: 255
 Gotay, C. C., Vol-I: 184
 Gotlib, I. H., Vol-I: 445; Vol-II: 141
 Gotoh, K., Vol-I: 247
 Gott, M., Vol-II: 532
 Gottlieb, A., Vol-II: 169
 Gottman, J. M., Vol-I: 437, 440; Vol-II: 265, 268, 499
 Gouchie, C., Vol-I: 222
 Gough, H. G., Vol-I: 134
 Gould, M. S., Vol-I: 68
 Gow, J., Vol-II: 171
 Grabe, M. E., Vol-II: 650
 Grabe, S., Vol-I: 87, 95, 150; Vol-II: 142, 154
 Graber, J. A., Vol-I: 8, 527–550
 Grabowski, T. J., Vol-I: 217
 Grace, A. D., Vol-I: 304, 306
 Grace, R. C., Vol-II: 287
 Grace, S. L., Vol-II: 478, 543
 Gradus, J. L., Vol-II: 436
 Grady, W. R., Vol-II: 65
 Graham, C., Vol-I: 479; Vol-II: 369
 Graham, J. R., Vol-II: 70
 Graham, K., Vol-II: 314–315
 Graham, N. M. H., Vol-II: 542
 Graham, T., Vol-I: 438; Vol-II: 21, 325
 Grant, B., Vol-II: 135, 230
 Grant, B. F., Vol-II: 133, 480
 Grant, C. A., Vol-II: 550
 Grant, K. R., Vol-II: 475
 Grant, K., Vol-I: 35
 Grant, L., Vol-I: 284
 Grant, M. C., Vol-II: 521
 Grant, P. R., Vol-II: 648
 Grant, R. W., Vol-II: 521
 Grauerholz, E., Vol-II: 171
 Grauerholz, L., Vol-II: 166
 Graves, A. R., Vol-II: 253
 Graves, E. J., Vol-II: 520
 Gray, C., Vol-I: 289
 Gray, D., Vol-I: 64
 Gray, J., Vol-I: 379, 386, 394;
 Gray, J., Vol-II: 290
 Gray, J. J., Vol-I: 90, 535; Vol-II: 160, 167, 172
 Gray, J. L., Vol-II: 159
 Gray, R., Vol-I: 108
 Gray, R. E., Vol-II: 478, 543
 Grayson, C., Vol-II: 137
 Graziano, W. G., Vol-I: 434
 Graziottin, A., Vol-I: 483
 Green, A. S., Vol-II: 327
 Green, C. R., Vol-II: 546
 Green, E., Vol-I: 412
 Green, L., Vol-I: 285
 Green, L. R., Vol-II: 313
 Green, R., Vol-I: 224, 324; Vol-II: 115–117, 367
 Green, R. J., Vol-I: 64; Vol-II: 255, 257–258, 263
 Green, S., Vol-I: 264, 321; Green, S., Vol-II: 656
 Green, S. M., Vol-I: 221
 Greenberg, B. S., Vol-II: 167, 644, 647
 Greenberg, S., Vol-II: 524
 Greenberg, S. A., Vol-II: 590
 Greenberg, T., Vol-I: 68
 Greenberg-Dotan, S., Vol-II: 524
 Greene, A. L., Vol-I: 545
 Greene, B., Vol-I: 35, 64–65, 68, 72; Vol-II: 103, 192–193, 255, 259–260, 262–263
 Greene, G., Vol-II: 613
 Greene, K., Vol-II: 289, 299–300
 Greene, R. L., Vol-II: 78–79
 Greene, R. W., Vol-II: 291
 Greenfield, M., Vol-I: 396
 Greenfield, P., Vol-II: 66
 Greenfield, P. M., Vol-I: 162–163, 169–171, 173; Vol-II: 66, 78
 Greenfield, S., Vol-II: 553
 Greenglass, E., Vol-II: 502–506, 512
 Greenglass, E. R., Vol-II: 503
 Greenleaf, C., Vol-II: 574–575

- Greenman, Y., Vol-I: 464
 Greeno, G. G., Vol-I: 459
 Green-Powell, P., Vol-I: 112, 116
 Greenstein, T. N., Vol-II: 405–407, 409–411
 Greenwald, A., Vol-I: 200, 281
 Greenwald, A. G., Vol-II: 447, 661
 Greenwald, S., Vol-II: 447, 661
 Greenway, F. L., Vol-I: 456
 Greenwood, D., Vol-II: 12, 645, 658
 Greenwood, D. N., Vol-II: 643–663
 Greenwood, G., Vol-I: 187
 Greenwood, R. M., Vol-I: 105
 Greer, K. M., Vol-I: 195
 Gregersen, E. A., Vol-I: 392
 Gregg, P. B., Vol-II: 656
 Gregory, W. L., Vol-II: 287
 Grellert, E. A., Vol-I: 140
 Greulich, F. K., Vol-I: 496
 Greve, W., Vol-II: 484
 Gridley, H., Vol-II: 580
 Grieg, A., Vol-II: 542
 Grieve, F. G., Vol-II: 99
 Griffin, C., Vol-I: 110; Vol-II: 112
 Griffin, D. W., Vol-II: 294
 Griffin, N. L., Vol-II: 383
 Griffin, P. S., Vol-II: 578
 Griffin, R. W., Vol-II: 423, 425
 Griffith, D., Vol-II: 633
 Griffith, L. K., Vol-II: 361
 Grilo, C. M., Vol-II: 156
 Grimes, C., Vol-I: 397
 Grimshaw, G. M., Vol-I: 220
 Grindel, C. G., Vol-II: 486
 Grittner, U., Vol-II: 480
 Groesz, L., Vol-I: 86, 97
 Groesz, L. M., Vol-I: 97; Vol-II: 156, 159, 658
 Grogan, S., Vol-I: 456–457, 462–463; Vol-II: 153–155, 160, 166–168, 171
 Grön, G., Vol-I: 330
 Gross, C. P., Vol-I: 184; Gross, C. P., Vol-II: 528
 Gross, E., Vol-II: 652
 Gross, J., Vol-I: 437, 440
 Gross, J. J., Vol-I: 432, 434
 Gross, L., Vol-II: 167, 644
 Gross, P. H., Vol-II: 447
 Grossman, A. H., Vol-II: 120
 Grossman, C. L., Vol-II: 369–370
 Grossman, J., Vol-II: 623
 Grossman, M., Vol-I: 434
 Grossman, S., Vol-II: 81
 Grossmann, T., Vol-I: 244
 Grote, N. K., Vol-II: 414
 Grotevant, H. D., Vol-I: 562
 Groth, G., Vol-II: 285
 Grotper, J. K., Vol-II: 312
 Grov, C., Vol-I: 64
 Grover, G. N., Vol-I: 458
 Grover, V. P., Vol-II: 155, 158
 Grube, J. W., Vol-II: 655
 Gruber, A. J., Vol-I: 53; Vol-II: 158–159, 166
 Gruber, E. L., Vol-II: 655
 Gruber, J. E., Vol-II: 434, 680
 Gruen, R. J., Vol-II: 495
 Gruenfeld, D. H., Vol-I: 429
 Grumbach, M. M., Vol-I: 534
 Grunberg, N. E., Vol-I: 457, 459–460
 Grzywacz, J. G., Vol-II: 415
 Guadagno, R. E., Vol-II: 684
 Guanipa, C., Vol-II: 255
 Gubin, A., Vol-I: 418
 Gubrium, J. F., Vol-I: 103, 122
 Guest, S., Vol-I: 246
 Guibert, M., Vol-II: 329
 Guier, C., Vol-II: 554
 Guille, C., Vol-II: 161
 Guillemin, F., Vol-I: 171
 Guiso, L., Vol-I: 262, 300, 303–305, 307–308, 313
 Gulko, J., Vol-I: 501
 Gullette, M., Vol-I: 567
 Gulyas, B., Vol-I: 249
 Gundersen, H. J., Vol-I: 217
 Gunnar, M. R., Vol-I: 445
 Gunn-Gruchy, C. D., Vol-II: 69
 Gunter, B., Vol-II: 644
 Gunther, M., Vol-II: 369
 Güntürkün, O., Vol-I: 222, 245, 270
 Gunz, A., Vol-II: 45
 Gupta, S., Vol-II: 405, 409, 411
 Gur, R., Vol-I: 307
 Gur, R. C., Vol-I: 217, 245, 279, 307, 325
 Gur, R. E., Vol-I: 279
 Gurian, M., Vol-I: 278–281, 287–288
 Gurin, G., Vol-II: 55
 Guroff, J. J., Vol-II: 195
 Gurung, R. A. R., Vol-II: 296
 Gutek, B. A., Vol-II: 432, 436, 686
 Guthrie, J. F., Vol-I: 456
 Guthrie, R. V., Vol-I: 25
 Gutierrez, M., Vol-II: 200
 Gutmann, D., Vol-I: 444, 565
 Guttormson, H. E., Vol-II: 271
 Gutwin, C., Vol-I: 221
 Guzman, R., Vol-II: 122
 Guzzo, R. A., Vol-II: 348
 Gyax, L., Vol-I: 512
 Gylje, M., Vol-II: 362
 Gysbers, N., Vol-II: 392
- H**
 Haake, S., Vol-II: 228
 Haas, A., Vol-I: 392
 Haas, K. B., Vol-I: 167
 Haas, S., Vol-II: 296
 Hacker, S., Vol-I: 363

- Hackett, G., Vol-II: 197, 201–203, 205, 380, 382
 Hackler, A. H., Vol-II: 228
 Hackman, J. R., Vol-II: 428
 Haddad, M. E., Vol-I: 496
 Haddock, G., Vol-I: 195
 Hadjiyannakis, K., Vol-II: 136
 Hadley, D., Vol-I: 330
 Hafetz, J., Vol-I: 442
 Hagan, H. J. J., Vol-II: 486
 Hagan, R., Vol-I: 504
 Hagborg, W. J., Vol-II: 617
 Hagedoorn, M., Vol-II: 501, 548, 551–552
 Hagen, J. W., Vol-I: 21
 Hahn, A., Vol-II: 619
 Hahn, E. D., Vol-I: 147, 151
 Hahn, J., Vol-II: 78, 79
 Haidet, P., Vol-II: 522
 Haidt, J., Vol-II: 169
 Haier, R. J., Vol-I: 279
 Haig, D., Vol-I: 365
 Haik, J., Vol-II: 482–483
 Haiken, E., Vol-II: 163, 166
 Haines, E. L., Vol-II: 447
 Hajszan, T., Vol-I: 217
 Halari, R., Vol-I: 222, 324
 Halberstadt, A. G., Vol-I: 136, 421, 438
 Halbert, C. H., Vol-I: 7, 179–188
 Halbreich, U., Vol-I: 222–223
 Haldane, D., Vol-I: 319
 Haldeman, D., Vol-II: 117
 Haldeman, D. C., Vol-I: 62; Vol-II: 227
 Hale, J. L., Vol-II: 290
 Halford, W. K., Vol-II: 268
 Halim, M. L., Vol-I: 8, 495–518
 Hall, J. A., Vol-I: 8, 136, 411–421, 429–448; Vol-II: 8, 324–325, 338, 432, 523
 Hall, J. R., Vol-II: 347
 Hall, K. P., Vol-II: 346
 Hall, M. A., Vol-II: 564, 566
 Hall, M. J., Vol-II: 520
 Hall, R. L., Vol-II: 225, 259–260, 262–263, 580
 Hall, W. S., Vol-I: 144
 Hallahan, M., Vol-I: 412
 Hallberg, L. R.-M., Vol-I: 111, 113
 Haller, I. V., Vol-II: 525
 Hallfors, D. D., Vol-I: 536
 Hall-Hoffarth, D., Vol-I: 329
 Halliday, G. M., Vol-I: 244
 Halliwell, E., Vol-I: 566–567; Vol-II: 154
 Hollowell, L., Vol-II: 591–592
 Halone, K. K., Vol-II: 647
 Halpern, C. T., Vol-I: 534, 536
 Halpern, D. F., Vol-I: 236, 238, 301, 303, 309, 318, 323–324; Vol-II: 68, 70, 386, 460
 Halpert, S. C., Vol-I: 68
 Halsey, N. A., Vol-II: 598
 Halstead, K., Vol-II: 258
 Halverson, C. F., Vol-I: 508, 515; Vol-I: 511
 Ham, M., Vol-I: 544
 Hamann, S., Vol-II: 483
 Hamberg, K., Vol-II: 545
 Hambleton, R. K., Vol-I: 170–171; Vol-II: 67, 76, 81–82
 Hamburg, P., Vol-II: 167
 Hamby, B. A., Vol-II: 225
 Hamby, S., Vol-II: 627
 Hamby, S. L., Vol-II: 316
 Hamill, R., Vol-II: 158
 Hamilton, D. A., Vol-I: 227, 264
 Hamilton, E. A., Vol-I: 570
 Hamilton, J., Vol-II: 98
 Hamilton, K., Vol-II: 658
 Hamilton, M. C., Vol-I: 195, 361, 363, 373, 505
 Hamilton, S., Vol-II: 94, 193, 623
 Hamilton, W. D., Vol-I: 260
 Hamm, J. P., Vol-I: 324
 Hamman, R. F., Vol-II: 531
 Hammar, M. L., Vol-I: 246
 Hammen, C. L., Vol-II: 82
 Hammer, T., Vol-I: 105
 Hammerstein, S. K., Vol-I: 475
 Hammerton, H., Vol-II: 614
 Hammock, G., Vol-II: 314
 Hammock, G. S., Vol-II: 312
 Hammond, B., Vol-II: 122
 Hammond, W. P., Vol-I: 150; Vol-II: 226
 Hampson, E., Vol-I: 84, 220–224, 227, 239, 270, 323–324
 Hampson, E. A., Vol-I: 222
 Hampson, J. G., Vol-I: 194
 Hampson, J. L., Vol-I: 194
 Hampson, S. E., Vol-I: 548
 Hampton, M. R., Vol-II: 548
 Hancock, K. A., Vol-I: 6, 59–72
 Handa, R. J., Vol-I: 226
 Handal, P., Vol-II: 626
 Handelsman, J., Vol-I: 313
 Haney, C., Vol-II: 607
 Hanish, L. D., Vol-I: 219
 Hankin, B. L., Vol-II: 96, 134, 142
 Hanna, E., Vol-II: 230
 Hansbrough, E., Vol-I: 542
 Hansen, A. M., Vol-I: 242
 Hansen, H. L., Vol-II: 438
 Hanson, G. R., Vol-I: 548
 Hanson, R., Vol-II: 620
 Hansson, R. O., Vol-I: 573; Vol-II: 24
 Harackiewicz, J., Vol-II: 48
 Harasty, J., Vol-I: 244
 Haraway, D., Vol-I: 105
 Haraway, D. J., Vol-I: 194, 202
 Harcourt, J., Vol-II: 114, 125
 Hardin, C. D., Vol-II: 77, 449
 Harding, S., Vol-I: 30–32, 36, 103, 105, 395–396, 398–399

- Haroon, S. L., Vol-II: 472
 Hardy, L., Vol-II: 480
 Hardy, R., Vol-II: 165
 Hare, R. D., Vol-II: 74
 Harel, F., Vol-I: 319
 Hare-Mustin, R., Vol-I: 381–382, 387, 403
 Hare-Mustin, R. T., Vol-I: 20, 29–31, 33, 193, 197;
 Vol-II: 64, 66, 83, 117–118, 253, 255, 671
 Hargie, O. D. W., Vol-II: 282, 295
 Hargittai, E., Vol-II: 253
 Hargreaves, D., Vol-II: 170
 Hargreaves, D. A., Vol-II: 477
 Hargreaves, D. J., Vol-I: 349
 Harlan, C. L., Vol-II: 380
 Harlan, L. C., Vol-II: 527
 Harlow, J. A., Vol-I: 237
 Harmon, T., Vol-II: 284
 Harnish, R. J., Vol-II: 283
 Harold, R., Vol-I: 281
 Harold, R. D., Vol-II: 389, 573
 Harper, B., Vol-II: 171
 Harper, G. W., Vol-II: 629
 Harré, R., Vol-I: 541
 Harrell, S., Vol-II: 634–635
 Harrell, W. A., Vol-I: 329
 Harries-Jenkins, G., Vol-II: 672
 Harrington, D. M., Vol-I: 352, 354
 Harris, A., Vol-I: 285
 Harris, A. C., Vol-I: 499
 Harris, B., Vol-I: 133
 Harris, C., Vol-I: 150–151
 Harris, C. R., Vol-II: 484
 Harris, D. V., Vol-II: 531, 569
 Harris, F., Vol-II: 410
 Harris, J. R., Vol-I: 282
 Harris, L., Vol-I: 283
 Harris, L. J., Vol-I: 330, 348
 Harris, M. B., Vol-II: 314–315
 Harris, M. I., Vol-II: 531
 Harris, R., Vol-II: 166
 Harris, R. J., Vol-I: 549; Vol-II: 430, 654–656, 660
 Harris, S., Vol-II: 624
 Harris, V. A., Vol-I: 194
 Harrison, D., Vol-I: 437
 Harrison, J. M., Vol-II: 573
 Harrison, K., Vol-I: 150; Vol-II: 159, 161, 163, 166–167,
 645, 647, 655, 658–659
 Harrison, L., Vol-I: 64, 363
 Harrison, P. M., Vol-II: 321
 Harrison, S. J., Vol-I: 374
 Harrison, S. K., Vol-II: 287
 Hart, G., Vol-II: 228
 Hart, L., Vol-II: 385
 Hart, P. L., Vol-II: 543
 Hart, R., Vol-I: 330
 Harter, S., Vol-I: 497, 528–529, 532; Vol-II: 30, 388
 Hartman, J. E., Vol-II: 363
 Hartmann, H. I., Vol-I: 571
 Hartmann, T., Vol-II: 651–652
 Harton, H. C., Vol-II: 326
 Hartsen, K. M., Vol-II: 43
 Hartsock, N., Vol-I: 105
 Harway, M., Vol-I: 54; Vol-II: 255
 Harwood, J., Vol-II: 371, 644–645, 647
 Harzing, A., Vol-I: 172
 Hasanali, P., Vol-II: 288
 Hasegawa, K., Vol-II: 644
 Haselton, M. G., Vol-I: 168; Vol-II: 286
 Hasher, L., Vol-I: 432
 Hashim, A., Vol-I: 365
 Hashimoto, T., Vol-II: 289
 Hasin, D., Vol-II: 159
 Hasin, D. S., Vol-II: 133–134, 146, 480
 Haskell, S. M., Vol-II: 192
 Haslam, N., Vol-I: 1, 194, 197; Vol-II: 1, 27, 370
 Haslam, S. A., Vol-I: 193; Vol-II: 449, 455–456, 461
 Hassett, J. M., Vol-I: 220
 Hassler, M., Vol-I: 348, 354
 Hatano, G., Vol-I: 162–163
 Hatch-Maillette, M. A., Vol-II: 322
 Hatfield, E., Vol-I: 239, 481; Vol-II: 297
 Hathaway, S. R., Vol-II: 78–79
 Hatoum, I. J., Vol-II: 658
 Hatzenbuehler, M. L., Vol-II: 9, 133–147
 Haug, F., Vol-I: 115
 Haught, C., Vol-I: 200
 Haugrud, S., Vol-I: 462
 Hause, K. S., Vol-II: 283, 296, 300
 Hausenblas, H., Vol-II: 574–575
 Hauser, S., Vol-I: 564
 Hauserman, N., Vol-II: 430
 Häusermann, M., Vol-II: 486
 Hausman, B. L., Vol-II: 115, 117, 121
 Hausmann, M., Vol-I: 222, 245, 270
 Havens, M. D., Vol-I: 323
 Hawgood, G., Vol-I: 328
 Hawk, S. T., Vol-II: 655
 Hawker, A., Vol-II: 483
 Hawkins, K. W., Vol-II: 339, 345
 Hawkins, R. C., Vol-I: 52; Vol-II: 550
 Hawton, K., Vol-II: 478–479
 Hay, D. H., Vol-II: 314
 Hayati, M., Vol-I: 328
 Hayden, H. A., Vol-II: 156
 Hayden, M. V., Vol-II: 448
 Hayes, C. W., Vol-I: 438
 Hayes, D., Vol-I: 463
 Hayes, E., Vol-II: 613
 Hayes, J. A., Vol-II: 231
 Hayes, K., Vol-I: 290
 Haynes, M. C., Vol-II: 345
 Hays, D. G., Vol-II: 205
 Hays, J., Vol-I: 185
 Hayslip, B. Jr., Vol-II: 174

- Hayward, C., Vol-I: 86, 543–544
 Hazan, C., Vol-I: 262; Vol-II: 281
 Hazen, M. D., Vol-I: 383; Vol-II: 340
 Head, J., Vol-II: 475
 Healy, D., Vol-II: 107
 Healy, J. M., Vol-I: 566
 Healy, S. D., Vol-I: 325
 Heaphy, B., Vol-I: 565
 Heard, K. V., Vol-II: 12, 587–609
 Heath, G. W., Vol-II: 567
 Heatherington, L., Vol-II: 620
 Heatherston, T. F., Vol-II: 167, 285
 Heaton, R. K., Vol-I: 568
 Heavey, C. L., Vol-II: 265–266, 499
 Hebert, K., Vol-I: 226
 Hébert, M., Vol-II: 208–209
 Hebl, M. R., Vol-I: 446; Vol-II: 157, 167–168, 172, 659
 Hecht, M. A., Vol-I: 89, 411, 437–438; Vol-II: 21, 338, 643
 Heckathorn, D. D., Vol-I: 187
 Heckhausen, J., Vol-I: 573
 Hedden, T., Vol-II: 66
 Hederstierna, C., Vol-I: 244
 Hedges, L. V., Vol-I: 299, 302, 304–305, 318
 Heerey, E. A., Vol-I: 420
 Heesacker, M., Vol-I: 437; Vol-II: 232
 Heesink, J., Vol-II: 413
 Hegarty, M., Vol-I: 328–329
 Hegarty, P., Vol-I: 7, 191–204, 372–373
 Hegna, K., Vol-II: 369
 Heider, F., Vol-I: 200
 Heil, M., Vol-I: 239, 319, 322
 Heilman, M. E., Vol-II: 345–346, 447–450, 457
 Heimberg, R. G., Vol-II: 136, 140, 142
 Heinberg, L. J., Vol-II: 153, 159, 658
 Heine, S. J., Vol-I: 161, 194, 374
 Heinecken, L., Vol-II: 673, 690
 Heining, M., Vol-I: 247, 464
 Heins, J. A., Vol-I: 330
 Heinze, H., Vol-I: 442
 Heinze, H. J., Vol-I: 324
 Heisenberg, W., Vol-II: 187
 Heitkemper, M. M., Vol-I: 241
 Helaire, L., Vol-I: 285
 Helbing, N., Vol-I: 503
 Helgesen, S., Vol-II: 458
 Helgeson, V. S., Vol-I: 421; Vol-II: 23, 25, 295, 297, 433, 502, 506, 547, 549–550
 Heller, A., Vol-II: 528
 Heller, D., Vol-II: 33–34
 Heller, K. A., Vol-II: 379
 Heller, T., Vol-II: 339
 Hellinger, F. H., Vol-II: 533
 Hellison, D., Vol-II: 576
 Hellstrom, B., Vol-I: 241
 Helm, B., Vol-I: 47
 Helmick, C. G., Vol-II: 542
 Helmreich, R., Vol-I: 146, 515
 Helmreich, R. L., Vol-I: 14, 47, 52, 134–136, 144, 146–147, 150–152, 192; Vol-II: 14, 22–23, 295, 569
 Helmreich, R. M., Vol-I: 366
 Helms, B. J., Vol-I: 145
 Helms, H. M., Vol-II: 296
 Helms, J. E., Vol-II: 65–66, 68, 72
 Helson, R., Vol-I: 26, 350–351, 566–568, 570–571
 Helt, M., Vol-I: 327
 Heltman, K., Vol-I: 389, 414; Vol-II: 338
 Helwig-Larson, M., Vol-II: 21
 Henderson, K. A., Vol-I: 90; Vol-II: 167, 473, 478, 574
 Henderson, L. A., Vol-I: 242–243
 Henderson, V. W., Vol-II: 524
 Henderson-King, D., Vol-I: 573; Vol-II: 163
 Henderson-King, E., Vol-I: 573; Vol-II: 163
 Hendrick, C., Vol-II: 289, 299–300, 432
 Hendrick, S. S., Vol-II: 289, 299–300, 432
 Hengst, J. A., Vol-I: 114
 Henley, M., Vol-I: 387–388, 399
 Henley, N., Vol-I: 27–28, 381–382, 399, 402
 Henley, N. M., Vol-I: 412, 418, 421; Vol-II: 168, 325
 Henley, P., Vol-I: 278–279, 281, 287–288
 Henne, J., Vol-II: 145
 Hennessy, D. W., Vol-II: 315
 Henning, J. B., Vol-II: 428, 437
 Henning, J., Vol-I: 354
 Henning, K., Vol-I: 478
 Henning, S. L., Vol-I: 94
 Henninger, D., Vol-I: 442
 Henrie, R. L., Vol-I: 330
 Henriksson-Larsen, K., Vol-II: 570
 Henriques, J., Vol-I: 118
 Henry, K. D., Vol-I: 25
 Henry, R. A., Vol-II: 347, 349
 Hens, G., Vol-II: 502
 Hensley, P. L., Vol-II: 532
 Henwood, K., Vol-I: 111
 Heo, M., Vol-II: 545
 Hepburn, A., Vol-I: 33, 121
 Heppen, J. B., Vol-II: 290, 661
 Heppner, M., Vol-II: 392
 Heppner, M. J., Vol-II: 392
 Heppner, P. P., Vol-II: 24, 226
 Herbert, S. E., Vol-II: 367–368
 Herbozo, S., Vol-II: 166–168
 Herd, A. M., Vol-II: 677–679
 Herdman, M., Vol-I: 171
 Herdt, G., Vol-I: 133, 150
 Herek, G., Vol-II: 139
 Herek, G. M., Vol-I: 60, 67–69; Vol-II: 139, 193, 340, 359–363, 577
 Herlitz, A., Vol-I: 323
 Herman, C. P., Vol-I: 8, 455–466; Vol-II: 8, 167
 Herman, J., Vol-II: 95
 Herman, J. F., Vol-I: 264–265, 329–330
 Herman, J. L., Vol-II: 190, 195–196, 208, 214

- Herman, R., Vol-I: 483
 Herman-Giddens, M. E., Vol-I: 533
 Hermann, D., Vol-I: 236
 Hermann, K. S., Vol-II: 24
 Hermann, M. G., Vol-II: 42
 Hermans, B., Vol-II: 453
 Hernandez, P., Vol-II: 262, 269–270
 Herold, E. S., Vol-I: 393; Vol-II: 286
 Héroux, G., Vol-I: 326
 Herrera, R., Vol-II: 412
 Herrmann, D. J., Vol-I: 327
 Hershberger, S., Vol-I: 68
 Hershberger, S. L., Vol-I: 545; Vol-II: 138, 367–368
 Hershcovis, M. S., Vol-II: 322, 423, 431
 Hertz, R., Vol-I: 111
 Herzberger, S. D., Vol-II: 160
 Herzog, D. B., Vol-II: 167
 Herzog, H., Vol-II: 446
 Hess, N., Vol-I: 397
 Hess, U., Vol-I: 431, 434–435
 Hesse-Biber, S. N., Vol-I: 3, 103, 112–113, 122; Vol-II: 3, 168
 Hetherington, E. M., Vol-II: 386
 Hetherington, M. M., Vol-I: 456, 462
 Hetsroni, A., Vol-II: 655
 Hewes, D. E., Vol-II: 656
 Hewitt, C., Vol-I: 547
 Hewitt, P. L., Vol-II: 99
 Hewlett, S. A., Vol-II: 446, 453
 Hewstone, M., Vol-I: 497
 Hexter, R. J., Vol-II: 460
 Heyman, G. D., Vol-I: 501, 506, 517
 Heyman, R. E., Vol-II: 268
 Heyns, R. W., Vol-II: 42, 49
 Hicken, M., Vol-II: 510
 Hicks, B. M., Vol-II: 74
 Hicks, G. R., Vol-I: 549
 Hicks, K. L., Vol-II: 158
 Hickson, F. C. I., Vol-II: 292
 Hidi, S., Vol-II: 390
 Higginbotham, E., Vol-I: 108
 Higgins, C. A., Vol-II: 415, 687
 Higgins, E. T., Vol-I: 196, 530
 Higgins, K., Vol-II: 484
 Highnote, S. M., Vol-I: 237
 Hilgard, E. R., Vol-II: 386
 Hill, A., Vol-II: 525
 Hill, C. A., Vol-I: 144
 Hill, C. E., Vol-II: 203
 Hill, C. T., Vol-II: 294–295, 297
 Hill, D. A., Vol-I: 114
 Hill, D. B., Vol-II: 366
 Hill, D. L., Vol-II: 655
 Hill, E. M., Vol-I: 320, 322
 Hill, J., Vol-I: 196; Vol-II: 614
 Hill, J. P., Vol-I: 530, 536; Vol-II: 389
 Hill, M., Vol-II: 202
 Hill, M. S., Vol-II: 156, 200
 Hill, R. A., Vol-I: 243
 Hill, S. A., Vol-II: 678
 Hiller, D., Vol-II: 405
 Hiller, J., Vol-I: 480, 483
 Hillier, L., Vol-I: 64
 Hillis, J. D., Vol-II: 290
 Hilsenroth, M. J., Vol-II: 235
 Hilt, L. M., Vol-II: 9, 133–147
 Hilton, J. L., Vol-I: 197
 Himself, A. J., Vol-II: 413–414
 Hinchliff, S., Vol-II: 532
 Hinduja, S., Vol-II: 320
 Hine, D. W., Vol-II: 322, 431
 Hine, T. J., Vol-I: 328
 Hines, D. A., Vol-I: 94; Vol-II: 317–319
 Hines, M., Vol-I: 84, 224, 270, 279, 307, 317, 324
 Hing, E., Vol-II: 530
 Hinrichs, D. W., Vol-II: 363
 Hinsz, V. B., Vol-I: 446
 Hirakata, M., Vol-I: 330
 Hirsch, E. S., Vol-I: 456
 Hirsch, L. S., Vol-I: 137
 Hirschfeld, M., Vol-II: 111
 Hisley, J., Vol-II: 385
 Hitchcock, A., Vol-I: 191, 196
 Hitti, J. E., Vol-II: 534
 Hix-Small, H., Vol-II: 622
 Hjelt-Back, M., Vol-II: 429
 Hlynsky, J. A., Vol-II: 473
 Ho, C., Vol-II: 199
 Ho, D., Vol-II: 139
 Hoard, M. K., Vol-I: 317
 Hoban, M. C., Vol-I: 458
 Hobbs, W., Vol-I: 329
 Hochschild, A. R., Vol-II: 402, 407, 411, 414, 452
 Hodges, C., Vol-I: 517
 Hodges, E. V. E., Vol-I: 498
 Hodges, S. D., Vol-I: 438; Vol-II: 21
 Hodgetts, D., Vol-II: 228
 Hoek, A., Vol-I: 483
 Hoek, H. W., Vol-I: 247
 Hoel, H., Vol-II: 423–424, 429–430
 Hoenig, J., Vol-II: 115
 Hofer, J., Vol-II: 43
 Hofferth, S., Vol-II: 225
 Hoffman, B. J., Vol-II: 50
 Hoffman, C., Vol-I: 194, 198
 Hoffman, D., Vol-II: 98
 Hoffman, G. E., Vol-I: 266
 Hoffman, K. L., Vol-II: 318–319
 Hoffman, M. A., Vol-I: 225
 Hoffman, M. L., Vol-II: 23
 Hoffman, R. M., Vol-I: 135, 151
 Hoffner, C., Vol-II: 648
 Hofman, M., Vol-II: 116
 Hofman, M. A., Vol-I: 224

- Hogan, J. D., Vol-I: 20, 159
 Hogan, K., Vol-II: 242
 Hogg, K., Vol-II: 484
 Hogue, M., Vol-I: 91
 Hohmann-Marriott, B. E., Vol-II: 413–414
 Hoiberg, A., Vol-II: 675
 Hoke, L., Vol-II: 95
 Holahan, C. K., Vol-I: 136; Vol-II: 23
 Holbein, M. F. D., Vol-II: 384
 Holbrook, T., Vol-I: 54
 Holbrook, T. M., Vol-II: 170
 Holden, G. W., Vol-II: 383
 Holden, N. J., Vol-II: 673, 676, 679–684, 686–688
 Holder, A., Vol-II: 227
 Holderness, C. C., Vol-I: 535
 Holding, C. S., Vol-I: 329
 Holding, D. H., Vol-I: 329
 Holdsworth, M., Vol-I: 327
 Holdsworth, M. J., Vol-I: 327
 Holland, D. C., Vol-II: 291
 Holland, J., Vol-II: 282
 Holliday, H., Vol-I: 397
 Hollingworth, L. S., Vol-I: 23, 27, 81
 Hollon, S. D., Vol-II: 82
 Holloway, J. B., Vol-II: 573
 Hollway, W., Vol-I: 117–118
 Holm, S. L., Vol-II: 144
 Holmbeck, G. N., Vol-I: 536
 Holmes, J. G., Vol-II: 282, 294
 Holmes, J., Vol-I: 381, 389, 394–395
 Holmes, L. D., Vol-I: 259
 Holmes, M., Vol-I: 194
 Holmes, R., Vol-I: 389, 394
 Holmes, S., Vol-I: 53; Vol-II: 123
 Holmes, W. C., Vol-II: 230
 Holmqvist, K., Vol-II: 156
 Holning, L., Vol-I: 187
 Holstein, J. A., Vol-I: 103, 122
 Holstrom, A. J., Vol-II: 167
 Holt, C. L., Vol-I: 151
 Holt, K. E., Vol-II: 156, 165
 Holtgraves, T., Vol-II: 343
 Holtzman, D., Vol-II: 473
 Holtzman, S., Vol-II: 495–497, 504, 511
 Holtzworth-Munroe, A., Vol-II: 329, 499–500, 509
 Holve, K., Vol-I: 354
 Homan, A. C., Vol-II: 350
 Homko, C. J., Vol-II: 543
 Hondagneu-Sotelo, P., Vol-I: 112
 Honeycutt, J. M., Vol-II: 291
 Hong, K. E., Vol-II: 120
 Hong, L., Vol-II: 456
 Hong, M., Vol-I: 442
 Hong, S., Vol-II: 289
 Hong, Y., Vol-I: 160; Vol-II: 70
 Hong, Z., Vol-I: 531
 Honnold, J., Vol-I: 186
 Hook, E. B., Vol-I: 246
 Hook, J. N., Vol-I: 227
 Hooker, E., Vol-I: 59, 62, 204
 Hooks, b., Vol-I: 104
 Hooks, B., Vol-II: 451
 Hootman, J. M., Vol-II: 542
 Hoover, H. D., Vol-I: 244
 Hopcroft, R. L., Vol-I: 164
 Hopkins, J. R., Vol-II: 225
 Hopkins, N., Vol-I: 496
 Hopp, C., Vol-II: 386
 Hops, H., Vol-I: 544
 Hopwood, C., Vol-II: 204
 Horan, P. F., Vol-I: 220
 Horgan, T. G., Vol-I: 411, 413–414, 438, 446
 Horn, S. S., Vol-I: 538
 Horne, A., Vol-II: 224
 Horne, S. G., Vol-I: 69
 Horner, M. S., Vol-I: 28; Vol-II: 47–48
 Horwood, L. J., Vol-II: 135
 Hossain, Z., Vol-II: 412
 Hou, J., Vol-I: 319
 Hough, J. C., Vol-I: 516
 Houk, C. P., Vol-I: 194
 House, A. T., Vol-I: 139; Vol-II: 113
 House, J. S., Vol-II: 498, 504
 Houser-Marko, L., Vol-II: 45
 Houston, B. K., Vol-I: 322
 Houston, D. A., Vol-II: 324
 Houtz, J. C., Vol-I: 349
 Howard, C., Vol-II: 228
 Howard, K. I., Vol-II: 224
 Howard, R. W., Vol-I: 25
 Howe, C., Vol-II: 510
 Howe, K. G., Vol-I: 286
 Howerton, M. W., Vol-I: 11
 Hox, J. J., Vol-II: 603
 Hoyer, W. D., Vol-II: 229
 Hoyert, D. L., Vol-II: 526, 542
 Hoyt, C. L., Vol-II: 460
 Hoyt, D., Vol-II: 619
 Hrdy, S. B., Vol-I: 474
 Hrudá, L., Vol-I: 502
 Hsia, J., Vol-II: 544
 Hsiung, R. C., Vol-II: 229
 Hsu, J., Vol-II: 460
 Hu, L., Vol-I: 146
 Huang, Y., Vol-I: 98
 Hubbard, G., Vol-I: 183
 Hubbard, R., Vol-II: 530
 Hubner, J. J., Vol-II: 31
 Hudson, J., Vol-II: 158
 Hudson, W. W., Vol-II: 360
 Huebner, D. M., Vol-I: 186; Vol-II: 170
 Huebsch, P. D., Vol-II: 619
 Huesmann, L. R., Vol-II: 655, 658

- Huesmann, R., Vol-II: 645
 Huettel, S. A., Vol-I: 329
 Huffaker, D. A., Vol-II: 272
 Huff-Corzine, L., Vol-I: 463
 Huffman, S., Vol-II: 647
 Hugdahl, K., Vol-I: 324
 Hughes, I. A., Vol-I: 194
 Hughes, J. P., Vol-II: 543
 Hughes, M., Vol-II: 134
 Hughes, T. L., Vol-I: 187; Vol-II: 161
 Huguet, P., Vol-I: 284, 289
 Hui, S. P., Vol-I: 236
 Huisman, H., Vol-II: 474
 Hulanská, K., Vol-II: 479
 Hulin, C. L., Vol-II: 426, 428, 685
 Hultcrantz, M., Vol-I: 244
 Hultin, M., Vol-II: 341
 Hummel, D. D., Vol-I: 320
 Hummert, M. L., Vol-II: 371
 Humphreys, K., Vol-II: 619
 Humphreys, L., Vol-II: 597
 Hund-Georgiadis, M., Vol-I: 245
 Hunsberger, B., Vol-II: 362
 Hunsley, J., Vol-II: 204
 Hunt, E., Vol-I: 329
 Hunt, E. B., Vol-I: 322
 Hunt, K., Vol-II: 228, 474–475
 Hunt, M. D., Vol-II: 346
 Hunt, M. G., Vol-II: 24
 Hunter, A. E., Vol-I: 36
 Hunter, B., Vol-I: 363
 Hunter, B. A., Vol-I: 144
 Hunter, E., Vol-II: 487
 Hunter, J., Vol-I: 63–64, 545
 Hunter, M., Vol-II: 684–686
 Hunter, S., Vol-II: 295
 Hurd, L. C., Vol-I: 567
 Hurd, S., Vol-I: 185
 Hurdle, D., Vol-II: 625
 Hurlbert, D., Vol-I: 485
 Hurrell, J. J. Jr., Vol-II: 423
 Hurst, N., Vol-I: 194, 198
 Hurt, M. M., Vol-I: 139
 Hurtaldo, A., Vol-I: 105
 Husaini, B. A., Vol-II: 228
 Huselid, R. F., Vol-II: 23
 Hüsler, G., Vol-II: 621
 Huss, E., Vol-I: 119
 Hussain, R., Vol-II: 484
 Huston, A., Vol-I: 502
 Huston, A. C., Vol-I: 501, 505, 510, 514–515; Vol-II: 386
 Huston, M., Vol-II: 292
 Huston, T., Vol-II: 411
 Huston, T. L., Vol-I: 562, 571; Vol-II: 289, 293
 Hutchins, L., Vol-II: 363–365
 Hutchison, K. E., Vol-II: 371
 Hutson-Comeaux, S. L., Vol-I: 432–433; Vol-II: 347
 Huttenlocher, J., Vol-I: 318, 326
 Huurre, T., Vol-II: 548
 Huynh, S. C., Vol-I: 236
 Hwang, C. P., Vol-II: 165
 Hwang, K., Vol-I: 162
 Hwang, V. S., Vol-II: 541–555
 Hyams, M., Vol-I: 113
 Hyde, J. S., Vol-I: 7–8, 35, 87, 89, 91, 139, 149–150, 193–195, 262, 280, 282, 297–313, 317–318, 362, 412, 431, 445, 471–488, 531, 545, 549, 569–570; Vol-II: 7–8, 30, 97, 136, 142, 146, 154, 156, 171, 253, 281, 299–300, 386, 569, 631, 643
 Hyde, R. J., Vol-I: 246
 Hyder, A. A., Vol-II: 482
 Hyers, L., Vol-I: 393
 Hyers, L. L., Vol-II: 170
 Hyman, S. L., Vol-II: 598
 Hynan, D. J., Vol-II: 81
 Hynes, K., Vol-I: 439
 Hynie, M., Vol-II: 288
 Hytti, J., Vol-II: 429
- I**
- Iachini, T., Vol-I: 321
 Iacoviello, B. M., Vol-II: 234
 Ialongo, N., Vol-II: 621
 Iaria, G., Vol-I: 221
 Ibarra, H., Vol-II: 454
 Icenogle, M., Vol-II: 415
 Ickes, W., Vol-I: 413–414, 438; Vol-II: 21, 295, 325, 501
 Igartua, K. J., Vol-II: 362
 Iijima, M., Vol-I: 236
 Ikeda, M., Vol-I: 246
 Ilardi, B., Vol-II: 29
 Ilardi, B. C., Vol-II: 339
 Iles, P., Vol-II: 456
 Ilies, R., Vol-II: 430
 Imel, Z. E., Vol-II: 221
 Imperato-McGinley, J., Vol-I: 218, 263, 321, 529
 Impett, E. A., Vol-I: 138; Vol-II: 117
 Inch, R., Vol-II: 644–645
 Inciardi, J. A., Vol-II: 591
 Inclan, J. E., Vol-II: 261–262
 Inglehart, R., Vol-II: 352
 Ingram, D., Vol-I: 220
 Ingram, J. G., Vol-II: 483
 Inhelder, B., Vol-I: 319
 Inman, C. C., Vol-II: 283, 294
 Instone, D., Vol-II: 678
 Inzlicht, M., Vol-I: 284; Vol-II: 21
 Iqbal, I., Vol-II: 545
 Irfan, N., Vol-I: 456
 Iribarne, L., Vol-I: 328
 Iritani, B., Vol-II: 647
 Irwin, J., Vol-II: 367
 Irwin, W., Vol-I: 242
 Irwing, P., Vol-I: 301

- Iscoe, I., Vol-II: 613
 Isensee, R., Vol-I: 64
 Isgor, C., Vol-I: 323
 Ishii-Kuntz, M., Vol-II: 409
 Ishikawa, T., Vol-I: 328
 Ismail, A. I., Vol-I: 570
 Israel, J. B., Vol-I: 238
 Israel, T., Vol-II: 363–364
 Israeli, D., Vol-I: 121
 Issakidis, C., Vol-II: 228
 Istar, A., Vol-II: 258
 Ito, T. A., Vol-II: 449
 Itoh, M., Vol-I: 245
 Ivanenko, Y. P., Vol-I: 329
 Ivory, J., Vol-II: 645–646
 Ivry, R. B., Vol-I: 222
 Iwamasa, G., Vol-II: 616
 Iwamoto, D. K., Vol-I: 53
 Iwasaki, Y., Vol-II: 509–510
 Iyengar, S., Vol-II: 650
 Izendoorn, R., Vol-I: 321
 Izraeli, D. N., Vol-II: 341
- J**
- Jablonska, B., Vol-II: 599
 Jack, D. C., Vol-I: 105; Vol-II: 94, 96, 102, 295
 Jack, L. Jr., Vol-II: 549
 Jacklin, C., Vol-I: 193
 Jacklin, C. N., Vol-I: 28, 88, 194, 240, 298, 317, 322, 514, 536; Vol-II: 313, 322–323, 326
 Jackson, A., Vol-II: 625
 Jackson, B., Vol-II: 74
 Jackson, C., Vol-I: 289
 Jackson, D., Vol-II: 620
 Jackson, J. M., Vol-I: 284
 Jackson, L. A., Vol-II: 652
 Jackson, M. A., Vol-II: 228
 Jackson, R., Vol-II: 482
 Jackson, S., Vol-I: 117
 Jackson, S. E., Vol-II: 348
 Jackson, S. J., Vol-II: 482
 Jacob, S., Vol-I: 248
 Jacobi, C., Vol-I: 86
 Jacobi, L., Vol-II: 159
 Jacobs, D. H., Vol-II: 91, 96
 Jacobs, E. C., Vol-I: 327
 Jacobs, G. H., Vol-I: 237
 Jacobs, J. A., Vol-II: 452
 Jacobs, J. E., Vol-I: 306, 374; Vol-II: 380, 384–385, 389–390
 Jacobs, J., Vol-I: 281; Vol-II: 384, 401–402
 Jacobs, L. F., Vol-I: 266, 329
 Jacobs, P., Vol-II: 531
 Jacobs, R. R., Vol-II: 457
 Jacobson, D. L., Vol-II: 542
 Jacobson, K. M., Vol-I: 187
 Jacobson, L., Vol-I: 306
 Jacobson, N. S., Vol-II: 265–267
 Jacques-Tiura, A. J., Vol-II: 284
 Jaffee, S. R., Vol-I: 474
 Jager, G., Vol-I: 321
 Jager, R., Vol-I: 267
 Jäggle, H., Vol-I: 237
 Jago, B., Vol-I: 115
 Jahoda, G., Vol-I: 222
 Jain, E., Vol-I: 442
 James, D., Vol-I: 388–390, 393–394
 James, J. B., Vol-II: 65
 James, M., Vol-II: 484
 James, R. D., Vol-I: 186
 James, T. W., Vol-I: 321
 James, W. H., Vol-I: 226
 Jameson, K. A., Vol-I: 237
 Jamieson, K. M., Vol-II: 575
 Jamison, W., Vol-I: 320, 327
 Jäncke, L., Vol-I: 324
 Janicki, D., Vol-II: 433
 Jankowiak, W., Vol-II: 292
 Janowsky, J., Vol-I: 222
 Janowsky, J. S., Vol-I: 223
 Jansen, E. A., Vol-II: 312, 320
 Jansen, M. A., Vol-II: 380
 Jansen-Osmann, P., Vol-I: 239, 319, 322, 329
 Janssen, E., Vol-I: 479, 485
 Jansz, J., Vol-II: 236
 Janzon, L., Vol-I: 241
 Jarrett, D. T., Vol-II: 431
 Jarrin, D., Vol-I: 456
 Jarvik, L. F., Vol-I: 238
 Jasper, K., Vol-II: 168
 Jastrow, J., Vol-I: 22
 Javornisky, G., Vol-II: 340
 Jay, T., Vol-I: 391–392
 Jayaratne, T. E., Vol-I: 194
 Jayaratne, T., Vol-I: 110
 Jeffries, J. E., Vol-II: 687
 Jeffries, V., Vol-II: 633
 Jemal, A., Vol-II: 541
 Jemmott, J. B., Vol-II: 51, 54, 520; Vol-II: 624, 634
 Jemmott, L., Vol-II: 624, 634
 Jenkins, M., Vol-II: 407, 411, 413
 Jenkins, S., Vol-II: 47, 56
 Jenkins, S. R., Vol-II: 161
 Jennings, L., Vol-II: 449
 Jennings, S. E., Vol-II: 569
 Jensen, J., Vol-II: 483
 Jensen, K. E., Vol-II: 571
 Jensen, L. A., Vol-II: 543
 Jessell, T. H., Vol-I: 236
 Jessica, M., Vol-II: 11, 288
 Jessurun, M., Vol-II: 483
 Jewkes, R., Vol-II: 542
 Jibotian, K. S., Vol-I: 195

- Jobling, I., Vol-II: 285
 Jockin, V., Vol-II: 431
 Jodl, K. M., Vol-II: 384
 Joffe, T. H., Vol-I: 217
 Johannesen-Schmidt, M. C., Vol-I: 84, 422; Vol-II: 338, 454, 677
 Johannsdotir, H. L., Vol-II: 434
 Johannsen, D. L., Vol-II: 478
 John, D., Vol-II: 405, 407, 409–412
 John, O. P., Vol-I: 434; Vol-II: 35, 45, 81
 Johnsen, B., Vol-II: 458, 474
 Johnsen, B. H., Vol-I: 239
 Johnson, A., Vol-I: 24–25
 Johnson, B. T., Vol-I: 150; Vol-II: 338, 677–678
 Johnson, B. W., Vol-I: 324–325
 Johnson, C., Vol-II: 337–338, 341, 620
 Johnson, C. B., Vol-II: 284
 Johnson, C. C., Vol-I: 288
 Johnson, E., Vol-II: 690
 Johnson, E. M., Vol-I: 571
 Johnson, E. S., Vol-I: 220
 Johnson, F., Vol-I: 385, 394
 Johnson, F. L., Vol-I: 392
 Johnson, H. M., Vol-I: 433
 Johnson, J., Vol-I: 244, 380; Vol-II: 568
 Johnson, J. A., Vol-II: 530
 Johnson, J. D., Vol-II: 661
 Johnson, J. T., Vol-I: 430, 436
 Johnson, K., Vol-I: 119; Vol-II: 361
 Johnson, K. L., Vol-II: 290, 546
 Johnson, L. L., Vol-I: 510
 Johnson, M. P., Vol-II: 317
 Johnson, M. T., 589
 Johnson, N. G., Vol-II: 117
 Johnson, P. B., Vol-II: 330
 Johnson, P. J., Vol-I: 98, 567; Vol-II: 659
 Johnson, R. A., Vol-II: 339, 341
 Johnson, S., Vol-I: 393, 397–398; Vol-II: 411
 Johnson, S. B., Vol-I: 197, 199
 Johnson, S. K., Vol-II: 450
 Johnson, S. M., Vol-I: 67
 Johnson, S. P., Vol-I: 318
 Johnson, T., Vol-II: 257
 Johnson, V., Vol-I: 474–475, 486; Vol-II: 190
 Johnson, W., Vol-II: 162
 Johnson, W. G., Vol-I: 464
 Johnsson, K. O., Vol-II: 476
 Johnston, E., Vol-I: 24–25
 Johnston, J., Vol-II: 392
 Johnston, L., Vol-I: 460
 Johnston, L. D., Vol-II: 224
 Johnston, L. H., Vol-II: 579
 Johnston-Robledo, I., Vol-I: 8, 35, 361–374; Vol-II: 8, 97
 Joiner, R., Vol-II: 652
 Joiner, T., Vol-II: 139
 Joiner, T. E., Vol-II: 194
 Jolliffe, D., Vol-II: 328
 Jolly, A., Vol-II: 228
 Jome, L. M., Vol-II: 200, 570
 Jonas, K., Vol-I: 418
 Jonasson, Z., Vol-I: 264, 323
 Jones, A. K., Vol-I: 242
 Jones, B. C., Vol-II: 286
 Jones, B. E., Vol-II: 104
 Jones, C., Vol-I: 544
 Jones, C. M., Vol-I: 265, 269–270, 325
 Jones, C. R., Vol-I: 196
 Jones, D., Vol-I: 394
 Jones, D. C., Vol-I: 535; Vol-II: 165–166
 Jones, D. P., Vol-I: 307
 Jones, D. W., Vol-I: 245
 Jones, E. E., Vol-I: 194
 Jones, J., Vol-II: 160
 Jones, J. C., Vol-I: 479
 Jones, K. S., Vol-I: 240
 Jones, L., Vol-II: 317
 Jones, L. C., Vol-I: 516
 Jones, R. A., Vol-II: 528
 Jones, S. B., Vol-II: 346
 Jones, S. H., Vol-I: 111
 Jones, T. H., Vol-I: 242
 Jones, W. H., Vol-II: 24
 Jönsson, F. U., Vol-I: 248
 Joplin, J. R. W., Vol-II: 502
 Jordan, C., Vol-II: 501
 Jordan, C. L., Vol-I: 270, 323
 Jordan, J., Vol-I: 105; Vol-II: 237
 Jordan, K., Vol-I: 324
 Jordan, T. J., Vol-I: 225
 Jøsendal, O., Vol-II: 474
 Josephs, R. A., Vol-I: 222; Vol-II: 20
 Josselson, R., Vol-I: 116, 563, 570
 Jost, A., Vol-I: 217
 Jost, J. T., Vol-I: 35
 Jouvent, R., Vol-I: 329
 Jovanovic, J., Vol-I: 283, 326
 Joyner, K., Vol-II: 136, 138, 142
 Jozefowicz, D., Vol-II: 573
 Juarez, L., Vol-II: 519
 Judd, C. M., Vol-I: 500
 Judd, P., Vol-II: 101
 Judge, E., Vol-II: 456
 Judge, T. A., Vol-II: 351, 459
 Judson, J. A., Vol-II: 482
 Juillard, E., Vol-I: 463
 Julien, D., Vol-II: 266
 Jung, D. I., Vol-I: 418
 Jung, J., Vol-I: 173; Vol-II: 167
 Junge, A., Vol-II: 368
 Juni, S., Vol-I: 52, 136
 Juntunen, D. L., 200, 211
 Jurik, N. C., Vol-II: 453
 Jussab, F., Vol-I: 328

K

- Kaahumanu, L., Vol-II: 363–365
 Kaas, A. L., Vol-I: 240
 Kaczala, C. M., Vol-II: 383–385
 Kaergaard, A., Vol-I: 242
 Kaestle, C. E., Vol-I: 536
 Kagan, D. M., Vol-II: 118
 Kagan, J., Vol-I: 512; Vol-II: 386
 Kagawa, M., Vol-II: 155
 Kahle, J., Vol-II: 385
 Kahle, J. B., Vol-I: 288
 Kahlenberg, S., Vol-II: 644, 646–647
 Kahlor, L., Vol-II: 660
 Kahn, A. S., Vol-I: 31; Vol-II: 55
 Kahn, L. M., Vol-II: 446
 Kahn, R., Vol-I: 566–567
 Kahn, T. J., Vol-II: 368
 Kahneman, D., Vol-I: 196, 199
 Kail, R., Vol-I: 319
 Kail, R. V., Vol-I: 264, 322, 329
 Kaiser, C. R., Vol-II: 138, 143
 Kalcik, S., Vol-I: 390
 Kalinka, C. J., Vol-II: 299
 Kalish, C. W., Vol-I: 500, 506
 Kallai, J., Vol-I: 328, 330
 Kallgren, C. A., Vol-II: 343
 Kallivayalil, D., Vol-II: 199
 Kalmuss, D., Vol-II: 532–533
 Kaluzny, G., Vol-I: 96
 Kamali, B., Vol-I: 118
 Kaminiski, P. L., Vol-II: 174
 Kaminski, P. L., Vol-II: 31–32
 Kamo, Y., Vol-II: 409, 412
 Kamphoff, C. S., Vol-II: 12, 563–580
 Kanazawa, S., Vol-I: 199; Vol-II: 285
 Kandel, E. R., Vol-I: 236
 Kando, T., Vol-I: 368
 Kandrack, M., Vol-II: 475
 Kandzari, D. E., Vol-I: 180
 Kane, K., Vol-II: 432
 Kane, M. J., Vol-II: 571
 Kane, M. L., Vol-II: 295
 Kane, R. L., Vol-II: 525
 Kanfer, R., Vol-I: 301
 Kang, L., Vol-II: 569
 Kanner, A., Vol-I: 146
 Kansaku, K., Vol-I: 245
 Kanter, R. M., Vol-II: 401
 Kantoff, P. W., Vol-II: 527
 Kantor, R., Vol-I: 387
 Kaplan, A., Vol-I: 105
 Kaplan, A. R., Vol-I: 246
 Kaplan, B. J., Vol-II: 73
 Kaplan, D. L., Vol-II: 283
 Kaplan, E., Vol-I: 236
 Kaplan, R. M., Vol-II: 547
 Kaplan, S., Vol-II: 229
 Kaplan, S. H., Vol-II: 553
 Kappers, A. M., Vol-I: 240
 Kaprio, J., Vol-II: 322
 Karakowsky, L., Vol-II: 338
 Karau, S. J., Vol-I: 411, 419–421; Vol-II: 339, 341, 351, 447–450, 457, 674
 Kareken, D. A., Vol-I: 249
 Kark, R., Vol-II: 13, 443–462
 Karlsson, A., Vol-II: 483
 Karney, B. R., Vol-II: 501, 504, 507–509, 511
 Karol, D., Vol-II: 69
 Karoly, P., Vol-II: 522
 Karp, S., Vol-II: 570
 Karremans, J. C., Vol-II: 294
 Karten, S. J., Vol-I: 389, 393; Vol-II: 339, 343, 345
 Karunas, R. B., Vol-II: 483
 Kaschak, E., Vol-I: 10; Vol-II: 10, 187–215
 Kashy, D. A., Vol-II: 677
 Kaslow, N., Vol-II: 142
 Kasper, S., Vol-I: 444
 Kasprzyk, D., Vol-II: 340
 Kass, S. J., Vol-I: 328
 Kasser, T., Vol-I: 194
 Kassinove, H., Vol-I: 393
 Kath, L. M., Vol-II: 428
 Kathleen, M., Vol-II: 316, 321
 Katkin, E. S., Vol-I: 443
 Katz, A. N., Vol-I: 354
 Katz, D. L., Vol-II: 99
 Katz, J. E., Vol-II: 653
 Katz, M., Vol-II: 121–122
 Katz, M. L., Vol-I: 184
 Katz, P. A., Vol-I: 47, 501, 503, 516–517
 Katz, S., Vol-I: 567–568
 Kauer, K. J., Vol-II: 570
 Kaufman, G., Vol-II: 646–647
 Kaufman, J., Vol-I: 329
 Kaufman, J. C., Vol-I: 304, 308
 Kaufman, J. S., Vol-I: 179
 Kaufman, S. B., Vol-I: 323
 Kaukiainen, A., Vol-II: 315, 328, 436
 Kaur, S., Vol-II: 519
 Kautzman, D., Vol-I: 462
 Kaw, E., Vol-I: 114
 Kawachi, I., Vol-II: 139, 145
 Kawahara, D. M., Vol-II: 660
 Kawakami, K., Vol-II: 147
 Kay, G., Vol-I: 133
 Kayano, M., Vol-I: 165
 Kayser, K., Vol-II: 497, 551
 Keane, T., Vol-I: 383
 Keating, C. F., Vol-I: 389, 414; Vol-II: 338
 Keating, D. P., Vol-I: 528; Vol-II: 32
 Keating, J. P., Vol-I: 195
 Keel, P. K., Vol-II: 155, 161
 Keelan, J. P., Vol-II: 157
 Keenan, C., Vol-I: 69

- Keenan, J. P., Vol-I: 244
 Keene, D., Vol-II: 510
 Keene, J. R., Vol-II: 415
 Keery, H., Vol-I: 88; Vol-II: 153, 164
 Kegan, R., Vol-I: 560, 563
 Kehily, M., Vol-I: 282
 Keil, J. E., Vol-II: 160
 Keita, G. P., Vol-II: 97
 Keith, J. R., Vol-I: 226, 269
 Keith, S. J., Vol-II: 532
 Keitz, S. A., Vol-II: 533
 Kelen, G. D., Vol-II: 483
 Kelleher, W., Vol-I: 138; Vol-II: 522
 Keller, A., Vol-I: 248
 Keller, A. J., Vol-I: 221, 323
 Keller, C. J., Vol-I: 352, 354
 Keller, E. F., Vol-I: 200, 202; Vol-II: 189
 Keller, H., Vol-I: 110, 346
 Keller, L. B., Vol-I: 569
 Keller, M., Vol-II: 134, 548
 Keller, M. B., Vol-II: 195
 Kellermann, S., Vol-I: 245
 Kelley, H. H., Vol-I: 200
 Kelley, J., Vol-II: 360
 Kelley, M. L., Vol-II: 687, 689
 Kelley, W. M., Vol-II: 285
 Kelloway, E. K., Vol-II: 423, 425, 431
 Kelly, A., Vol-I: 388; Vol-II: 268
 Kelly, D. M., Vol-I: 329–330
 Kelly, E., Vol-II: 166
 Kelly, F. D., Vol-I: 536
 Kelly, J., Vol-I: 383
 Kelly, J. A., Vol-I: 389
 Kelly, J. B., Vol-II: 599
 Kelly, J. G., Vol-II: 613–614, 633
 Kelly, J. R., Vol-I: 432–433
 Kelly, K., Vol-II: 255, 436
 Kelly, L., Vol-II: 173
 Kelly, R. J., Vol-II: 347
 Keltner, D., Vol-I: 429, 431, 435
 Kemeny, M. E., Vol-II: 141, 434, 553
 Kemp, D. T., Vol-I: 243
 Kempel, P., Vol-I: 324
 Kemper, E., Vol-II: 544
 Kempler, T., Vol-II: 385
 Kenagy, G. P., Vol-II: 114, 121
 Kenna, J. C., Vol-II: 115
 Kennealy, P. J., Vol-II: 74
 Kennedy, C. R., Vol-I: 243
 Kennedy, D. N., Vol-I: 217
 Kennedy, G., Vol-II: 230
 Kennedy, M., Vol-II: 527
 Kennedy, R. E., Vol-I: 545
 Kenny, D. A., Vol-I: 3, 86; Vol-II: 3
 Kenrick, D. T., Vol-II: 285
 Keogh, E., Vol-I: 241
 Kerekovska, A., Vol-II: 473
 Kerkstra, A., Vol-I: 411, 419–420
 Kern, J., Vol-I: 383
 Kern, M. K., Vol-I: 241
 Kerns, K. A., Vol-I: 220
 Kernsmith, P., Vol-II: 631
 Kerpelman, J., Vol-II: 686
 Kerr, G., Vol-II: 575
 Kerr, J. E., Vol-I: 226
 Kershner, J. R., Vol-I: 354
 Kersker, J. L., Vol-I: 329
 Kerst, M. E., Vol-II: 425
 Kerstetter, D. L., Vol-II: 571
 Keshet, S., Vol-II: 460
 Kesimci, A., Vol-II: 511
 Kessels, R. P. C., Vol-I: 223, 321
 Kessenich, J. J., Vol-II: 154
 Kessler, R., Vol-I: 63
 Kessler, R. C., Vol-II: 96, 133–135, 137, 140, 224, 473, 497–498, 501–502, 506, 631
 Kessler, S., Vol-I: 105, 112, 120, 194, 364
 Kessler, S. J., Vol-I: 192, 194, 260
 Ketay, S., Vol-II: 66
 Ketelaar, T., Vol-II: 283
 Keteyian, S. J., Vol-II: 567
 Kettrey, H. H., Vol-II: 319
 Keyes, K. M., Vol-II: 146, 480
 Keyes, S., Vol-I: 515
 Keys, C., Vol-II: 627
 Keys, C. B., Vol-II: 283
 Keysar, B., Vol-I: 200
 Khouri, H., Vol-II: 140
 Khoury, J., Vol-II: 482
 Khoury-Kassabri, M., Vol-II: 628, 633
 Kian, E. M., Vol-II: 572
 Kidd, A., Vol-II: 624
 Kidd, L., Vol-I: 183
 Kidd, S., Vol-I: 163
 Kidder, L., Vol-I: 383
 Kiecolt, K. J., Vol-II: 318
 Kiecolt-Glaser, J. K., Vol-I: 443; Vol-II: 498–499, 507
 Kiefe, C. I., Vol-II: 544
 Kiefer, A. K., Vol-II: 291, 299
 Kiesinger, C. E., Vol-I: 107, 109
 Kiesner, J., Vol-I: 433
 Kiessling, F., Vol-II: 43
 Kiger, G., Vol-II: 413, 415
 Kilborn, B., Vol-I: 159
 Kilgus, M. D., Vol-II: 118
 Killen, J. D., Vol-I: 544
 Killian, L. T., Vol-II: 101
 Killian, T. M., Vol-II: 101
 Kilmartin, C., Vol-I: 54
 Kilmartin, C. T., Vol-II: 225
 Kilpatrick, D., Vol-II: 620
 Kilpatrick, D. G., Vol-II: 137, 195, 316, 685
 Kim, D. D., Vol-II: 646
 Kim, J., Vol-I: 511

- Kim, K., Vol-II: 644, 646
 Kim, S., Vol-II: 653
 Kim, U., Vol-I: 162–163, 166
 Kimball, M. M., Vol-I: 304, 505; Vol-II: 386
 Kimberley, B. P., Vol-I: 243
 Kimble, T. D., Vol-I: 236
 Kimerling, R., Vol-II: 74
 Kimes, D. D., Vol-II: 648
 Kimm, S. Y. S., Vol-II: 567
 Kimmel, A. J., Vol-II: 123
 Kimmel, A., Vol-I: 398
 Kimmel, D., Vol-I: 65–66
 Kimmel, E., Vol-I: 33, 103
 Kimmel, E. B., Vol-I: 20
 Kimmel, M., Vol-I: 133; Vol-II: 225–226
 Kimmel, M. S., Vol-II: 282, 291
 Kimmel, S. B., Vol-II: 170
 Kimmons, J. E., Vol-II: 473
 Kimura, D., Vol-I: 49, 216, 220–223, 239, 263, 265–266, 279, 319, 321, 324, 329
 Kincheloe, J. L., Vol-I: 290
 Kinchla, M., Vol-I: 456
 Kindermann, T. A., Vol-II: 384
 King, A., Vol-II: 171
 King, C., Vol-II: 646, 647
 King, D., Vol-II: 112
 King, E. B., Vol-II: 157
 King, J., Vol-I: 277
 King, L. A., Vol-II: 45
 King, M. J., Vol-II: 98, 485
 King, S. E., Vol-II: 230
 King, S. S., Vol-I: 283
 Kinnish, K. K., Vol-I: 72
 Kinnunen, U., Vol-II: 27
 Kinsey, A., Vol-I: 204, 486
 Kinsey, A. C., Vol-I: 66
 Kinsey, B. L., Vol-I: 317
 Kipke, M., Vol-II: 620
 Kipp, K., Vol-I: 473
 Kippax, S., Vol-I: 115
 Kirasic, K. C., Vol-I: 330
 Kirby, S. L., Vol-II: 579
 Kirk, S. A., Vol-II: 105
 Kirkbride, A., Vol-I: 98; Vol-II: 156, 659
 Kirkland, J., Vol-I: 237
 Kirkley, B., Vol-I: 383
 Kirkove, C., Vol-II: 527
 Kirkpatrick, K. L., Vol-II: 35
 Kirkpatrick, L. A., Vol-II: 283
 Kirk-Smith, M., Vol-I: 248
 Kiselica, M. S., Vol-II: 224, 232–233, 235–237
 Kissling, E. A., Vol-I: 393
 Kitano, K., Vol-II: 120
 Kitayama, S., Vol-I: 441; Vol-II: 26, 56
 Kitazawa, S., Vol-I: 245
 Kite, M. E., Vol-I: 195, 480; Vol-II: 360–361, 447, 449, 458
 Kite, M., Vol-II: 570
 Kitzinger, C., Vol-I: 35, 110, 117–118, 192, 194, 199, 201, 382; Vol-II: 192
 Kiviruuusu, O., Vol-II: 548
 Kivnick, H. Q., Vol-I: 560
 Kizilos, M. A., Vol-II: 350
 Klabunde, C. N., Vol-II: 527, 544
 Klaczynski, P. A., Vol-I: 501
 Klarenbach, S. W., Vol-II: 531
 Klaw, E., Vol-II: 619
 Klebanov, P. K., Vol-II: 520
 Kleck, R. E., Vol-I: 431
 Klein, A., Vol-II: 161, 163
 Klein, D. J., Vol-I: 547
 Klein, E. B., Vol-I: 44
 Klein, F., Vol-I: 66, 72; Vol-II: 365
 Klein, H., Vol-II: 167, 647–648
 Klein, K. J., Vol-II: 21
 Klein, K. J. K., Vol-I: 438
 Klein, L. C., Vol-I: 457, 459–460
 Klein, P., Vol-II: 291
 Klein, R., Vol-II: 368–369
 Klein, S., Vol-I: 240, 243
 Klesges, R. C., Vol-I: 462
 Klieme, E., Vol-I: 318
 Klimmt, C., Vol-II: 651–652
 Kline, R. B., Vol-I: 151
 Kling, K. C., Vol-I: 299, 431, 569; Vol-II: 30
 Klinger, R. L., Vol-I: 64
 Klinkenberg, D., Vol-II: 292
 Klöckner, C., Vol-I: 420
 Klohnen, E. C., Vol-II: 45
 Klonoff, E. A., Vol-I: 148, 192; Vol-II: 195
 Klonsky, B. G., Vol-II: 343–344, 450
 Klosterhalfen, S., Vol-I: 245
 Kluckhohn, C., Vol-I: 160
 Klump, K. L., Vol-II: 161
 Klute, M. M., Vol-II: 296
 Kluwer, E., Vol-II: 413
 Kmet, J., Vol-II: 347
 Knapp, D., Vol-I: 329
 Knapp, M. L., Vol-I: 412
 Knee, R. E. Jr., Vol-II: 451
 Knickmeyer, R. C., Vol-I: 220
 Kniffin, K., Vol-I: 396
 Knight, C., Vol-II: 169
 Knight-Bohnhoff, K., Vol-II: 314
 Knott, J. A., Vol-I: 308, 319
 Knox, D., Vol-II: 283
 Knox, R., Vol-II: 242
 Koberg, C. S., Vol-I: 354
 Kobryniewicz, D., Vol-II: 344
 Koca, C., Vol-II: 569
 Koch, J., Vol-I: 281–283, 287, 289
 Koch, P., Vol-I: 485
 Kochanek, K. D., Vol-II: 228
 Koehler, M. S., Vol-II: 385

- Koelsch, S., Vol-I: 244
 Koenig, A. M., Vol-I: 430, 438, 569
 Koenig, B. L., Vol-II: 283–284
 Koenig-Nobert, S., Vol-I: 461
 Koeske, R., Vol-I: 88, 381
 Koeske, R. D., Vol-I: 193, 371
 Koestner, R., Vol-I: 545; Vol-II: 23, 43–46, 49, 56
 Koff, E., Vol-I: 535, 544
 Kohlberg, L., Vol-I: 260, 528; Vol-II: 188
 Kohlberg, L. A., Vol-I: 496
 Kohlman, M., Vol-I: 96
 Koivula, N., Vol-II: 571
 Kokot, A. P., Vol-II: 299
 Kolakowsky-Hayner, S. A., Vol-II: 483
 Kolaric, G. C., Vol-I: 531
 Kolb, D., Vol-I: 395, 397
 Kolk, A. M., Vol-I: 145; Vol-II: 474
 Koller, V., Vol-I: 404
 Kollock, P., Vol-I: 390
 Kolo, L. L., Vol-I: 323
 Komar, J., Vol-II: 33
 Komesaroff, P., Vol-I: 117
 Konik, J., Vol-I: 362, 565
 Konrad, A. M., Vol-I: 95, 150–151; Vol-II: 432, 436
 Konrath, S., Vol-II: 648
 Kopper, B. A., Vol-II: 312, 427, 431
 Koppeschaar, H. P. F., Vol-I: 223, 321
 Korabik, K., Vol-II: 460, 503, 679
 Korchmaros, J., Vol-I: 195–196
 Korchmaros, J. N., Vol-I: 195, 199
 Kornman, C. L., Vol-II: 205
 Korol, D. L., Vol-I: 323
 Koropeczyj-Cox, T., Vol-I: 573
 Korszun, A., Vol-I: 241
 Kosler, J., Vol-II: 385
 Koslowsky, M., Vol-II: 460
 Koss, M. P., Vol-II: 137, 330, 579, 632, 685
 Kosslyn, S. M., Vol-I: 328
 Kosutic, I., Vol-II: 254, 269
 Kotre, J., Vol-I: 563
 Kouznetsova, N., Vol-I: 432
 Kovacs, M., Vol-II: 134
 Koval, J. J., Vol-II: 477
 Kowalski, K. C., Vol-II: 576
 Kowalski, R. M., Vol-II: 315
 Kowumaki, J. H., Vol-II: 295
 Koyi, H., Vol-II: 545
 Kozak, L. J., Vol-II: 520, 533
 Kozee, H. B., Vol-II: 161
 Koziej, J., Vol-I: 387
 Kozma, A., Vol-II: 318
 Kposowa, A. J., Vol-II: 485
 Kraemer, H., Vol-I: 86
 Kraemer, H. C., Vol-I: 86–87
 Krafka, C., Vol-II: 589
 Kraimer, M. L., Vol-II: 454
 Krajewski, H. T., Vol-II: 498, 502–503, 510
 Kral, M. J., Vol-I: 163
 Kramarae, C., Vol-I: 381–382, 385, 387–388, 393, 401
 Kramarow, E. A., Vol-II: 519
 Kramer, B. S., Vol-II: 527
 Kramer, D. A., Vol-I: 148–149
 Kramer, G. A., Vol-I: 321
 Kramer, L., Vol-II: 655
 Kramer, S., Vol-II: 480
 Krane, V., Vol-II: 569–570, 573–574, 577–578
 Krantz, D. S., Vol-I: 456
 Krassas, N. R., Vol-II: 171
 Kraus, L. A., Vol-I: 438
 Krauss, R. M., Vol-I: 438
 Kraut, R., Vol-II: 282, 602
 Kravetz, D., Vol-I: 30; Vol-II: 197–198
 Kravitz, R. L., Vol-II: 522
 Krekling, S., Vol-I: 319
 Krestan, J. A., Vol-II: 94–95, 102, 104, 255
 Krieger, N., Vol-I: 179; Vol-II: 120
 Kril, J. J., Vol-I: 244
 Kring, A. M., Vol-I: 242, 420, 432, 435, 442; Vol-II: 35
 Krishnan, H. A., Vol-II: 351, 456
 Krishnan, S. S., Vol-I: 347
 Krishnayya, S., Vol-I: 392
 Kroeber, A. L., Vol-I: 160
 Kroger, J., Vol-I: 528, 562–565
 Kroll, J. K., Vol-II: 95
 Kroner, T., Vol-I: 198
 Kroska, A., Vol-II: 68
 Krueger, J. L., Vol-II: 24
 Krug, E. G., Vol-II: 482
 Kruger, A., Vol-I: 241
 Kruger, D. J., Vol-II: 285–286
 Krugman, S., Vol-I: 432
 Kruijver, F., Vol-II: 116
 Kruijver, F. P. M., Vol-I: 224
 Krupa, M. H., Vol-I: 327
 Krupat, E., Vol-II: 522
 Krupp, D., Vol-I: 432
 Krysik, J., Vol-II: 604
 Ksansnak, K. R., Vol-I: 501
 Ku, L. C., Vol-I: 52, 137; Vol-II: 299
 Kubberød, E., Vol-I: 462–463
 Kuebli, J., Vol-II: 141
 Kuehl, T., Vol-I: 241
 Kuehne, V. S., Vol-I: 564
 Kufera, J., Vol-II: 483
 Kuga, M., Vol-I: 246
 Kuh, D., Vol-II: 165
 Kuhlman, J. S., Vol-I: 326
 Kuhn, A., Vol-I: 504
 Kuhn, D., Vol-I: 516, 528
 Kuhn, M., Vol-I: 218
 Kuhn, S. L., Vol-I: 267
 Kuhn, T., Vol-I: 82
 Kühnen, U., Vol-II: 449
 Kuijjer, R. G., Vol-II: 546, 548

- Kuiper, A. J., Vol-II: 119–120, 367
 Kulik, L., Vol-I: 572; Vol-II: 625, 627, 633
 Kulis, S., Vol-II: 625
 Kulka, R., Vol-II: 43
 Kulynych, J. J., Vol-I: 245
 Kumanyika, S. K., Vol-II: 160
 Kümmel, G., Vol-II: 691
 Kung, H. C., Vol-II: 228, 526, 542
 Kunter, M., Vol-II: 385
 Kuntsche, S., Vol-II: 480
 Kunz, K., Vol-I: 245
 Kupanoff, K., Vol-I: 536
 Kupersmidt, J., Vol-I: 397
 Kupersmidt, J. B., Vol-I: 397
 Kurdek, L., Vol-II: 411
 Kurdek, L. A., Vol-I: 64, 66; Vol-II: 285, 412
 Kuriansky, J. A., Vol-I: 571
 Kurilla, V., Vol-II: 204
 Kuring, J. K., Vol-II: 156–157, 172
 Kurita, J. A., Vol-II: 340
 Kurland, B., Vol-I: 307
 Kurokawa, M., Vol-I: 441
 Kuse, A. R., Vol-I: 221, 322
 Kushner, M. A., Vol-II: 599
 Küskü, F., Vol-II: 383, 391
 Kutchins, H., Vol-II: 105
 Kvale, S., Vol-I: 106
 Kwan, V. S. Y., Vol-II: 352
 Kwang, T., Vol-I: 92
 Kyllonen, P. C., Vol-I: 321
 Kyrejto, J. W., Vol-II: 576
- L**
- L'Hirondelle, N., Vol-I: 321, 328
 La Freniere, P., Vol-I: 511
 Labella, A. G., Vol-I: 544
 Laberge, S., Vol-II: 566
 Labouvie-Vief, G., Vol-I: 442, 561, 568–569
 LaBrecque, S. V., Vol-I: 537
 Lachlan, K., Vol-II: 167
 Lachman, M. E., Vol-I: 328
 Lader, D., Vol-II: 478
 Laessle, R. G., Vol-I: 456
 LaFleur, S. J., Vol-II: 340
 LaFrance, M., Vol-I: 84, 89, 194–195, 411, 419–420, 437–438; Vol-II: 21, 69, 71, 75–76, 338
 Lagan, H. D., Vol-I: 53
 Lagerspetz, K. M. J., Vol-II: 315
 Lago, T., Vol-II: 313
 Lagro-Janssen, A. L., Vol-II: 474
 Lahey, B. B., Vol-I: 547
 Lahiff, M., Vol-II: 619
 Lai, L., Vol-II: 342, 347
 Laird, J., Vol-I: 67; Vol-II: 255, 263
 Laird, N., Vol-II: 363
 Lajoie, S. P., Vol-I: 332
 Lajtha, A., Vol-I: 365
 Lakoff, R., Vol-I: 380–381, 383, 387
 Lal, S., Vol-I: 25
 Lalonde, R. N., Vol-II: 288
 Lalta, V., Vol-II: 453
 Lalumiere, M. L., Vol-II: 285
 Lam, K. S. L., Vol-II: 543
 Lam, L. T., Vol-II: 482
 Lam, M., Vol-II: 504
 Lamacz, M., Vol-II: 367
 LaMar, L., Vol-II: 361
 LaMay, M. L., Vol-I: 301
 Lamb, M. E., Vol-I: 362; Vol-II: 225, 383, 385
 Lamb, S., Vol-II: 95, 193
 Lambdin, J., Vol-I: 195
 Lambert, A. J., Vol-II: 340
 Lambert, M. J., Vol-II: 234
 Lambert, S. M., Vol-I: 568
 Lambert, S., Vol-II: 272
 Lambrey, S., Vol-I: 329
 Lamke, L. K., Vol-II: 296
 Lamon, S. J., Vol-I: 303, 531; Vol-II: 386
 Lancee, W., Vol-II: 95
 Landa, A., Vol-II: 347
 Landis, K. R., Vol-II: 140, 498
 Landrine, H., Vol-I: 105, 192; Vol-II: 95–96, 104, 195, 534
 Lane, J. M., Vol-I: 50, 53
 Lane, K. A., Vol-II: 265, 447
 Laner, M. R., Vol-II: 289–290, 298
 Lang, F. R., Vol-I: 566
 Langabeer, K. A., Vol-I: 68
 Lange, C., Vol-II: 325
 Langeland, W., Vol-II: 100
 Langer, E. J., Vol-II: 364
 Langer, S. J., Vol-II: 114, 119, 121–122, 125
 Langford, N. M., Vol-I: 328
 Langhout, R., Vol-II: 634
 Langhout, R. D., Vol-II: 429
 Langley-Evans, A. J., Vol-I: 246
 Langley-Evans, S. C., Vol-I: 246
 Langlois, J. A., Vol-II: 483
 Langlois, J. H., Vol-I: 143
 Langrock, A., Vol-I: 318
 Langton, R., Vol-I: 31–32
 Lannon, P., Vol-II: 623
 Lanphear, B. P., Vol-II: 482
 Lansford, J. E., Vol-I: 397
 Lanyon, L. J., Vol-I: 221
 Lanyon, R. I., Vol-II: 522
 Lanza, S., Vol-II: 389
 Lapchick, R., Vol-II: 566–567, 572–573
 Lapiere, L. M., Vol-II: 436
 LaPorte, R. E., Vol-I: 187
 Larkey, L. K., Vol-I: 185
 Larkins, A. G., Vol-II: 385
 Larose, S., Vol-II: 383
 Larsen, R. J., Vol-I: 434; Vol-II: 511

- Larsen, S., Vol-II: 474
 Larson, J., Vol-I: 386; Vol-II: 137
 Larson, L. M., Vol-II: 228, 235
 Larson, M., Vol-II: 645, 649
 Larson, R., Vol-II: 117
 Larson, R. W., Vol-I: 436, 536–537, 539–540, 544–545;
 Vol-II: 384
 Larsson, M., Vol-I: 248
 Larue, J., Vol-I: 326
 Laschever, S., Vol-I: 383–384
 Lasco, M. S., Vol-I: 225
 Lasky, B., Vol-II: 343
 Laszlo, A. C., Vol-I: 24
 Lather, P., Vol-I: 103, 106–107, 111, 403
 Latour, B., Vol-I: 194, 202
 Lau, B. H-B., Vol-I: 145–146
 Lau, H., Vol-II: 139
 Lau, S., Vol-I: 355
 Lau, T., Vol-II: 502
 Laub, J. H., Vol-I: 546
 Laumann, E. O., Vol-I: 478, 480; Vol-II: 321
 Launder, C., Vol-I: 53
 Laungani, P., Vol-I: 163
 Laurenceau, J. P., Vol-II: 294
 Lauriello, J., Vol-II: 532
 Laursen, B., Vol-I: 545
 Lautenbacher, S., Vol-I: 241
 Lautenschlager, G., Vol-I: 227
 Lauterbach, K. W., Vol-II: 543
 Laux, G., Vol-II: 519
 Lauzen, M. M., Vol-II: 644
 Lavezzary, E., Vol-II: 43
 Lavine, H., Vol-II: 659
 Lavish, L. A., Vol-I: 352
 Law, D. J., Vol-I: 322
 Lawless, P., Vol-II: 431
 Lawrence, A. A., Vol-II: 367
 Lawrence, M., Vol-II: 168
 Lawrence, M. A., Vol-I: 114, 260, 317, 497
 Lawrence-Lightfoot, S., Vol-I: 114
 Lawrenz, F., Vol-I: 531
 Lawson, D. M., Vol-II: 210
 Lawson, R., Vol-II: 187
 Lawton, C. A., Vol-I: 7, 317–332
 Layton, H. S., Vol-II: 646
 Lazar, M., Vol-I: 395, 403
 Lazarus, R., Vol-I: 146
 Lazarus, R. S., Vol-II: 432, 495–497, 499, 503–505,
 511, 550
 Le Resche, L., Vol-I: 241
 Le, J., Vol-I: 238, 241
 Le, V. N., Vol-II: 71
 Leadbeater, B. J., Vol-II: 134, 139
 Leader, D., Vol-II: 616
 Leahy, T., Vol-II: 579
 Leaper, C., Vol-I: 280–283, 397, 414, 512, 531, 536,
 538; Vol-II: 338
 Lear, M., Vol-II: 650
 Leary, D. E., Vol-I: 200, 202
 Lease, S., Vol-I: 67
 Leavy, P. L., Vol-I: 103, 113
 Leavy, P., Vol-I: 3; Vol-II: 3, 168
 LeBeau, L. S., Vol-I: 416–417, 444
 Leberman, S., Vol-II: 566
 Lebesis, M., Vol-II: 343
 LeBlanc, M. M., Vol-II: 431
 Lebolt, A., Vol-II: 141
 Leck, J. D., Vol-II: 436
 Leder, G. C., Vol-II: 383, 385
 Ledger, G., Vol-I: 354
 Lee, B. B., Vol-I: 237
 Lee, C. J., Vol-II: 485
 Lee, D., Vol-II: 424
 Lee, K., Vol-II: 436
 Lee, N., Vol-I: 204
 Lee, N. C., Vol-II: 541
 Lee, N. S., Vol-II: 288
 Lee, R. M., Vol-II: 194–195
 Lee, S., Vol-I: 307
 Lee, S. E., Vol-II: 362
 Lee, T., Vol-I: 11, 13, 194, 549
 Lee, Y., Vol-II: 165
 Leeb, B. F., Vol-II: 545
 LeeTiernan, S., Vol-II: 67
 Legare, C. H., Vol-I: 501, 506
 Lehavot, K., Vol-II: 340
 Lehman, A., Vol-II: 507
 Lehmann, W., Vol-I: 326
 Lehrke, S., Vol-I: 456
 Lehrner, J., Vol-I: 248
 Leiblum, S., Vol-I: 480–481
 Leichty, G., Vol-II: 171
 Leinbach, M. D., Vol-I: 504–505, 510
 Leisring, P. A., Vol-II: 230
 Leit, R. A., Vol-I: 90, 535; Vol-II: 160, 166–167, 172
 Leitenberg, H., Vol-I: 478
 Lekas, H. M., Vol-II: 371
 Lemieux, A., Vol-I: 203
 Lemieux, S., Vol-I: 457
 Lemmon, C. R., Vol-I: 458
 Lengua, L. J., Vol-II: 24, 27
 Lenney, E., Vol-I: 134
 Lennon, M., Vol-II: 414
 Lennon, R., Vol-I: 435
 Lenroot, R. K., Vol-I: 280
 Lensky, D. B., Vol-II: 50
 Lenskyj, H., Vol-II: 579
 Lensvelt-Mulders, G. J. L. M., Vol-II: 603
 Lent, R. W., Vol-II: 380, 383
 Lentz, E., Vol-II: 454
 Leo, R. A., Vol-II: 591, 596
 Leon, C., Vol-I: 329
 Leon, D. A., Vol-II: 481
 Leon, G. R., Vol-II: 161

- Leonard, K., Vol-II: 314
 Leonardelli, G. J., Vol-II: 352
 Leong, F. T. L., Vol-II: 231, 269
 Leong, H., Vol-I: 238
 Lepore, S. J., Vol-II: 550
 Leranath, C., Vol-I: 217
 LeResche, L., Vol-I: 241
 Lerman, H., Vol-II: 192
 Lerner, C., Vol-II: 566
 Lerner, H., Vol-I: 472
 Lerner, N., Vol-I: 439; Vol-II: 454
 Lerner, R. M., Vol-I: 326
 Leschied, A. W., Vol-I: 548
 Leslie, L. A., Vol-II: 8, 254–255, 260
 Lester, R., Vol-II: 50
 Lethbridge-Cejku, M., Vol-II: 525
 Letherby, G., Vol-I: 573
 Letourneau, K. J., Vol-I: 511
 Leung, A. K., Vol-II: 460
 Leung, K., Vol-I: 165, 167, 169–172
 Leung, M. L., Vol-I: 108
 Leupnitz, D. A., Vol-II: 191
 Leuty, M., Vol-I: 445
 Lev, A. I., Vol-II: 111, 114–115, 118–120, 122–123, 125, 367
 Levant, R., Vol-I: 43, 46; Vol-II: 522
 Levant, R. F., Vol-I: 45, 52, 137, 139, 150; Vol-II: 113, 123, 221–225, 228–229, 233–234, 238
 LeVay, S., Vol-I: 217, 223, 225, 483
 Levenson, R. W., Vol-I: 437, 440, 443; Vol-II: 265, 499
 Lever, J., Vol-II: 157
 Levi-Minzi, M., Vol-I: 53
 Levin, J., Vol-I: 396–398
 Levin, R., Vol-II: 527
 Levine, E. A., Vol-II: 528
 Levine, M. E., Vol-I: 245
 Levine, M. P., Vol-I: 86–87, 97, 318; Vol-II: 156, 165–166, 168, 658
 Levine, R., Vol-II: 289
 Levine, S. C., Vol-I: 318, 326
 Levine, T., Vol-II: 297
 Levinson, D., Vol-I: 167
 Levinson, M. H., Vol-I: 44
 Levinson, W., Vol-II: 523
 Levitt, S., Vol-II: 339
 Levy, B., Vol-II: 285
 Levy, G. D., Vol-I: 510, 515; Vol-II: 340
 Levy, L. J., Vol-I: 321
 Levy, S. R., Vol-I: 194; Vol-II: 370
 Lewald, J., Vol-I: 244
 Lewin, C., Vol-I: 323
 Lewin, M., Vol-I: 149; Vol-I: 366
 Lewins, A., Vol-I: 123
 Lewinsohn, P., Vol-II: 142
 Lewinsohn, P. M., Vol-I: 543–544
 Lewis, C., Vol-I: 304
 Lewis, C. D., Vol-I: 349
 Lewis, I., Vol-I: 236
 Lewis, K. N., Vol-I: 196
 Lewis, L. L., Vol-II: 447–448
 Lewis, M., Vol-II: 156
 Lewis, R. J., Vol-II: 509
 Lewis, S. I., Vol-II: 430
 Lewis, S. M., Vol-I: 239
 Lex, U., Vol-I: 245
 Leymann, H., Vol-II: 424
 Li, G., Vol-II: 482–483
 Li, M. Y., Vol-II: 320
 Li, Q., Vol-II: 320
 Li, W. L., Vol-I: 10
 Li, W., Vol-II: 553
 Liben, L. S., Vol-I: 282, 318–320, 323–324, 500, 503, 508, 515–516; Vol-II: 385
 Liburd, L. C., Vol-II: 549
 Lichtenstein, M., Vol-I: 196
 Lichter, D., Vol-II: 405, 407, 409
 Liden, R. C., Vol-II: 454
 Lieberman, M. A., Vol-II: 143
 Liebert, R. S., Vol-I: 50
 Liebler, A., Vol-I: 412–413
 Lieblich, A., Vol-I: 116
 Liebman, M., Vol-I: 457
 Lievens, F., Vol-II: 71
 Light, K. C., Vol-I: 235, 436
 Lightdale, J. R., Vol-II: 312
 Lightfoot, C., Vol-I: 114, 319
 Lilienfeld, S. O., Vol-II: 96
 Liller, K. D., Vol-II: 319
 Lillis, J., Vol-II: 165
 Lim, S., Vol-II: 429, 436–437
 Lima, L., Vol-II: 454
 Lin, C. A., Vol-II: 662
 Lin, E. J., Vol-I: 170
 Lin, J., Vol-II: 154, 659
 Lin, K., Vol-II: 646
 Lin, M. H., Vol-II: 352
 Lincoln, A., Vol-II: 483
 Lincoln, Y. S., Vol-I: 106, 122
 Lind, A., Vol-II: 120
 Lindberg, L., Vol-II: 599
 Lindberg, S. M., Vol-I: 87, 262, 299, 531, 549; Vol-II: 142, 154, 386
 Linder, M., Vol-II: 100
 Lindgren, R., Vol-I: 246
 Lindorff, M., Vol-II: 506, 512
 Lindsay, J. J., Vol-I: 413
 Lindsay, K., Vol-II: 77
 Lindstedt, K., Vol-I: 515
 Lindstrom, P., Vol-I: 225, 249
 Linebarger, D. L., Vol-I: 505
 Lingard, B., Vol-II: 379
 Linimon, D., Vol-I: 383; Vol-II: 340
 Link, B. G., Vol-II: 147

- Linn, M. C., Vol-I: 262–263, 299–300, 305, 318–320, 331, 569; Vol-II: 386
 Linney, J. A., Vol-II: 633
 Linsenmeier, J. A. W., Vol-I: 512
 Linville, D., Vol-II: 258
 Linz, D. G., Vol-II: 660
 Lipford-Sanders, J., Vol-II: 205
 Lipinski, J. P., Vol-II: 155
 Liposvsky, J. A., Vol-II: 195
 Lippa, R., Vol-I: 134, 143, 150, 192
 Lippa, R. A., Vol-I: 193, 309, 312; Vol-II: 21–22, 27, 323, 362
 Lips, H., Vol-I: 34, 364–366
 Lips, H. M., Vol-II: 91, 95, 104, 379, 388
 Lipsey, M. W., Vol-I: 477
 Lisak, D., Vol-I: 48; Vol-II: 230, 236
 Lisoway, A., Vol-I: 264, 321
 Litosseliti, L., Vol-I: 388, 402–403
 Little, A. C., Vol-II: 286
 Little, J. K., Vol-I: 503
 Little, M., Vol-I: 328
 Little, T. D., Vol-I: 546
 Littlefield, M. B., Vol-I: 513
 Litwiller, R. M., Vol-I: 323
 Liu, F., Vol-I: 317, 327
 Liu, L. L., Vol-I: 271
 Liu, W. M., Vol-I: 53; Vol-II: 223, 226–227, 229, 232–234
 Liu, Z., Vol-II: 646
 Lively, K. J., Vol-I: 440
 Livezey, A., Vol-II: 579
 Livingston, N., Vol-I: 391
 Livingston, R. W., Vol-II: 451
 Lloyd, G., Vol-I: 32
 Lo, V., Vol-II: 653
 Loaiza, S., Vol-I: 459
 Lobel, T. E., Vol-I: 512
 Lobliner, D. B., Vol-I: 516
 Löbmann, R., Vol-II: 484
 LoCicero, A., Vol-I: 110
 Lockard, J., Vol-II: 270
 Lockford, L., Vol-I: 115
 Lockheed, M. E., Vol-II: 339, 346
 Lodhi, P. H., Vol-II: 26–27
 Lodi-Smith, J., Vol-I: 571
 Loeber, C. C., Vol-II: 340
 Loevinger, J., Vol-I: 560
 Logan, K., Vol-I: 289
 Logue, A. W., Vol-I: 463
 Lohaus, A., Vol-I: 503
 Lohman, D. F., Vol-I: 321
 Lohr, B. A., Vol-II: 371
 Lomax, E., Vol-I: 21
 Lombard, J., Vol-I: 248
 Lombardi, E. L., Vol-II: 120
 Lombardi, W. J., Vol-I: 196
 Lombardo, J. P., Vol-I: 536
 Lomskey-Feder, E., Vol-II: 674
 Loney, B. R., Vol-II: 74
 Long, B. C., Vol-II: 575
 Long, R. G., Vol-I: 330
 Longcope, C., Vol-I: 227
 Longhurst, J. G., Vol-II: 137
 Longino, H., Vol-I: 103
 Longmore, M. A., Vol-II: 407
 Longpré, S., Vol-I: 320
 Lonner, W. J., Vol-I: 162, 164, 166, 170, 172
 Loo, C., Vol-II: 616
 Lopez, E., Vol-II: 160
 Lopez, S., Vol-II: 269
 López-Escámez, J. A., Vol-I: 243
 Lopiano, D. A., Vol-I: 549
 Lorant, V., Vol-II: 101
 Lorber, J., Vol-II: 115, 123, 225, 406
 Lorde, A., Vol-I: 35, 204; Vol-II: 214
 Lorenz, F. O., Vol-I: 544; Vol-II: 139
 Lorenz, J., Vol-I: 243
 Loriaux, D. L., Vol-I: 226
 Loring-Meier, S., Vol-I: 323
 Lorion, R. P., Vol-II: 619, 635
 Lorr, M., Vol-II: 324
 Lott, B., Vol-I: 382, 401; Vol-II: 101
 Lotz, A., Vol-II: 650
 Louderback, L. A., Vol-II: 361
 Loudermilk, S., Vol-II: 570
 Louis, T., Vol-II: 543
 Lounsbury, J., Vol-II: 229, 616
 Lourenco, S. F., Vol-I: 326
 Lourens, P. F., Vol-II: 483
 Louse, G., Vol-I: 265
 Lovas, G. S., Vol-II: 314
 Lövdén, M., Vol-I: 248, 329
 Love, L. R., Vol-I: 438
 Lovejoy, M., Vol-II: 160
 Lovelace, K., Vol-I: 328
 Lövgren, M., Vol-II: 545
 Lovrinic, J. H., Vol-I: 243
 Lowe, P. A., Vol-I: 569–570
 Lowell, E. L., Vol-II: 41
 Lowenstein, R. J., Vol-II: 209
 Lowery, B. S., Vol-I: 497; Vol-II: 77
 Lowes, J., Vol-II: 159, 165
 Lowinger, R., Vol-II: 230
 Lowry, D. T., Vol-II: 644, 646
 Loxton, D., Vol-II: 484
 Lozano, R., Vol-II: 482
 Lu, T. G. C., Vol-II: 32
 Lubinski, D., Vol-I: 14, 135, 310, 317; Vol-II: 15, 386
 Lubinski, D. S., Vol-I: 310
 Lucas, J. W., Vol-II: 518
 Lucas, K., Vol-II: 650–651, 657
 Lucas, R. E., Vol-I: 431
 Luce, C. B., Vol-II: 453
 Lucey, A. B., Vol-II: 578

- Luchetta, T., Vol-I: 195, 372
 Luciano, L., Vol-II: 160, 166, 169–170, 172
 Ludolph, P., Vol-II: 95
 Ludwig, A. M., Vol-I: 345
 Lueck, M., Vol-II: 95
 Luecke-Aleksa, D., Vol-I: 511
 Luhtanen, R., Vol-I: 496–497
 Lumley, M. A., Vol-I: 442
 Lund, M., Vol-II: 217
 Lunde, C., Vol-II: 156, 165
 Lundquist, L., Vol-I: 434, 438
 Lundy, A., Vol-II: 44
 Lunt, I., Vol-I: 541
 Luo, L., Vol-II: 619
 Lupton, M. J., Vol-II: 169
 Lurie, N., Vol-II: 532
 Lurye, L. E., Vol-I: 500–501, 509, 515
 Lusterman, D. D., Vol-II: 256
 Lutgendorf, S. K., Vol-II: 553
 Luttrell, W., Vol-I: 115
 Lutz, S. E., Vol-I: 513
 Lybomirsky, S., Vol-II: 141
 Lydon, J. E., Vol-II: 294
 Lye, D., Vol-II: 410, 413
 Lykes, M. B., Vol-I: 103, 108, 118
 Lynam, D., Vol-I: 548
 Lynch, C. I., Vol-II: 661
 Lynch, J. E., Vol-I: 91
 Lynch, L., Vol-I: 1; Vol-II: 1
 Lynch, M., Vol-II: 414
 Lynch, M. E., Vol-I: 530; Vol-II: 389
 Lyness, K. S., Vol-II: 448, 455, 457
 Lynn, J., Vol-II: 529
 Lynn, R., Vol-I: 9, 301, 304, 306; Vol-II: 27
 Lyons, A., Vol-I: 35
 Lyons, A. C., Vol-II: 477
 Lyons, J., Vol-II: 684–686
 Lyons, N., Vol-I: 105
 Lyons, P. C., Vol-II: 326
 Lyons, P. M., Vol-I: 458–459
 Lyons, T., Vol-II: 385
 Lytton, H., Vol-II: 390
 Lyubelsky, J., Vol-II: 235
 Lyubomirsky, S., Vol-II: 144
- M**
- Maas, C. J. M., Vol-II: 603
 Maass, A., Vol-I: 433
 Maberly, K. J., Vol-I: 328
 Mac Iver, D., Vol-II: 388
 Macafee, C., Vol-II: 327
 Macari, S., Vol-I: 509
 Maccoby, E., Vol-I: 193, 396
 Maccoby, E. E., Vol-I: 28, 88, 260, 280, 496, 498, 500, 506, 511, 514–515, 527, 532, 536, 538–539, 541, 544; Vol-II: 282, 313, 322–323, 326
 Maccoby, E. M., Vol-I: 193, 240, 298, 302, 317, 322
 MacCorquodale, P., Vol-II: 290
 MacDermid, S., Vol-I: 563, 570–571; Vol-II: 411
 MacDermid, S. M., Vol-I: 571
 MacDiarmid, J. I., Vol-I: 462
 MacDonald, G., Vol-II: 288
 Macefield, V. G., Vol-I: 243
 Macera, C. A., Vol-II: 567
 MacFadden, A., Vol-I: 328
 MacGeorge, E. L., Vol-II: 253
 MacGregor, M. W., Vol-I: 431
 MacInnis, D., Vol-II: 46
 Macintyre, S., Vol-II: 474–475
 Macionis, J. J., Vol-I: 160
 Mack, D. E., Vol-II: 574, 576
 Mackay, J., Vol-II: 541–542
 MacKenzie, E. J., Vol-II: 482
 Mackey, W. C., Vol-I: 49
 MacKinnon, C., Vol-I: 387
 MacLean, A. B., Vol-I: 223
 MacLeod, C. M., Vol-I: 238
 Macleod, C., Vol-I: 109
 MacLusky, N. J., Vol-I: 217
 MacPherson, G. M., Vol-I: 318
 MacPherson, J., Vol-I: 500
 Macrae, C. N., Vol-II: 287
 Madden, L., Vol-II: 652
 Maddox, K. B., Vol-II: 650
 Maddux, W. W., Vol-II: 460
 Madon, S., Vol-I: 437; Vol-II: 231, 340, 360, 449
 Madronio, C., Vol-I: 180
 Madsen, K. M., Vol-II: 295, 297, 598
 Madson, L., Vol-II: 294
 Maess, B., Vol-I: 244
 Maggs, J., Vol-II: 409
 Magley, V. J., Vol-II: 11, 423–437, 685
 Magnée, T., Vol-I: 239
 Magnusson, D., Vol-I: 543
 Magovcevic, M., Vol-II: 135, 137, 226
 Mahadzir, M., Vol-I: 328
 Mahaffey, A. L., Vol-II: 371
 Mahalik, J. R., Vol-I: 15, 51–53, 55, 138–139, 150, 535; Vol-II: 15, 117, 135, 137, 203, 212, 224, 226, 228–229, 234–236, 241, 267, 340, 528, 545–546
 Maher, L., Vol-II: 487
 Maher, M. J., Vol-II: 371
 Maier, G., Vol-II: 48
 Maines, D. R., Vol-II: 393
 Maing, D. M., Vol-II: 117
 Maio, G. R., Vol-II: 656
 Maixner, W., Vol-I: 241
 Majerovitz, S. D., Vol-II: 501, 551
 Majied, K., Vol-II: 104
 Major, B., Vol-I: 84, 194, 197; Vol-II: 30, 67, 296, 631
 Majors, R. G., Vol-II: 227
 Majumdar, S. R., Vol-II: 530
 Mak, T., Vol-II: 646
 Makar, R. O., Vol-I: 329

- Makhijani, M. G., Vol-II: 343–344, 351, 450, 457, 674, 678
 Maki, P. M., Vol-I: 223–224
 Makkar, J. K., Vol-II: 160
 Makoul, G., Vol-II: 523
 Malafi, T. N., Vol-II: 292
 Malamuth, N. M., Vol-I: 201; Vol-II: 281, 660
 Malanchuk, O., Vol-I: 497; Vol-II: 384
 Malcolm, J. P., Vol-II: 362
 Malenchuk, O., Vol-II: 573
 Malin, E. L., Vol-I: 323
 Malinowski, B., Vol-I: 159, 162, 167
 Malinowski, J. C., Vol-I: 328–329
 Malkin, A. R., Vol-II: 648
 Malle, B. F., Vol-II: 362
 Malley, J., Vol-I: 458
 Malley-Morrison, K., Vol-II: 317–319
 Mallucchi, L., Vol-I: 496
 Malone, B. E., Vol-I: 413
 Malone, K. R., Vol-II: 671
 Maloney, N., Vol-II: 526
 Malouf, D., Vol-II: 114, 368
 Malouf, M. A., Vol-I: 219
 Malson, H., Vol-I: 117
 Malterud, K., Vol-II: 546, 549
 Maltz, D., Vol-I: 385–386, 389
 Mancl, L., Vol-I: 241
 Mandel, H., Vol-II: 446
 Mangalparsad, R., Vol-II: 160
 Mangun, G. R., Vol-I: 222
 Mani, L., Vol-II: 292
 Manigart, P., Vol-II: 673, 691
 Manke, B. A., Vol-I: 143
 Mann, V. A., Vol-I: 222, 326
 Manne, S., Vol-II: 501
 Manning, J. T., Vol-I: 225, 324
 Manning, V., Vol-II: 195
 Mannix, L. M., Vol-II: 167
 Mannon, S., Vol-II: 413
 Mannon, S. E., Vol-II: 415
 Manolio, A., Vol-II: 482
 Mansfield, A. F., Vol-I: 501; Vol-I: 53
 Mansfield, E. D., Vol-II: 50
 Mansfield, P., Vol-I: 485
 Mansfield, P. K., Vol-I: 362
 Manstead, A., Vol-II: 21
 Manstead, A. S. R., Vol-I: 430, 434–435, 441–442
 Manthei, R. J., Vol-II: 242
 Mantle, D., Vol-I: 393
 Manuck, S. B., Vol-I: 442
 Manuel, T., Vol-II: 453–454
 Maple, S. A., Vol-II: 47, 390
 Mar'i, S. K., Vol-I: 347
 Maracek, J., Vol-I: 382–383
 Marantz, S. A., Vol-I: 501
 Marcia, J., Vol-I: 528
 Marcia, J. E., Vol-I: 152, 562
 Marcus, G., Vol-I: 115
 Marcus, H., Vol-I: 503, 508
 Marcus, S. C., Vol-II: 519
 Marecek, J., Vol-I: 20, 29–33, 106, 193, 197–198, 381, 387; Vol-II: 64, 66–67, 83, 117, 197–198
 Mares, M., Vol-II: 662
 Margulis, S. T., Vol-II: 326
 Marin, A. J., Vol-II: 684
 Marin, B., Vol-II: 301
 Marin, B. V., Vol-II: 145
 Marin, T., Vol-II: 497
 Marina, N., Vol-I: 6, 133–152
 Markell, M., Vol-I: 516
 Markman, H. J., Vol-II: 268
 Markovic, N., Vol-I: 187
 Markowitz, F., Vol-I: 63
 Marks, A. C., Vol-I: 484
 Marks, J. P. G., Vol-II: 407
 Marks, L. I., Vol-II: 229
 Marks, N. F., Vol-II: 326, 415
 Marks, S. R., Vol-I: 571
 Markstrom-Adams, C., Vol-I: 516, 531
 Markula, P., Vol-II: 576
 Markus, E. J., Vol-I: 328
 Markus, H., Vol-II: 158, 643
 Markus, H. R., Vol-I: 441; Vol-II: 26, 66
 Marlowe, C. M., Vol-II: 648
 Marlowe, D., Vol-II: 602
 Marmot, M., Vol-II: 475, 482
 Marotta, N., Vol-I: 243
 Marquart, J., Vol-II: 594
 Marra, M., Vol-I: 394, 395
 Marrett, C. B., Vol-I: 284
 Marsh, H. W., Vol-I: 288; Vol-II: 31–33, 389
 Marshall, B. L., Vol-I: 567–568
 Marshall, J., Vol-I: 10, 106; Vol-II: 679
 Marshall, L. L., Vol-II: 312
 Marshall, N. L., Vol-I: 539, 116
 Marshall, P., Vol-II: 228
 Marshall, T. C., Vol-II: 281–301
 Marsiglia, F., Vol-II: 625
 Marske, A. L., Vol-II: 167, 658
 Martell, R. F., Vol-II: 346, 448
 Martin, A. J., Vol-I: 219, 288; Vol-II: 379
 Martin, C., Vol-II: 368
 Martin, C. E., Vol-I: 66, 476
 Martin, C. K., Vol-I: 456–457
 Martin, C. L., Vol-I: 84, 495, 500–501, 503–504, 508, 510–511, 514–516, 531; Vol-II: 360, 387
 Martin, C. M., Vol-II: 340
 Martin, D., Vol-II: 588
 Martin, D. J., Vol-I: 244
 Martin, D. M., Vol-I: 223, 249
 Martin, E., Vol-I: 117, 201–202, 362; Vol-II: 170
 Martin, J., Vol-II: 452
 Martin, J. I., Vol-II: 114, 119, 121–122, 125
 Martin, L. L., Vol-I: 446

- Martin, P. R., Vol-I: 237
 Martin, P. Y., Vol-II: 340, 452
 Martin, R., Vol-II: 347
 Martin, R. R., Vol-II: 338–339
 Martin, S. B., Vol-II: 229
 Martin, T., Vol-II: 27
 Martin, T. A., Vol-II: 26
 Martin-Baro, I., Vol-I: 35
 Martindale, C., Vol-I: 351
 Martinez, D., Vol-I: 65, 160, 166, 170–171
 Martinez, E., Vol-II: 155
 Martinez, R., Vol-II: 97
 Martinko, M. J., Vol-II: 427, 431
 Martino, S. C., Vol-I: 547
 Martino, W., Vol-I: 280, 286, 291; Vol-II: 379
 Martins, Y., Vol-I: 98; Vol-II: 156–157, 172, 659
 Martyna, W., Vol-I: 195
 Marx, D. B., Vol-I: 93, 259
 Marx, F., Vol-II: 576
 Marx, R., Vol-II: 120–122
 Masaki, S., Vol-I: 222, 326
 Mashoodh, R., Vol-I: 226
 Maslach, C., Vol-I: 172
 Maslow, A., Vol-II: 56
 Maslow, A. H., Vol-I: 346, 352
 Mason, A., Vol-II: 50, 53
 Mason, C., Vol-II: 620
 Mason, J. L., Vol-II: 63–83
 Mason, K. L., Vol-II: 320
 Massa, L. J., Vol-I: 327
 Massey, J., Vol-II: 137
 Masson, P., Vol-I: 568
 Mast, M. S., Vol-I: 8, 411–422, 438; Vol-II: 8, 324–325, 338
 Masters, M. S., Vol-I: 318–319
 Masters, W., Vol-II: 190
 Masters, W. H., Vol-I: 474, 486
 Mastro, D. E., Vol-II: 644, 646, 648
 Mastropieri, M. A., Vol-II: 385
 Masuda, A., Vol-I: 243
 Matarazzo, S., Vol-I: 239
 Mathason, L., Vol-I: 332
 Matheson, G., Vol-II: 409
 Mathews, C., Vol-I: 67
 Mathews, V. P., Vol-I: 67
 Mathy, R. M., Vol-II: 113
 Matkin, G. S., Vol-I: 93
 Maton, K. I., Vol-I: 531
 Matschiner, M., Vol-II: 342
 Matsuda, H., Vol-I: 330
 Matsuda, S., Vol-II: 623
 Matsumoto, D., Vol-I: 432, 440–441; Vol-II: 324
 Matsunami, H., Vol-I: 248
 Matthews, G., Vol-I: 439
 Matthews, L., Vol-II: 619
 Matthews, M. H., Vol-I: 307, 330
 Matthews, R. A., Vol-II: 203, 429
 Mattis, J. S., Vol-I: 150; Vol-II: 226
 Mattison, A., Vol-I: 67
 Mattson, S. L., Vol-I: 220
 Matula, K. E., Vol-I: 562
 Mau, W. C., Vol-I: 304, 306; Vol-II: 383
 Maughan, B., Vol-I: 548
 Maume, D., Vol-II: 406; Vol-II: 482
 Maume, D. J. Jr., Vol-II: 337, 446
 Maurer, B., Vol-I: 202
 May, J. G., Vol-I: 8, 245, 345, 495–518
 May, K. E., Vol-II: 348
 Mayer, J. D., Vol-I: 439
 Mayer, K. H., Vol-II: 136
 Mayer, R. E., Vol-I: 327
 Mayes, S., Vol-II: 133, 290
 Maylor, E. A., Vol-I: 225
 Maynard, A. E., Vol-II: 66
 Mayring, P., Vol-I: 111
 Mays, V., Vol-I: 69
 Mays, V. M., Vol-I: 63, 65, 480; Vol-II: 103, 135, 138, 144, 224, 486
 Mazerolle, P., Vol-II: 329
 Mazure, C. M., Vol-II: 136–137
 Mazzella, R., Vol-I: 567
 Mazzeo, J., Vol-I: 220
 McAdams, D., Vol-I: 116
 McAdams, D. P., Vol-I: 563–564, 567; Vol-II: 42, 49–51, 54
 McAlinden, F., Vol-I: 381
 McAndrew, F., Vol-I: 398–399
 McAnnally, L., Vol-II: 416
 McAuley, E., Vol-II: 573
 McAuliffe, T. L., Vol-I: 487
 McAuslan, P., Vol-II: 284, 631
 McBey, K., Vol-II: 338
 McBurney, D. H., Vol-I: 323
 McCabe, M., Vol-II: 161, 163, 165
 McCabe, M. P., Vol-I: 542; Vol-II: 156, 165, 168, 173
 McCaffree, K., Vol-II: 624
 McCaffrey, D., Vol-I: 547
 McCall, D. T., Vol-II: 531
 McCallister, S. G., Vol-II: 574
 McCann, C., Vol-II: 672, 674
 McCann, T., Vol-I: 463
 McCarthy, M., Vol-II: 619
 McCarthy, P., Vol-II: 203
 McCartney, K., Vol-I: 87–88
 McCarty, M. J., Vol-I: 463
 McCaughan, E., Vol-II: 545
 McCaughy, M., Vol-I: 202
 McCauley, C., Vol-II: 169
 McCauley, C. D., Vol-II: 455
 McClarty, K. L., Vol-II: 31
 McClelland, D., Vol-II: 46
 McClelland, D. C., Vol-I: 571; Vol-II: 41–42, 44–46, 49, 51, 54
 McClennen, J. C., Vol-II: 631

- McClintock, M. K., Vol-I: 248
 McClive, T., Vol-I: 368
 McClure, E. B., Vol-I: 411, 414, 419–420, 438
 McConahay, J. B., Vol-I: 516
 McConnell, A. R., Vol-I: 433
 McConnell-Ginet, S., Vol-I: 390, 404
 McCormick, C. M., Vol-I: 227
 McCoy, N. L., Vol-I: 481
 McCrae, R. M., Vol-II: 81
 McCrae, R. R., Vol-I: 166, 170, 442, 560; Vol-II: 25–26, 81, 447
 McCray, A. D., Vol-I: 284
 McCreary, D. R., Vol-I: 1–15, 53, 59, 98, 121, 136, 143, 145, 220, 222, 535, 544, 567–568; Vol-II: 1–14, 99, 155, 157–161, 167, 170, 340, 360, 478, 522, 543, 659, 688
 McDaniel, A. K., Vol-II: 286, 290
 McDaniel, M. A., Vol-I: 270, 323
 McDaniel, S. H., Vol-II: 255
 McDaniels, J. S., Vol-I: 68
 McDavis, R., Vol-II: 231
 McDermott, C., Vol-I: 429, 447
 McDermott, R. J., Vol-II: 319
 McDonagh, D., Vol-II: 201
 McDonald, K., Vol-I: 397; Vol-II: 627
 McDonald, L. M., Vol-II: 503
 McDonald, T. W., Vol-I: 148; Vol-II: 344
 McDowell, M. A., Vol-II: 543
 McDowell, T., Vol-II: 254, 269
 McElroy, J. C., Vol-II: 452
 McEnally, M., Vol-II: 340, 346
 McEnery, T., Vol-I: 391
 McEntee, D. J., Vol-II: 574
 McEwen, B. S., Vol-I: 215, 222, 226–227
 McFadden, D., Vol-I: 243
 McFadyen, J., Vol-II: 686
 McGarvey, S. T., Vol-II: 160
 McGaughey, D., Vol-II: 111
 McGee, J. S., Vol-I: 244
 McGeorge, C. R., Vol-II: 271
 McGeorge, P., Vol-I: 517
 McGlone, F., Vol-I: 246
 McGlone, J., Vol-I: 324, 327
 McGoldrick, M., Vol-II: 255, 263
 McGonagle, K. A., Vol-II: 134
 McGowan, J. F., Vol-I: 224
 McGrath, D., Vol-I: 380; Vol-II: 339
 McGrath, E., Vol-II: 97
 McGue, M., Vol-II: 431
 McGuffog, I., Vol-II: 472
 McGuinness, D., Vol-I: 236, 244
 McGuire, C. V., Vol-I: 497
 McHale, S. M., Vol-I: 143, 501, 511, 536–537, 544; Vol-II: 296, 411, 413
 McHugh, M., Vol-I: 193–194; Vol-II: 100, 614, 633
 McHugh, M. C., Vol-I: 8, 88, 361–374, 379–404, 568; Vol-II: 312
 McHugh, P., Vol-II: 119
 McHugh, T-L. F., Vol-I: 112, 120
 McKay, M., Vol-I: 289
 McKee, B., Vol-I: 44; Vol-II: 672, 674
 McKeever, P., Vol-II: 95
 McKeever, T. M., Vol-II: 530
 McKeever, W. F., Vol-I: 239, 325
 McKelley, R. A., Vol-I: 138; Vol-II: 229
 McKenna, H., Vol-II: 545
 McKenna, K. Y. A., Vol-II: 327, 662
 McKenna, W., Vol-I: 112, 192, 260
 McKenzie, K. J., Vol-I: 324
 McKeown, R. E., Vol-II: 485
 McKillop, E., Vol-I: 328
 McKinlay, J. B., Vol-I: 227
 McKinley, J. C., Vol-II: 78
 McKinley, N. M., Vol-I: 91, 139; Vol-II: 154, 156, 171
 McKinley, W. O., Vol-II: 165
 McKinney, C. W., Vol-II: 385
 McKinney, K., Vol-II: 299, 425
 McKinnon, L., Vol-II: 75
 McKown, C., Vol-I: 284
 McLaren, L., Vol-II: 165
 McLaughlin, K. A., Vol-II: 136, 141, 144–145
 McLaughlin, M. L., Vol-I: 393; Vol-II: 295
 McLaughlin-Volpe, T., Vol-I: 496
 McLean, K., Vol-II: 365
 McLeod, J. D., Vol-II: 140, 498, 501–502
 McMahan, A. M., Vol-II: 339
 McMahan, L. F. Jr., Vol-II: 529
 McMahan, L. R., Vol-I: 25
 McMahan, M. A., Vol-I: 324
 McMaster, L. E., Vol-II: 320
 McMillan, J., Vol-I: 380, 390
 McMillan, J. R., Vol-II: 339
 McMillan, K. K., Vol-I: 138; Vol-II: 522
 McMillen, J., Vol-II: 621
 McMullen, L. M., Vol-II: 338
 McMullen, S., Vol-I: 486
 McNair, R., Vol-II: 263
 McNall, K., Vol-I: 431
 McNally, J., Vol-II: 570
 McNamara, A. M., Vol-II: 530
 McNamara, W., Vol-II: 50
 McNaughton-Cassill, M., Vol-II: 414
 McNay, L., Vol-II: 169
 McNulty, J. L., Vol-II: 76
 McNutt, L., Vol-II: 195
 McPherson, D., Vol-II: 411
 McPherson, M., Vol-II: 480
 McQueen, A., Vol-II: 544
 McQueen, G., Vol-I: 203
 McRitchie, D. A., Vol-I: 244
 McWhirter, D., Vol-I: 67
 McWhirter, E. H., Vol-II: 105, 383
 McWilliams, J. M., Vol-II: 518
 Mead, M., Vol-I: 159, 162, 167, 173, 259

- Meade, A. C., Vol-I: 220
 Meagher, M. W., Vol-I: 242
 Meaney, M. J., Vol-I: 217
 Meara, E., Vol-II: 518
 Meares, E., Vol-II: 616
 Mears, D., Vol-II: 607
 Mease, A. L., Vol-II: 269
 Meck, W. H., Vol-I: 221, 323
 Medin, D. L., Vol-I: 199, 506
 Medina-Mora, M. E. V., Vol-I: 165
 Mednick, M. T., Vol-I: 193, 198
 Mednick, M. T. S., Vol-I: 27
 Meece, J. L., Vol-I: 283; Vol-II: 379–381, 385, 388
 Meehan, A. M., Vol-I: 327
 Meehl, P. E., Vol-II: 588
 Meeker, B. F., Vol-II: 345
 Meert, S. K., Vol-II: 460
 Megens, J., Vol-I: 224
 Megens, J. A., Vol-II: 113
 Meginnis-Payne, K. L., Vol-II: 201–202
 Meh, D., Vol-I: 240
 Mehl, M., Vol-I: 391
 Mehl, M. R., Vol-II: 20
 Mehra, D., Vol-I: 347
 Mehrabian, A., Vol-I: 412
 Meier, J., Vol-II: 414
 Meikle, D. B., Vol-I: 269
 Meilman, P. W., Vol-I: 528
 Meissen, G., Vol-II: 633
 Meissner, H. I., Vol-II: 544
 Meissner, K., Vol-I: 245
 Mellinger, T., Vol-II: 223
 Mellon, S., Vol-II: 551
 Melnick, M. J., Vol-II: 576
 Meltzer, A. L., Vol-II: 11, 13, 517–535
 Menaged, M., Vol-I: 226
 Menaghan, E. G., Vol-II: 143
 Menard, L., Vol-II: 98
 Menard, W., Vol-II: 162
 Mendelson, M., Vol-II: 144
 Mendoza-Denton, R., Vol-II: 67, 141
 Meneely, J., Vol-I: 353
 Mentzel, H. J., Vol-I: 243
 Menvielle, E. J., Vol-II: 118
 Menzie, C. R., Vol-I: 392, 402
 Merighi, J. R., Vol-II: 522
 Merlis, S. R., Vol-II: 258
 Merluzzi, T. V., Vol-II: 290
 Merrell, K. W., Vol-II: 32
 Merriwether, A., Vol-II: 171, 660
 Merten, J., Vol-I: 441, 544
 Merton, S., Vol-I: 397
 Mervis, G., Vol-I: 196
 Meslé, F., Vol-II: 472
 Mesquita, B., Vol-I: 440; Vol-II: 432
 Messer, S. B., Vol-II: 234
 Messerschmidt, J. W., Vol-I: 51; Vol-II: 225–227
 Messineo, M., Vol-II: 647–648
 Messman, S. J., Vol-II: 283
 Messner, M., Vol-I: 112; Vol-II: 225
 Messner, M. A., Vol-I: 112; Vol-II: 571–572, 577–578
 Metalsky, G. I., Vol-II: 142
 Metheny, E., Vol-II: 570
 Metsapelto, R., Vol-II: 27
 Metts, S., Vol-II: 297, 326
 Metz, H., Vol-II: 230
 Metz, L. M., Vol-II: 546
 Metzl, J. M., Vol-II: 97
 Metzler, J., Vol-I: 221, 238, 318; Vol-II: 48
 Meyenburg, B., Vol-II: 112, 119
 Meyenn, B., Vol-I: 280, 286, 291
 Meyer, G. J., Vol-II: 63, 65
 Meyer, I., Vol-I: 68, 69
 Meyer, I. H., Vol-I: 186–187; Vol-II: 133, 135–136, 138, 360, 368, 486, 509
 Meyer, K., Vol-II: 204
 Meyer, S., Vol-I: 457
 Meyer, S. L., Vol-II: 267
 Meyer, W., Vol-II: 119
 Meyer, W. J., Vol-I: 224
 Meyer-Bahlburg, H. F., Vol-I: 140; Vol-II: 118
 Meyer-Bahlberg, H. F. L., Vol-I: 140, 226
 Meyerowitz, J., Vol-II: 114
 Meyers, S. A., Vol-II: 285
 Meyerson, D. E., Vol-II: 454, 461
 Mezulis, A. H., Vol-I: 545; Vol-II: 136, 146
 Michael, A., Vol-I: 138; Vol-II: 117, 384
 Michael, R. T., Vol-I: 44, 112, 478, 483; Vol-II: 321
 Michaelis, B., Vol-II: 140
 Michaels, M. W., Vol-II: 647
 Michaels, S., Vol-I: 478; Vol-II: 321
 Michalenok, J., Vol-II: 574
 Michaud, C. I., Vol-I: 459, 464
 Michelson, K., Vol-I: 63
 Middleton, K. R., Vol-II: 530
 Midgley, C., Vol-II: 388–389
 Mier, H. I., Vol-I: 240
 Miethe, T. D., Vol-II: 607
 Migdal, S., Vol-I: 563–564
 Migeon, C. J. 115; Vol-I: 219
 Mignot, P., Vol-II: 383
 Mihalko, S., Vol-II: 573
 Mikels, J. A., Vol-I: 567
 Milar, K. S., Vol-I: 20
 Miles, C., Vol-I: 224–225, 324
 Miles, C. C., Vol-I: 134, 192, 204, 365
 Miles, E., Vol-II: 415
 Miles, L., Vol-I: 117; Vol-II: 287
 Miletich, D., Vol-II: 589
 Miley, A., Vol-II: 623
 Milhausen, R. R., Vol-II: 286
 Milich, R., Vol-I: 354
 Milkie, M. A., Vol-II: 405, 407, 445
 Millard, J. E., Vol-II: 648

- Miller, A. D., Vol-I: 69
 Miller, A. S., Vol-I: 112
 Miller, C. R., Vol-I: 330
 Miller, C. T., Vol-II: 138, 143
 Miller, D. L., Vol-II: 338
 Miller, D. T., Vol-I: 195–196, 199, 328, 500–502, 506–507, 509, 514; Vol-II: 448
 Miller, I. J., Vol-I: 246
 Miller, J., Vol-I: 194
 Miller, J. B., Vol-I: 105; Vol-II: 117, 188, 191–192, 208, 213–214
 Miller, J. G., Vol-I: 163
 Miller, J. S., Vol-II: 449
 Miller, K. E., Vol-II: 576
 Miller, L. C., Vol-II: 33, 154, 326, 347
 Miller, L. K., Vol-I: 328
 Miller, M., Vol-II: 365
 Miller, M. K., Vol-II: 645, 647
 Miller, N., Vol-I: 440; Vol-II: 313, 315
 Miller, P. J., Vol-I: 114
 Miller, R. J., Vol-II: 21
 Miller, R. S., Vol-II: 294, 323–324
 Miller, S. L., Vol-II: 449
 Miller, S. W., Vol-I: 568
 Miller, T. R., Vol-II: 482
 Miller, W., Vol-II: 544
 Miller, W. R., Vol-II: 235
 Millon, C., Vol-II: 70
 Millon, T. M., Vol-II: 70, 81
 Millot, J. L., Vol-I: 248
 Mills, C. J., Vol-I: 304
 Mills, J. A., Vol-II: 170
 Mills, J. S., Vol-I: 98, 567, 571; Vol-II: 659
 Mills, M., Vol-II: 379
 Mills, S., Vol-I: 33
 Millsap, R. E., Vol-II: 72
 Milne, A., Vol-I: 517
 Miltner, W. H., Vol-I: 243
 Milton, L. P., Vol-II: 456
 Milun, R., Vol-I: 328
 Min, J., Vol-II: 33
 Minamoto, F., Vol-I: 236
 Miner, A. G., Vol-II: 685
 Minkler, M., Vol-I: 186
 Minnotte, K. L., Vol-II: 415
 Minoshima, S., Vol-I: 242–243
 Minter, S., Vol-II: 111, 119, 368
 Minton, H. L., Vol-I: 21
 Mintz, L., Vol-II: 155
 Mintz, L. B., Vol-II: 237
 Mira, M., Vol-I: 458
 Mirabeau, O., Vol-I: 344–345
 Miranda, J., Vol-II: 520
 Mirande, A., Vol-II: 412
 Mirgain, S. A., Vol-I: 437, 439
 Miron, D., Vol-I: 240
 Mischel, W., Vol-II: 65, 67–68, 83
 Mishkin, M., Vol-I: 236
 Mishkind, M. E., Vol-II: 156
 Mishra, G., Vol-II: 484
 Mishra, R. C., Vol-I: 326
 Misle, B., Vol-II: 95
 Mistretta, C. M., Vol-I: 246
 Mistry, R., Vol-I: 502
 Mitchell, A. A., Vol-II: 427
 Mitchell, C., Vol-I: 319; Vol-II: 619
 Mitchell, J., Vol-II: 188
 Mitchell, J. N., Vol-I: 236
 Mitchell, J. P., Vol-II: 155
 Mitchell, M. B., Vol-I: 10, 20
 Mitchell, P., Vol-I: 236
 Mitchell, V., Vol-I: 564, 568, 571, 574
 Mitra, A., Vol-II: 662
 Mitrook, M., Vol-II: 661
 Mitrushina, M., Vol-II: 605
 Mittal, M., Vol-II: 263
 Mittenberg, W., Vol-II: 603
 Mize, L. K., Vol-II: 264
 Moane, G., Vol-I: 35, 118, 571
 Moebius, M. M., Vol-II: 117
 Moelker, R., Vol-II: 673
 Moen, P., Vol-I: 570–571; Vol-II: 401–402
 Moffat, S. D., Vol-I: 84, 222–223, 227
 Moffitt, T. E., Vol-I: 535, 543, 546–548
 Moghaddam, F. M., Vol-I: 34
 Mogil, J. S., Vol-I: 242
 Mohan, R. N., Vol-II: 97
 Mohanty, C. T., Vol-I: 105–106; Vol-II: 461
 Mohr, J. J., Vol-II: 363–364
 Moise-Titus, J., Vol-II: 645
 Molde, H., Vol-II: 474
 Molinaro, C., Vol-I: 326
 Molinsky, A., Vol-II: 460
 Moller, A. R., Vol-II: 113
 Moller, C., Vol-I: 246, 511
 Möller, C. G., Vol-I: 246, 511
 Møller, M. B., Vol-I: 244
 Möller-Leimkuehler, A., Vol-II: 228
 Molloy, B. L., Vol-II: 160
 Molnar, B. E., Vol-II: 631
 Monaco, N. M., Vol-II: 383
 Mondello, M., Vol-II: 572
 Money, J., Vol-I: 194, 260, 367; Vol-II: 111, 115–116, 366–367
 Mongeau, P. A., Vol-II: 290
 Mongin, S. J., Vol-II: 483
 Monroe, S. M., Vol-II: 137, 143, 146
 Monsour, M., Vol-II: 284
 Montano, D. E., Vol-II: 340
 Monte, F., Vol-I: 262, 300
 Montello, D. R., Vol-I: 328
 Montepare, J. M., Vol-II: 451
 Montero, M., Vol-II: 613, 635
 Montgomery, K., Vol-II: 432

- Montgomery, S., Vol-I: 285; Vol-II: 620
 Montoro, R., Vol-II: 362
 Mood, D., Vol-II: 551
 Moody, M. S., Vol-I: 324
 Mooney, K., Vol-II: 675
 Mooney, K. M., Vol-I: 457, 462–463
 Moore, A., Vol-II: 414
 Moore, C., Vol-II: 429
 Moore, D., Vol-I: 499
 Moore, D. S., Vol-I: 318
 Moore, H. A., Vol-II: 380
 Moore, L., Vol-I: 547
 Moore, L. J., Vol-I: 201
 Moore, L. M., Vol-I: 246
 Moore, R. J., Vol-I: 47, 52
 Moore, R. L., Vol-II: 293
 Moore, S. T., Vol-II: 228
 Moos, R., Vol-II: 235, 633
 Moradi, B., Vol-I: 98; Vol-II: 194–195, 200–201, 205–206, 211
 Morales, A., Vol-I: 223
 Moran, J. D., Vol-I: 350
 Morawski, J., Vol-I: 26, 364, 366
 Morawski, J. G., Vol-I: 31–32, 192
 Moray, S. M., Vol-II: 122
 Moretti, M. M., Vol-I: 549
 Morey, L. C., Vol-II: 70, 73–75, 77, 81
 Morey, L., Vol-II: 204
 Morgan, B. L., Vol-II: 205
 Morgan, C. D., Vol-II: 41
 Morgan, E. E. Vol-I: 256
 Morgan, E. M., Vol-I: 475; Vol-II: 291
 Morgan, F., Vol-II: 347
 Morgan, M., Vol-I: 117, 542; Vol-II: 167
 Mori, D., Vol-I: 460–461
 Mori, S., Vol-II: 233
 Morin, P., Vol-I: 390
 Morin, S., Vol-I: 17
 Moriyama, H., Vol-I: 245
 Morland, I., Vol-I: 194
 Morling, B., Vol-II: 56
 Morosan, P., Vol-I: 244
 Morra, N. N., Vol-I: 393
 Morrell, S., Vol-II: 485
 Morrin, K. A., Vol-I: 329
 Morris, A., Vol-II: 628
 Morris, A. M., Vol-I: 572
 Morris, A. S., Vol-I: 549
 Morris, E. L., Vol-I: 456
 Morris, L. M., Vol-II: 509
 Morris, T. L., Vol-I: 66, 68
 Morrison, D., Vol-II: 660
 Morrison, E. W., Vol-II: 452
 Morrison, J. A., Vol-I: 53
 Morrison, K., Vol-II: 234, 317–319
 Morrison, M. A., Vol-II: 156
 Morrison, T., Vol-I: 196
 Morrison, T. G., Vol-II: 156
 Morrison-Beedy, D., Vol-I: 487
 Morrongiello, B. A., Vol-II: 484
 Morrow, A. L., Vol-I: 365
 Morrow, J. E., Vol-II: 455
 Morrow, P. C., Vol-II: 452
 Morrow, R. G., Vol-II: 578
 Morrow, T. J., Vol-I: 242
 Morton, G., Vol-II: 254–255, 260
 Morton, T. A., Vol-I: 193
 Morton, T. L., Vol-II: 294
 Mosca, L., Vol-II: 543
 Moseley, W., Vol-II: 116
 Moser, D. K., Vol-II: 487, 543
 Mosewich, A. D., Vol-II: 576
 Mosher, C., Vol-II: 550
 Mosher, C. E., Vol-II: 550
 Mosher, C. J., Vol-II: 607–609
 Mosher, D. L., Vol-I: 52
 Mosher, M., Vol-II: 319
 Moskos, C., Vol-II: 673, 676–677, 682
 Moskowitz, D. S., Vol-I: 421; Vol-II: 21
 Mosquera, P. M. R., Vol-I: 435; Vol-II: 282
 Mostert, I., Vol-II: 349
 Motheral, B. R., Vol-II: 530
 Motulsky, A. G., Vol-I: 237
 Moulin, A., Vol-I: 243
 Mountcastle, V. B., Vol-I: 240
 Mowbray, C., Vol-II: 624
 Moya, P. M. L., Vol-I: 32
 Moyer, R., Vol-I: 195
 Moynihan, R., Vol-II: 98
 Mraz, W., Vol-I: 352
 Msimang, S., Vol-II: 542
 Müchele, A., Vol-II: 207
 Muday, T., Vol-I: 431
 Muderrisoglu, S., Vol-I: 440
 Muehlenhard, C. L., Vol-II: 321
 Muehlenkamp, J. J., Vol-II: 153
 Mueller, J. M., Vol-I: 34
 Mueller, S. C., Vol-I: 219, 329
 Mueser, K. T., Vol-II: 266
 Mugny, G., Vol-I: 194
 Muhlenbruck, L., Vol-I: 413
 Muir, S. L., Vol-II: 165, 168
 Mukherjee, S., Vol-II: 484
 Mulac, A., Vol-I: 380
 Mulder, M., Vol-II: 285
 Mulick, P. S., Vol-II: 363
 Mullally, S., Vol-I: 500
 Mullan, J. T., Vol-II: 143
 Mullaney, H. A., Vol-II: 605
 Mullany, L., Vol-I: 394, 395
 Mullen, B., Vol-II: 459
 Mullis, T., Vol-II: 318
 Mulvey, A., Vol-II: 613–614, 622, 628
 Munch, S., Vol-II: 523

- Mundorf, J., Vol-II: 657
 Mundorf, N., Vol-II: 657
 Munnoch, D. A., Vol-II: 483
 Muñoz-Laboy, M. A., Vol-II: 371
 Munson, L. J., Vol-II: 685
 Munson, M., Vol-II: 621
 Muntaner, C., Vol-II: 478
 Murdock, G. P., Vol-I: 167
 Murgio, A., Vol-II: 482
 Murnen, S. K., Vol-I: 6, 81–98, 479; Vol-II: 6, 156, 170, 174, 342, 658
 Murphy, C. M., Vol-II: 267
 Murphy, M., Vol-II: 482
 Murphy, N. A., Vol-I: 413, 417
 Murphy, R., Vol-II: 154
 Murphy, S. A., Vol-II: 323
 Murphy, S. E., Vol-II: 450
 Murphy, S. L., Vol-II: 228, 526, 542
 Murphy, T., Vol-II: 371
 Murray, A. D., Vol-I: 244
 Murray, H. A., Vol-II: 41
 Murray, M., Vol-I: 116
 Murray, S. H., Vol-II: 165
 Murray, S. L., Vol-II: 294
 Muscat, A. C., Vol-II: 575
 Musen, G., Vol-II: 530
 Musick, M. A., Vol-II: 228
 Mussap, A. J., Vol-II: 169
 Mussen, P. H., Vol-II: 386
 Mustanski, B. S., Vol-I: 225
 Musteen, M., Vol-II: 460
 Muth, E. R., Vol-I: 245
 Muth, J. L., Vol-I: 567; Vol-II: 156, 158
 Muuss, R. E., Vol-I: 528
 Myaskovsky, L., Vol-II: 338–339, 347
- N**
- Naftolin, F., Vol-I: 218
 Nagurney, A. J., Vol-II: 295
 Nagy, G., Vol-II: 388–389
 Naidoo, L., Vol-II: 294
 Naigles, L. R., Vol-II: 341
 Nakash-Eisikovits, O., Vol-I: 440
 Namageyo-Funa, A., Vol-II: 549
 Nanin, J. E., Vol-I: 64
 Nankervis, B., Vol-II: 72
 Napier, A. Y., Vol-II: 265–266
 Naples, N. A., Vol-I: 105
 Napoli, D. S., Vol-I: 24
 Narayan, K. M. V., Vol-II: 531
 Nardi, P., Vol-II: 281
 Nash, H. C., Vol-II: 104
 Nash, S. C., Vol-I: 516
 Nass, R., Vol-I: 219
 Nassif, A., Vol-II: 644
 Nast, H., Vol-I: 107
 Nath, L. E., Vol-I: 434, 435
 Nathans, J., Vol-I: 237
 Nathanson, C., Vol-II: 533
 Naylor, K. E., Vol-II: 414
 Neal, D. J., Vol-II: 347, 349
 Neal, L. V. I., Vol-I: 284
 Neale, M. A., Vol-II: 349
 Neave, N., Vol-I: 226
 Neckerman, H., Vol-I: 397
 Neece, W. M., Vol-I: 573
 Neff, D., Vol-II: 448
 Neff, K. D., Vol-II: 35–36, 294, 298
 Neff, L. A., Vol-II: 501, 504, 507–509, 511
 Neff, N. L., Vol-I: 322
 Nehls, N., Vol-II: 95
 Neighbors, H. W., Vol-II: 228
 Neilands, T., Vol-I: 33
 Neilson, I., Vol-I: 222
 Neitz, J., Vol-I: 237
 Neitz, M., Vol-I: 237
 Nelissen, M., Vol-I: 398
 Nell, V. P., Vol-II: 545
 Nellen, V. C., Vol-II: 576
 Nelson, A., Vol-II: 672
 Nelson, B. D., Vol-I: 330
 Nelson, C. B., Vol-II: 134
 Nelson, D. L., Vol-II: 502
 Nelson, J. A., Vol-I: 147
 Nelson, J. D., Vol-I: 320, 322
 Nelson, S., Vol-I: 386
 Neptune, D., Vol-II: 170–171, 647–648
 Ness, T. J., Vol-I: 241
 Nesse, R., Vol-II: 410
 Neto, F., Vol-II: 649
 Nettle, D., Vol-II: 19, 29
 Nettleton, C., Vol-II: 486
 Neuberg, S. L., Vol-I: 85, 418
 Neufeld, K. J., Vol-II: 481
 Neugarten, B., Vol-I: 570–571, 573
 Neuhauser, H. K., Vol-I: 245
 Neuman, J. H., Vol-II: 423, 427, 431
 Neumann, C. S., Vol-II: 31
 Neumann, S. A., Vol-I: 442
 Nevers, C. C., Vol-I: 22
 Newberry, A. M., Vol-II: 255
 Newbrough, J. R., Vol-II: 635
 Newcomb, M. D., Vol-I: 136, 140, 165; Vol-II: 7, 24
 Newcombe, N., Vol-I: 7, 88, 239, 308
 Newcombe, N. S., Vol-I: 259–272, 317, 325–328, 338
 Newhouse, C., Vol-I: 329
 Newman, D. L., Vol-I: 535
 Newman, L. K., Vol-II: 123
 Newman, L. S., Vol-I: 510, 515
 Newman, M. L., Vol-I: 222
 Newman, W. L., Vol-II: 592
 Newport, F., Vol-II: 447, 449
 Newson, J., Vol-I: 330
 Newson, L., Vol-I: 456

- Newton, T., Vol-I: 9; Vol-II: 9, 498–499, 507
 Ng, S. H., Vol-I: 195
 Ng-Mak, D., Vol-II: 621
 Nguyen, D., Vol-II: 426
 Nguyen, T., Vol-I: 247
 Nguyen-Michel, S. T., Vol-I: 460
 Nicholls, J. G., Vol-II: 388
 Nicholls, T. L., Vol-II: 604
 Nichols, D., Vol-II: 647
 Nichols, T. E., Vol-I: 242
 Nichols, T. R., Vol-I: 546
 Nicholson, A., Vol-II: 482
 Nicholson, G., Vol-I: 463
 Nicolson, P., Vol-I: 117
 Nielsen, C., Vol-I: 246
 Niemann, Y. F., Vol-II: 449
 Nieschlag, E., Vol-I: 348
 Nightingale, D., Vol-I: 33
 Nijssen, A., Vol-II: 502
 Niklasson, M. K., Vol-I: 246
 Nilsson, L. G., Vol-I: 248
 Nilsson, T., Vol-II: 318
 Nisbett, R. E., Vol-I: 171, 200
 Nishii, L. H., Vol-II: 301
 Nkomo, S. M., Vol-II: 451, 454, 458
 Nobel, E., Vol-I: 247, 346, 354
 Nobunaga, A. I., Vol-II: 483
 Nock, S., Vol-II: 411
 Nocon, M., Vol-II: 472
 Noe, A. W., Vol-II: 349
 Nolan, C., Vol-I: 326, 483
 Noland, V. J., Vol-II: 319
 Nolen-Hoeksema, S., Vol-I: 9, 298, 543; Vol-II: 9, 74, 133–147, 297
 Noll, S. M., Vol-I: 91; Vol-II: 156–157, 659
 Nonas, E., Vol-I: 217
 Noon, M., Vol-I: 395, 397
 Nora, A., Vol-I: 285
 Norcross, J. C., Vol-II: 221, 234
 Nordberg, P. B., Vol-II: 590
 Nordin, S., Vol-I: 249
 Norenzayan, A., Vol-I: 161
 Noret, N., Vol-I: 290
 Norman, L., Vol-II: 566–567
 Norman, M. A., Vol-I: 106, 568
 Norman, R. Z., Vol-II: 345
 Norris, M., Vol-II: 674
 Norris, P., Vol-II: 352
 Norris, S. L., Vol-II: 531
 North, F., Vol-II: 475
 Northen, S., Vol-II: 553
 Northouse, L. L., Vol-II: 551
 Norton, G. N., Vol-I: 456
 Norton, R. N., Vol-II: 482
 Norwich, K. H., Vol-I: 244
 Norwood, J. D., Vol-I: 462
 Nosek, B., Vol-I: 281
 Nosek, B. A., Vol-I: 35, 497; Vol-II: 447
 Nowell, A., Vol-I: 299, 302, 304–305
 Nowicki, S., Vol-I: 414
 Nurius, P., Vol-II: 643
 Nurnberg, H. G., Vol-II: 532
 Nutt, R. L., Vol-II: 255–256
 Nuttall, R. L., Vol-I: 317, 325; Vol-II: 317, 325
 Nuttbrock, L., Vol-II: 145
 Nylen, K., Vol-I: 222
 Nylund, D., Vol-II: 225
- O**
- O'Bannon, R., Vol-II: 626
 O'Barr, W., Vol-I: 381, 387
 O'Boyle, C., Vol-I: 504–505
 O'Brien, E. J., Vol-I: 317
 O'Brien, K. M., Vol-II: 228–229
 O'Brien, M., Vol-I: 402
 O'Brien, R., Vol-II: 228, 236
 O'Brien, T., Vol-II: 496–497
 O'Brien, T. B., Vol-II: 499
 O'Connell, A. N., Vol-I: 20, 25
 O'Connor, E., Vol-I: 67
 O'Connor, E., Vol-II: 411
 O'Connor, P., Vol-II: 171, 281–282
 O'Connor, R. C., Vol-II: 510
 O'Doherty, S., Vol-II: 380
 O'Donnell, A., Vol-I: 227
 O'Donnell, C., Vol-II: 620
 O'Donnell, L., Vol-II: 620
 O'Donohue, W., Vol-II: 360
 O'Hanlan, K. A., Vol-II: 486
 O'Heron, C. A., Vol-I: 143
 O'Kane, G. M., Vol-II: 477
 O'Kearney, R., Vol-I: 436
 O'Keefe, J. A., Vol-I: 226, 345
 O'Laughlin, E. M., Vol-I: 264
 O'Leary, A., Vol-II: 161
 O'Leary, K., Vol-I: 381
 O'Leary, M. M., Vol-II: 74
 O'Leary, V., Vol-II: 677
 O'Loughlin, C., Vol-II: 284
 O'Malley, M. S., Vol-II: 526
 O'Malley, P. M., Vol-II: 224
 O'Meara, J. D., Vol-II: 283
 O'Meara, K. P., Vol-II: 98
 O'Neal, E. C., Vol-II: 314
 O'Neil, J., Vol-I: 47, 51–54, 144–145, 150
 O'Neil, J. M., Vol-I: 123, 225; Vol-II: 123, 225, 255–256, 266
 O'Reilly, C. A., Vol-II: 348, 350
 O'Sullivan, L. F., Vol-I: 527, 531, 540; Vol-II: 299
 Oakes, J., Vol-II: 388
 Oathout, A., Vol-II: 295
 Obbo, C., Vol-I: 116
 Oberg, C., Vol-I: 248
 Oberlander, S., Vol-I: 362

- Oborn, K. L., Vol-II: 460
 Ochs, R., Vol-II: 363–365
 Ochse, R., Vol-I: 562
 Ochsner, K. N., Vol-I: 432–443
 Oddone, E. Z., Vol-II: 533
 Odgers, C. L., Vol-I: 549
 Ofotokun, I., Vol-II: 534
 Ogilvie, D. T., Vol-II: 460
 Ogletree, R. J., Vol-I: 53
 Ogletree, S. M., Vol-I: 392; Vol-II: 650
 Ogloff, J. R., Vol-II: 604
 Oguz, C., Vol-II: 502
 Oh, E., Vol-I: 392
 Ohlott, P. J., Vol-II: 455
 Ohnishi, T., Vol-I: 330
 Ojeda, L., Vol-I: 150
 Öjehagen, A., Vol-II: 476
 Okazaki, S., Vol-II: 623
 Okely, A. D., Vol-II: 480
 Okimoto, T. G., Vol-II: 346, 447
 Okonofua, F. E., Vol-II: 155
 Oksenberg, A., Vol-II: 524
 Okut, H., Vol-II: 622
 Olafsson, R. F., Vol-II: 434
 Olak, J., Vol-II: 529
 Oldenburg, B., Vol-II: 472
 Oldham, J. D., Vol-I: 194
 Olfson, M., Vol-II: 519
 Olivardia, R., Vol-II: 99, 158–159, 162, 166, 172, 575
 Oliver, C., Vol-II: 318
 Oliver, G., Vol-I: 141, 456–457, 459–460, 463–464
 Oliver, K. K., Vol-II: 165
 Oliver, M. B., Vol-I: 476–477, 479–480; Vol-II: 299, 656
 Oliver, P., Vol-II: 614
 Olkin, R., Vol-II: 193
 Ollendick, T. H., Vol-II: 221
 Ollie, M., Vol-II: 621
 Olm-Shipman, C., Vol-II: 337
 Olmstead, E. B., Vol-II: 343
 Olofsson, J. K., Vol-I: 249
 Olsen, M., Vol-II: 533
 Olson, J. E., Vol-II: 326, 329, 648
 Olsson, E. S., Vol-II: 113
 Olsson, M. J., Vol-I: 248
 Olweus, D., Vol-II: 328, 599
 Ong, A. D., Vol-I: 161
 Ong, K. L., Vol-II: 543
 Ontai, L. L., Vol-I: 143
 Onyx, J., Vol-I: 115
 Opie, A., Vol-I: 108
 Oquendo, M. A., Vol-II: 224
 Orbach, S., Vol-II: 156
 Orbuch, T., Vol-II: 412–413
 Orduña, M., Vol-II: 618
 Orford, J., Vol-II: 430
 Organ, D. W., Vol-II: 452–453
 Orlick, T., Vol-II: 570
 Orlofsky, J. L., Vol-I: 142–143, 150
 Ormerod, A. J., Vol-I: 282–283
 Ormrod, R., Vol-II: 319
 Orr, J. S., Vol-I: 456
 Orsini, N., Vol-II: 476
 Orthner, D. K., Vol-II: 686
 Ortiz, M. L., Vol-I: 165, 221, 328
 Ortiz-Torres, B., Vol-II: 627
 Ortola, G., Vol-II: 620
 Ortony, A., Vol-I: 506
 Orwoll, E. S., Vol-I: 223
 Oryol, V. E., Vol-II: 26
 Osbaldiston, R., Vol-II: 45
 Osborn, T. W., Vol-I: 223
 Osgood, D. W., Vol-I: 501, 537; Vol-II: 389
 Osherson, S., Vol-I: 432
 Osipow, S. H., Vol-I: 29
 Ost, J., Vol-I: 187
 Ostchega, Y., Vol-II: 543
 Osterman, K., Vol-II: 429
 Ostrov, J. M., Vol-II: 320
 Ostrove, J., Vol-I: 566–567
 Ostrove, J. M., Vol-I: 563, 566
 Ostrow, D., Vol-II: 135
 Oswald, D. L., Vol-I: 285, 515
 Otsuka, N., Vol-I: 245
 Otsuka, R., Vol-I: 456
 Ott, E. M., Vol-II: 341
 Otto, S., Vol-I: 198
 Otto, S. J., Vol-II: 526
 Ouimette, P., Vol-II: 74
 Outhwaite, W., Vol-I: 122
 Overman, W. H., Vol-I: 224
 Overton, W. F., Vol-I: 327–328, 503, 567
 Ovesey, L., Vol-II: 118
 Oviatt, S. K., Vol-I: 223
 Owen, J., Vol-I: 383
 Owen, J. W., Vol-II: 340
 Owen-Anderson, A., Vol-I: 510
 Owens, C. L., Vol-I: 571
 Owens, L. K., Vol-II: 161
 Owens, R. G., Vol-II: 474, 485
 Owens, S. S., Vol-II: 576
 Owen-Smith, A., Vol-II: 52
 Owens-Nicholson, D., Vol-II: 161
 Oyama, S., Vol-I: 200
 Oyeboode, J., Vol-II: 318
 Ozanne-Smith, J., Vol-II: 482
 Özbilgin, M., Vol-II: 382–383, 391
 Ozel, S., Vol-I: 326
 Özkale, L., Vol-II: 391
 Ozonoff, A., Vol-I: 187
- P**
 Paccaud, F., Vol-II: 476
 Pace, R., Vol-II: 543
 Pachankis, J. E., Vol-I: 63; Vol-II: 141, 145

- Packard, M. G., Vol-I: 325
 Padesky, C. A., Vol-II: 82
 Paganini-Hill, A., Vol-II: 524
 Page, R. M., Vol-I: 547
 Page, S., Vol-II: 104
 Page, S. E., Vol-II: 456
 Paget, S. A., Vol-II: 550
 Paglin, M., Vol-I: 311
 Paik, I., Vol-II: 447
 Paikoff, R. L., Vol-I: 534, 536
 Pakkenberg, B., Vol-I: 217
 Palella, F. J., Vol-II: 533
 Pallesen, P., Vol-II: 474
 Palmary, I., Vol-I: 105, 118
 Palmer, C. T., Vol-I: 91
 Palmieri, P. A., Vol-II: 433
 Palomares, N., Vol-I: 434, 430
 Pals, J., Vol-I: 564
 Paluch, R., Vol-I: 456
 Paluck, E. L., Vol-I: 89, 411, 437; Vol-II: 21, 338, 643
 Pang, J., Vol-II: 42, 44, 48, 57
 Pang, J. S., Vol-II: 44, 56–57
 Pangalila, R. F., Vol-II: 483
 Paniagua, F. A., Vol-II: 236
 Pannu, M., Vol-II: 288
 Pantoja, P., Vol-II: 301
 Paolillo, J. G. P., Vol-II: 457
 Papp, P., Vol-II: 255
 Parada, R. H., Vol-II: 31
 Paradie, L., Vol-I: 372
 Parameswaran, G., Vol-I: 319, 328
 Pardie, L., Vol-I: 195
 Pardo, S. T., Vol-II: 10, 359–371
 Pardo, T., Vol-II: 366
 Parent, J. D., Vol-II: 448
 Parent, M. B., Vol-I: 329
 Parham, W. D., Vol-II: 580
 Parikh-Patel, A., Vol-II: 528
 Paris, J., Vol-II: 95
 Park, B., Vol-I: 500
 Park, D., Vol-II: 351, 456
 Park, D. C., Vol-I: 568
 Park, J., Vol-I: 330
 Park, J. H., Vol-II: 288
 Park, K., Vol-I: 483
 Park, R. J., Vol-II: 565–566
 Park, S., Vol-II: 234
 Parke, R. D., Vol-II: 386, 406
 Parker, F., Vol-II: 620
 Parker, H., Vol-I: 513
 Parker, L., Vol-II: 269
 Parker, L. M., Vol-II: 532
 Parker, P. S., Vol-II: 460
 Parker, S., Vol-I: 513; Vol-II: 160
 Parkes, M. A., Vol-II: 690
 Parkhill, M. R., Vol-II: 284
 Parkin, D. M., Vol-II: 541
 Parks, M. R., Vol-II: 282
 Parlee, M. B., Vol-I: 27–29, 194, 401
 Parman, C. L., Vol-II: 520
 Parrett, K. L., Vol-II: 551
 Parsons, J. E., Vol-II: 330, 379, 383–385, 388
 Parsons, J. T., Vol-I: 64; Vol-II: 371
 Parsons, T., Vol-I: 134; Vol-II: 406
 Parsons, T. D., Vol-I: 244, 319
 Pascale, L., Vol-I: 383
 Pascalis, P., Vol-I: 504
 Pascarella, E. T., Vol-I: 285
 Pascoe, C. J., Vol-II: 227
 Pashler, H., Vol-I: 330
 Paskett, E. D., Vol-I: 184
 Pasloski, D. D., Vol-II: 338
 Passero, R. N., Vol-I: 363
 Pastò, L., Vol-II: 688
 Pastore, A. L., Vol-II: 316, 321
 Patai, D., Vol-I: 106
 Patchin, J. W., Vol-II: 320
 Patel, V., Vol-II: 51
 Patrick, B. C., Vol-II: 385
 Patrick, C. J., Vol-II: 74
 Patsdaughter, C. A., Vol-II: 486
 Patten, S. B., Vol-II: 546
 Patterson, C. J., Vol-I: 67, 501, 565; Vol-II: 411
 Patterson, D. W., Vol-I: 573
 Patterson, J., Vol-I: 383
 Patterson, M. M., Vol-I: 186, 512, 517
 Patton, C., Vol-II: 603
 Patton, G. C., Vol-I: 548
 Patton, M. Q., Vol-I: 112
 Paul, J., Vol-I: 66, 121
 Pauling, M. L., Vol-II: 103
 Paulson, P. E., Vol-I: 242
 Pavalko, E. K., Vol-II: 410
 Pavel, S., Vol-I: 184
 Pavlidou, T. S., Vol-I: 388
 Pawlowski, B., Vol-II: 286
 Pawlowski, L. M., Vol-I: 62
 Paxton, S. J., Vol-II: 155, 165, 168, 173
 Peacock, D., Vol-II: 542
 Peake, P. K., Vol-II: 67
 Pearce, J. K., Vol-II: 255
 Pearce, N. A., Vol-II: 451
 Pearcey, S. M., Vol-I: 226
 Pearlin, L. I., Vol-II: 143, 145
 Pearson, C. M., Vol-II: 423–424, 429, 435
 Pedersen, K. E., Vol-I: 244
 Pedersen, S., Vol-II: 327, 576
 Pederson, E., Vol-II: 228
 Pederson, L., Vol-I: 187
 Pederson, L. L., Vol-II: 477
 Pedhazur, E. J., Vol-I: 135, 192
 Peek, C., Vol-II: 588
 Peekna, H. M., Vol-II: 521
 Pegalis, L., Vol-II: 295

- Peiro, J. M., Vol-II: 503
 Pekrun, R., Vol-I: 444; Vol-II: 382, 385, 388
 Peleg-Oren, N., Vol-II: 525, 548
 Peletz, M. G., Vol-II: 114
 Pelias, R. J., Vol-I: 118–119
 Pelled, L. H., Vol-II: 350
 Pellegrini, A. D., Vol-I: 263, 265
 Pellegrino, J. W., Vol-I: 319, 322
 Pelletier, J., Vol-I: 240, 320
 Pelletier, L. C., Vol-II: 388
 Pellis, V. C., Vol-I: 220
 Peña, E. D., Vol-I: 171, 173, 322
 Penhale, B., Vol-II: 318
 Penn, P., Vol-II: 255
 Pennebaker, J., Vol-I: 391
 Penner, L. A., Vol-II: 326
 Penrod, S., Vol-II: 660
 Penton-Voak, I. S., Vol-II: 286
 Pepitone-Arreola-Rockwell, F., Vol-I: 198
 Peplau, L. A., Vol-I: 64–66, 72, 480; Vol-II: 68, 157, 282, 294, 297, 363–364, 411
 Pepler, D., Vol-I: 540; Vol-II: 319–320
 Perchellet, J. P., Vol-I: 217
 Perdue, L., Vol-II: 166
 Peregrine, P. N., Vol-I: 160
 Perez-Albeniz, A., Vol-II: 329
 Pergram, A. M., Vol-II: 21
 Perkins, D. N. T., Vol-II: 633
 Perkins, H., Vol-II: 409, 411
 Perkins, R., Vol-II: 192
 Perlesz, A., Vol-II: 263
 Perlin, M. J., Vol-II: 553
 Perlman, D., Vol-II: 282, 295, 323, 328
 Perloff, R. M., Vol-I: 510
 Perrin, E. C., Vol-I: 67
 Perrone, D., Vol-II: 594–595
 Perrot-Sinal, T. S., Vol-I: 226
 Perrott, D. A., Vol-I: 200
 Perry, C. L., Vol-II: 161
 Perry, D. G., Vol-I: 142, 150, 192, 497–499, 512, 515, 531
 Perry, J., Vol-II: 95
 Perry, J. C., Vol-II: 195
 Perry, L. A., Vol-I: 282
 Perry, M., Vol-I: 283, 436
 Perry, P., Vol-I: 484
 Perry, Z. W., Vol-II: 647
 Perry-Jenkins, M., Vol-I: 537, 529; Vol-II: 407, 411, 413
 Person, E., Vol-II: 118
 Person, S., Vol-II: 543
 Péruch, P., Vol-I: 330
 Perunovic, W. Q. E., Vol-II: 34
 Perz, J., Vol-I: 440
 Pestello, F., Vol-II: 407
 Peter, J., Vol-I: 7, 8, 191–204, 244, 542; Vol-II: 171
 Peters, D. H., Vol-II: 481
 Peters, G. R., Vol-I: 463
 Peters, J. F., Vol-I: 143
 Peters, M., Vol-I: 222, 225, 318, 322, 324
 Petersen, A., Vol-II: 473, 477
 Petersen, A. C., Vol-I: 87, 147, 263, 300, 318–320, 530, 535–536, 544, 547; Vol-II: 386
 Petersen, J., Vol-I: 8, 471–488
 Peterson, A. C., Vol-I: 9, 142, 198, 325, 461, 529, 548, 564
 Peterson, B., Vol-II: 166
 Peterson, B. E., Vol-I: 564; Vol-II: 9, 41–58
 Peterson, B. S., Vol-I: 325
 Peterson, C., Vol-II: 146
 Peterson, J. B., Vol-I: 461
 Peterson, M., Vol-I: 548; Vol-II: 167
 Peterson, R. E., Vol-I: 529
 Peterson, S. B., Vol-I: 198
 Peterson-Badali, M., Vol-I: 142
 Petito, C. K., Vol-I: 225
 Petri, M., Vol-II: 542
 Petro, Z., Vol-I: 218
 Petronio, S., Vol-II: 326
 Petrucci, L., Vol-I: 219
 Petty, E. M., Vol-I: 194
 Pewewardy, N., Vol-II: 263
 Pezaris, E., Vol-I: 317, 325
 Pfaefflin, F., Vol-I: 368
 Pfafflin, F., Vol-II: 112, 119, 368
 Pfeffer, C. A., Vol-I: 194
 Phares, V., Vol-II: 155
 Pharmed, J. A., Vol-II: 347
 Phelan, J., Vol-I: 285
 Phelan, J. C., Vol-II: 145, 147
 Phelan, J. E., Vol-II: 298–299
 Phelan, S., Vol-I: 196
 Philippot, P., Vol-I: 440
 Phillips, B., Vol-II: 204
 Phillips, D. M., Vol-II: 607
 Phillips, K. A., Vol-II: 158–159, 161–162, 575
 Phillips, K., Vol-I: 222, 324, 326; Vol-II: 99, 352
 Phillips, K. W., Vol-II: 344, 349
 Phillips, M., Vol-I: 393
 Phillips, M. D., Vol-I: 245
 Phillips, S. L., Vol-II: 297
 Philpot, C. L., Vol-II: 256
 Phinney, J. S., Vol-I: 160–161
 Phoenix, A., Vol-I: 110, 185; Vol-II: 475
 Piaget, J., Vol-I: 319, 496, 503; Vol-II: 188
 Piccolo, R. F., Vol-II: 351, 459
 Pichado, M., Vol-I: 218
 Pichler, S., Vol-II: 371
 Pickering, A. S., Vol-II: 166
 Pickering, D. I., Vol-II: 686
 Pickren, W. E., Vol-I: 20
 Pidada, S., Vol-II: 312
 Pidgeon, N., Vol-I: 111
 Pienta, A. M., Vol-I: 573
 Pierce, P. F., Vol-II: 686

- Pierce, T. W., Vol-II: 318
 Pietromonaco, P. R., Vol-I: 436; Vol-II: 294
 Pietrzak, J., Vol-II: 141
 Pignone, M., Vol-II: 544
 Piirto, J., Vol-I: 346, 348
 Pike, K. L., Vol-I: 161
 Pike, K. M., Vol-I: 438
 Piliavin, J. A., Vol-II: 338–339
 Pilkington, N., Vol-I: 68
 Pilkington, N. W., Vol-II: 367–368
 Pillard, R., Vol-I: 63
 Pillard, R. C., Vol-II: 27
 Pillay, Y., Vol-II: 194
 Pilon, D. A., Vol-II: 56
 Pina, D., Vol-II: 413–414
 Pinch, P., Vol-II: 690
 Pincus, A. L., Vol-II: 26
 Pincus, H. A., Vol-II: 519
 Pinderhughes, E., Vol-II: 255, 261–262
 Pinker, S., Vol-I: 202, 259, 261
 Pinto, K., Vol-II: 412
 Piorkowski, R., Vol-II: 43
 Piotrkowski, C. S., Vol-II: 502–503
 Pipher, M., Vol-I: 345; Vol-II: 30, 117, 253
 Piquero, A., Vol-II: 329
 Piran, N., Vol-I: 118; Vol-II: 170
 Piscecco, S., Vol-I: 145
 Piskur, J., Vol-I: 194
 Pita, J., Vol-I: 459
 Pittinsky, T. L., Vol-I: 284, 353, 433
 Pitts, M. K., Vol-I: 388
 Pituch, K. A., Vol-II: 226, 229
 Pjrek, E., Vol-I: 444
 Plailly, J., Vol-I: 249
 Plant, E. A., Vol-I: 193, 431; Vol-II: 97
 Plante, R. F., Vol-II: 113
 Plassman, B. L., Vol-II: 523
 Pleak, R., Vol-II: 119, 125
 Pleck, J. H., Vol-I: 44, 47, 49–50, 52–53, 134, 136–138, 145; Vol-II: 117, 256, 266, 281–282, 294, 297, 299, 402, 415
 Pledger, M., Vol-II: 480
 Pleis, J. R., Vol-II: 525
 Pliner, P., Vol-I: 456–458, 460–461, 567
 Plomin, R., Vol-I: 302
 Plous, S., Vol-II: 170–171, 647–648
 Plug, C., Vol-I: 562
 Plugge-Foust, C., Vol-I: 68
 Plumb, P., Vol-I: 510
 Plummer, D. C., Vol-II: 227
 Poag, J. R., Vol-I: 354
 Podolski, C., Vol-II: 645
 Podolsky, D. K., Vol-II: 529, 544
 Pohar, S. L., Vol-II: 530
 Polefrone, J. M., Vol-I: 442
 Polivy, J., Vol-I: 455–466; Vol-II: 8, 167
 Pollack, W. S., Vol-I: 45, 50, 538; Vol-II: 222, 224–225, 228–230, 236, 238
 Polo, M., Vol-II: 43
 Pols, H., Vol-I: 203
 Polsky, N., Vol-II: 595
 Polzer, J. T., Vol-II: 349, 456
 Pomaki, G., Vol-II: 499
 Pomerantz, A., Vol-I: 199
 Pomerantz, W. J., Vol-II: 482
 Pomerantz-Zorin, L., Vol-II: 460
 Pomeroy, D., Vol-I: 329
 Pomeroy, W., Vol-I: 486
 Pomeroy, W. R., Vol-I: 66
 Ponse, B., Vol-II: 363
 Ponseti, J., Vol-I: 225
 Ponterotto, J. G., Vol-I: 122; Vol-II: 228
 Ponton, C. W., Vol-I: 243
 Poole, D. A., Vol-I: 330
 Pope, H. G. Jr., Vol-I: 53, 90, 535; Vol-II: 99, 155, 158–162, 166–167, 170, 172, 575
 Pope, R. L., Vol-I: 34
 Popiel, D., Vol-II: 98
 Popovic, J. R., Vol-II: 533
 Popp, D., Vol-I: 484
 Porath, C. L., Vol-II: 429, 435
 Porche, M. V., Vol-I: 15, 137–138, 150; Vol-II: 15
 Portegijs, W., Vol-II: 453
 Porter, J., Vol-II: 486
 Porter, L. S., Vol-II: 508–509, 511
 Porter, N., Vol-II: 192
 Portillo, M., Vol-I: 353
 Pöschl, S., Vol-II: 646
 Post, E. M., Vol-I: 123, 137, 248
 Post, M. W., Vol-II: 483
 Post, R. M., Vol-II: 134, 195
 Postmes, T., Vol-I: 193
 Poteet, M. L., Vol-II: 454
 Potosky, A. L., Vol-II: 527
 Potter, B. K., Vol-II: 477
 Potter, J., Vol-I: 111
 Potuchek, J., Vol-II: 410
 Poulin-Dubois, D., Vol-I: 500–501
 Powell, B., Vol-I: 440
 Powell, D. A., Vol-I: 442
 Powell, G. N., Vol-II: 448
 Powell, J. W., Vol-II: 483
 Powell-Griner, E., Vol-II: 473
 Power, C., Vol-II: 169
 Powers, D., Vol-II: 114
 Powers, J. L., Vol-II: 76
 Powers, J. S., Vol-II: 575
 Powlishta, K. K., Vol-I: 500–501; Vol-II: 23
 Pratarelli, M. E., Vol-I: 194
 Pratt, C., Vol-II: 484
 Pratt, D., Vol-II: 507
 Pratt, J., Vol-I: 307, 328; Vol-II: 568, 651
 Pratt, M., Vol-II: 567

Prättälä, R., Vol-II: 473
 Pratto, F., Vol-I: 7, 191–204; Vol-II: 7, 362, 662
 Prentice, D. A., Vol-I: 195, 198–199, 456, 506–507;
 Vol-II: 312, 340, 448
 Prepin, J., Vol-I: 217
 Prescott, J., Vol-I: 247
 Prescott, S., Vol-I: 197
 Presnell, K., Vol-I: 86; Vol-II: 155
 Presser, H. B., Vol-II: 402, 410
 Pressly, P. K., Vol-II: 232
 Preston-Schreck, C., Vol-II: 646–647, 649
 Prestopnik, J. L., Vol-I: 329
 Pretty, G., Vol-II: 579, 619
 Pribor, E. F., Vol-II: 195
 Price, B., Vol-I: 327, 330
 Price, D. D., Vol-I: 241, 243
 Price, R. H., Vol-II: 140
 Priesing, D., Vol-II: 114, 368
 Priest, R. F., Vol-II: 677
 Prihoda, T., Vol-II: 622
 Prilleltensky, I., Vol-I: 31, 35; Vol-II: 272, 613, 635
 Prince, H. T., Vol-II: 677
 Prince, V., Vol-I: 486
 Pringle, R., Vol-I: 285
 Prkachin, K. M., Vol-I: 438
 Proctor, B., Vol-II: 123
 Propp, K. M., Vol-II: 339, 349
 Protopopescu, X., Vol-I: 223, 225
 Proulx, C. M., Vol-II: 296
 Proulx, R., Vol-II: 361
 Prouty, A. M., Vol-II: 255
 Prouty-Lyness, A. M., Vol-II: 255
 Provencher, V., Vol-I: 457
 Proverbio, A. M., Vol-I: 239
 Pruitt, B. H., Vol-II: 452
 Pruzinsky, T., Vol-II: 153
 Pryor, D., Vol-I: 66
 Pryor, J. B., Vol-II: 290, 660
 Pryzgodna, J., Vol-I: 2, 365, 373; Vol-II: 2
 Psalti, A., Vol-II: 260
 Puentes, J., Vol-II: 283
 Pugh, M. D., Vol-II: 343, 350
 Puhl, R., Vol-II: 167
 Pulkkinen, L., Vol-II: 27, 322
 Puolakka, K., Vol-II: 545
 Purcell, D. W., Vol-I: 68
 Purcell, P., Vol-I: 281
 Purdie, V., Vol-II: 141
 Purdie-Vaughns, V., Vol-I: 198
 Putallaz, M., Vol-I: 397
 Puterman, E., Vol-II: 499, 504
 Putnam, F. W., Vol-II: 195
 Putnam, L., Vol-I: 395, 397
 Puts, D. A., Vol-I: 217, 270, 323–324
 Pyke, K., Vol-II: 405, 409, 412
 Pyszczynski, T., Vol-II: 169

Q

Qian, H., Vol-II: 327
 Quaiser-Pohl, C., Vol-I: 326
 Quas, J., Vol-I: 442
 Quick, J. C., Vol-II: 502
 Quigley, K. S., Vol-I: 457
 Quine, L., Vol-II: 424
 Quinlan, D. M., Vol-II: 139
 Quinn, C. E., Vol-II: 168
 Quinn, D. M., Vol-I: 85, 91, 306; Vol-II: 157, 659–660
 Quinn, P. C., Vol-I: 318, 504
 Quinsey, V. L., Vol-II: 285

R

Raag, T., Vol-I: 143
 Rabinowitz, F. E., Vol-I: 45, 50, 54; Vol-II: 135, 137,
 224–225, 229–230, 232, 234–236
 Rabinowitz, V. C., Vol-II: 588
 Raboy, B., Vol-II: 411
 Rachlin, K., Vol-II: 119
 Rackliff, C. L., Vol-I: 143
 Rademacher, J., Vol-I: 244
 Rader, J., Vol-II: 201–202, 205, 211–212
 Radkowsky, M., Vol-II: 136, 140
 Rado, S., Vol-I: 61
 Radway, J., Vol-I: 399
 Raffaelli, M., Vol-I: 143
 Rafi, A., Vol-I: 328
 Raghunathan, T. E., Vol-II: 476
 Ragins, B. R., Vol-II: 449, 458
 Ragsdale, J. D., Vol-II: 293
 Rahav, M., Vol-II: 145
 Rahman, Q., Vol-I: 225, 328
 Raidt, T., Vol-II: 363
 Raina, T. N., Vol-I: 347
 Rainie, L., Vol-II: 653
 Rainville, P., Vol-I: 243
 Raitt, F. E., Vol-II: 64, 72
 Raj, R., Vol-II: 125
 Rajendran, P., Vol-I: 347
 Rakowski, W., Vol-II: 544
 Ram, N., Vol-II: 568
 Ramage, K., Vol-II: 339
 Ramazanoglu, C., Vol-II: 282
 Ramirez-Valles, J., Vol-I: 187
 Ramos, V., Vol-II: 31
 Ramrattan, M. E., Vol-I: 63; Vol-II: 141
 Ramsay, J. O., Vol-II: 82
 Ramsden, M. W., Vol-I: 142–143
 Ramsey, S. J., Vol-II: 325
 Randall, E. P., Vol-I: 327
 Randel, A. E., Vol-II: 341
 Rane, A., Vol-II: 474
 Raney, A. A., Vol-II: 647
 Rani, M., Vol-II: 481
 Rankin, S. R., Vol-II: 578
 Raofi, S., Vol-II: 521

- Rapagna, S. O., Vol-I: 349
 Raphael, B., Vol-II: 477
 Raphaeli, N., Vol-I: 242
 Rapkin, B., Vol-II: 633
 Rapoport, R., Vol-II: 452
 Rappaport, J., Vol-II: 613, 619
 Rappoport, L., Vol-I: 463
 Rapson, R. L., Vol-I: 239
 Raskin, M., Vol-II: 100
 Rasky, E., Vol-II: 473
 Rasmussen, K., Vol-I: 242
 Rastogi, M., Vol-II: 260
 Ratcliff, K., Vol-II: 414
 Rauch, J., Vol-II: 650
 Rauh, V., Vol-II: 620
 Raven, B., Vol-I: 416
 Raver, J. L., Vol-II: 301
 Ravussin, E., Vol-II: 478
 Rawlins, W. K., Vol-II: 284
 Rawthorne, L. J., Vol-II: 29
 Ray, S., Vol-II: 652
 Rayburn, T. M., Vol-II: 188, 193
 Rayner, C., Vol-II: 423–424, 429–430
 Rayyan, F., Vol-II: 625, 633
 Razani, J., Vol-II: 605
 Read, G., Vol-I: 56
 Read, J. G., Vol-II: 553
 Read, S. J., Vol-II: 33
 Real, T., Vol-II: 229–230, 238
 Realo, A., Vol-I: 441
 Ream, G., Vol-I: 480
 Reardon, P., Vol-I: 197
 Reason, P., Vol-I: 118, 122
 Reavey, P., Vol-I: 119
 Rechtsteiner, E. A., Vol-II: 518
 Redaelli, M., Vol-II: 543
 Reddy, D. M., Vol-II: 350
 Redman, L. M., Vol-II: 478
 Reed, B. R., Vol-I: 115, 135, 487
 Reed, V., Vol-II: 337
 Reed-Danahay, D. E., Vol-I: 115
 Reed-Sanders, D., Vol-I: 135
 Reedy, C. S., Vol-I: 187; Vol-II: 114
 Reel, J. J., Vol-II: 574–575
 Reeves, J. B., Vol-I: 52
 Regan, P. C., Vol-II: 286–287
 Régner, I., Vol-I: 284, 289
 Rehkopf, D. H., Vol-I: 179
 Rehm, J., Vol-II: 481
 Reich, S. M., Vol-II: 613, 635
 Reichard, R. J., Vol-II: 450
 Reichert, T., Vol-II: 170–171
 Reid, C., Vol-II: 619
 Reid, H., Vol-I: 330, 545
 Reid, P. T., Vol-I: 35, 198, 290; Vol-II: 260
 Reid-Griffin, A., Vol-I: 330
 Reidy, E. B., Vol-II: 410
 Reimer, M. A., Vol-II: 546
 Reimers, S., Vol-I: 225, 324
 Reinaart, R., Vol-I: 35
 Reinharz, S., Vol-I: 33, 103, 106, 108, 111, 113
 Reinking, R., Vol-I: 322
 Reips, U., Vol-II: 602
 Reis, H. T., Vol-II: 281–282, 294
 Reis, L. A. G., Vol-II: 526
 Reiter, E. O., Vol-I: 354, 533–534
 Reiter-Palmon, R., Vol-I: 354
 Rejskind, F. G., Vol-I: 349
 Rekers, G. A., Vol-II: 118, 122
 Remafedi, G., Vol-II: 156
 Remer, P., Vol-I: 35; Vol-II: 92–94, 192
 Rennie, H., Vol-II: 484
 Renzetti, C. M., Vol-II: 632
 Repetti, R. L., Vol-II: 143
 Resnick, H. S., Vol-II: 316
 Resnick, M. D., Vol-II: 140, 156
 Resnick, S., Vol-I: 279
 Resnick, S. M., Vol-I: 219
 Restrepo, D., Vol-I: 246
 Reuman, D., Vol-II: 43, 388
 Reusch, J. E., Vol-II: 531
 Reuter, M., Vol-I: 354, 567
 Reuter-Lorenz, P. A., Vol-I: 567
 Reuveni, H., Vol-II: 524
 Revenson, T. A., Vol-II: 497, 501, 543, 546–547, 550–551, 554
 Reyes, C., Vol-II: 200
 Reyes, O., Vol-II: 623, 634
 Reynolds, A. L., Vol-I: 34
 Reynolds, C. R., Vol-I: 569; Vol-II: 602
 Reynolds, J. R., Vol-II: 415
 Reynolds, K. A., Vol-II: 547
 Reznikoff, M., Vol-II: 295–296
 Rguibi, M., Vol-II: 160
 Rheman, U. S., Vol-II: 499–500, 509
 Rhoads, K. V., Vol-II: 343
 Rhode, D. L., Vol-II: 337
 Rhodes, J. E., Vol-I: 103
 Rhodes, J., Vol-II: 623
 Rhodes, K., Vol-I: 195
 Rhodes, L., Vol-II: 473
 Rhodes, M., Vol-I: 502, 506–507
 Rhodes, N. D., Vol-I: 143
 Rhodes, S., Vol-II: 368
 Rholes, W. S., Vol-I: 196
 Rhudy, J. L., Vol-I: 242
 Rhyne, D., Vol-II: 298
 Riach, P. A., Vol-II: 447
 Ribbens, J., Vol-I: 106
 Ricciardelli, L. A., Vol-I: 542; Vol-II: 156, 161, 163, 165, 168, 173
 Rice, J. K., Vol-II: 264
 Rice, R. E., Vol-II: 653
 Rice, R. W., Vol-II: 677–678

- Rich, J. B., Vol-I: 223
 Richards, H., Vol-II: 160, 168
 Richards, J. L., Vol-II: 318
 Richards, M. H., Vol-I: 172, 436, 535–536, 538–539, 544; Vol-II: 117, 384
 Richards, M., Vol-I: 147; Vol-II: 424
 Richardson, A. E., Vol-I: 328
 Richardson, A. G., Vol-I: 347
 Richardson, D. R., Vol-II: 312, 314
 Richardson, D. S., Vol-II: 313–314, 631
 Richardson, L., Vol-I: 111, 285
 Richardson, P. W., Vol-II: 382
 Richardson, R., Vol-II: 673–674
 Richardson, S. S., Vol-II: 525
 Richardson, V. E., Vol-I: 573
 Richelme, C., Vol-I: 217
 Richeson, J. A., Vol-I: 438
 Richins, M. L., Vol-II: 166
 Richman, E. L., Vol-II: 576
 Richman, J. A., Vol-II: 436
 Richman, R. A., Vol-I: 248
 Richmond, C., Vol-II: 487
 Richmond, K., Vol-I: 9, 137, 139; Vol-II: 9, 111–125
 Rickard, K. A., Vol-I: 148
 Rickard, K. M., Vol-II: 201
 Ricketts, W. A., Vol-II: 360
 Ridder, E. M., Vol-II: 135
 Riddle, B., Vol-II: 94–95, 99
 Rideout, V. J., Vol-II: 651
 Rideout, V., Vol-I: 542
 Ridge, D., Vol-I: 51; Vol-II: 168
 Ridgeway, C., Vol-II: 346
 Ridgeway, C. L., Vol-I: 90; Vol-II: 281, 283, 339, 341–342, 345
 Ridley, C. A., Vol-II: 210
 Riedel, M., Vol-II: 607
 Rieger, G., Vol-I: 512
 Rieke, M. L., Vol-II: 80
 Riemer, B. A., Vol-II: 571
 Riemer, M., Vol-II: 613, 635
 Riepe, M. W., Vol-I: 330
 Rierdan, J., Vol-I: 535, 544
 Riessman, C. K., Vol-I: 116
 Riessman, C. K., Vol-II: 297
 Riger, S., Vol-I: 31–32
 Riggio, R. E., Vol-II: 75
 Riggle, E. D., Vol-I: 69, 187
 Riggle, E. D. B., Vol-II: 114, 125
 Rilea, S. L., Vol-I: 325
 Riley, III, J. L., Vol-I: 241
 Rimé, B., Vol-I: 440
 Rimmer, J. H., Vol-II: 567
 Rincón, C., Vol-I: 540; Vol-II: 141
 Rinehart, R., Vol-I: 111
 Ring, C., Vol-II: 258
 Rink, F., Vol-II: 461
 Riordan, C., Vol-I: 288
 Riordan, C. A., Vol-II: 347
 Riordan, C. M., Vol-II: 350
 Risco, C., Vol-II: 194–195
 Riseley, D., Vol-II: 368
 Rissman, E. F., Vol-I: 218
 Ristock, J., Vol-II: 626, 631
 Ristock, J. L., Vol-II: 196, 258, 509–510
 Risvik, E., Vol-I: 462–463
 Ritsma, S., Vol-II: 228
 Ritter, B. A., Vol-II: 449
 Ritter, K. Y., Vol-I: 64
 Rivadeneyra, R., Vol-I: 542
 Rivas, D., Vol-I: 285
 Rivera, M., Vol-II: 94
 Rivers, B. M., Vol-II: 528
 Rivers, C., Vol-II: 631
 Rivers, I., Vol-I: 290
 Rivers, S. E., Vol-I: 439; Vol-II: 454
 Rizza, M. G., Vol-I: 280
 Rizzo, A. R., Vol-I: 244
 Roach, K. A., Vol-I: 307
 Roades, L., Vol-II: 292
 Robbins, A. S., Vol-II: 527–528
 Robbins, D., Vol-I: 327
 Roberson-Nay, R., Vol-I: 202
 Robert, A., Vol-II: 10
 Robert, M., Vol-I: 10, 240, 267, 269–270, 319–320, 322, 325–326, 330
 Roberts, A., Vol-I: 150
 Roberts, B. W., Vol-I: 571; Vol-II: 33–34
 Roberts, D. F., Vol-I: 542
 Roberts, H., Vol-I: 106
 Roberts, J. E., Vol-II: 141
 Roberts, M. C., Vol-II: 117
 Roberts, R., Vol-II: 195
 Roberts, R. A., Vol-I: 35
 Roberts, R. D., Vol-I: 439
 Roberts, S. J., Vol-II: 552
 Roberts, S. K., Vol-I: 290
 Roberts, T. A., Vol-II: 153–154, 157, 169–171; Vol-I: 91, 571
 Roberts, W. L., Vol-II: 319
 Robertson, A., Vol-II: 362
 Robertson, C. W., Vol-II: 385
 Robertson, J. M., Vol-II: 224–226, 228, 230
 Robertson, M., Vol-II: 619
 Robertson, R. M., Vol-II: 543
 Robeson, W. W., Vol-I: 539
 Robey, C. S., Vol-II: 295
 Robin, L., Vol-I: 436
 Robinson, B., Vol-I: 7, 68
 Robinson, B. E., Vol-II: 206
 Robinson, B. W., Vol-II: 672
 Robinson, D. A., Vol-II: 201, 205
 Robinson, E., Vol-I: 199
 Robinson, J., Vol-II: 404–405, 407, 408–410
 Robinson, J. P., Vol-II: 404–405, 407, 445

- Robinson, L., Vol-II: 497
 Robinson, M. D., Vol-I: 430, 434, 436
 Robinson, M. E., Vol-I: 241
 Robinson, S. L., Vol-II: 423, 428
 Rocher, S., Vol-I: 134
 Rochlen, A. B., Vol-I: 138; Vol-II: 226, 228–229, 363–364
 Rohtchina, E., Vol-I: 236
 Rodbotten, M., Vol-I: 462
 Rodham, K., Vol-II: 478
 Rodin, J., Vol-I: 246, 345; Vol-II: 156, 168
 Rodriguez, G. M., Vol-II: 205
 Rodriguez, I., Vol-II: 503
 Rodríguez-Carmona, M., Vol-I: 237
 Roe, C. M., Vol-II: 530
 Roe, L. S., Vol-I: 456
 Roe, M. T., Vol-I: 456
 Roeder, M. R., Vol-I: 63
 Roeltgen, D., Vol-I: 218
 Roen, K., Vol-II: 113, 121
 Roe-Sepowitz, D., Vol-II: 604
 Roeser, R. W., Vol-II: 393–394
 Roets, G., Vol-I: 35
 Rogelberg, S. G., Vol-II: 349
 Rogers, A., Vol-I: 105
 Rogers, C. R., Vol-I: 352; Vol-II: 56
 Rogers, H. J., Vol-II: 67
 Rogers, P. L., Vol-I: 413, 441
 Rogers, P. O., Vol-II: 296
 Rogers, R., Vol-II: 72, 602
 Rohde, W., Vol-I: 122; Vol-II: 51, 54
 Rohlinger, D. A., Vol-II: 549
 Rohrbaugh, M. J., Vol-II: 551
 Roizman, S., Vol-I: 248
 Roland, P., Vol-I: 249
 Roll, C., Vol-II: 620
 Rollman, G. B., Vol-I: 240
 Rollnick, S., Vol-II: 235
 Rollock, D., Vol-I: 442
 Rolls, B. J., Vol-I: 456–457, 462
 Romans, S. E., Vol-II: 73
 Romatowski, J. A., Vol-II: 287
 Romberger, B., Vol-II: 451, 453
 Romero, A., Vol-II: 618
 Romney, D. M., Vol-II: 390
 Ronai, C. R., Vol-I: 115
 Roof, R. L., Vol-I: 323
 Roopnarine, J., Vol-II: 412
 Roopnarine, J. L., Vol-I: 445
 Root, M. P., Vol-II: 103, 195
 Roper, E. A., Vol-II: 568
 Rosabianca, A., Vol-I: 433
 Rosario, M., Vol-I: 63–64, 545; Vol-II: 621
 Rosch, E., Vol-I: 196, 361; Vol-II: 32
 Roscoe, B., Vol-II: 319
 Rose, A. J., Vol-I: 445, 539
 Rose, H., Vol-I: 511
 Rose, J. G., Vol-II: 521
 Rose, N., Vol-I: 202
 Rose, N. R., Vol-II: 542
 Rose, R., Vol-II: 482
 Rose, R. J., Vol-II: 322
 Rose, S., Vol-II: 292, 509
 Rose, S. E., Vol-II: 476
 Rose, S. M., Vol-II: 289, 292
 Rosemann, T., Vol-II: 519
 Rosen, A. B., Vol-II: 529, 545
 Rosen, R. C., Vol-I: 486
 Rosenbaum, A., Vol-II: 230
 Rosenbaum, R. S., Vol-I: 223
 Rosenberg, B. G., Vol-I: 236
 Rosenberg, D., Vol-I: 319
 Rosenberg, M., Vol-II: 118, 389
 Rosenberg, P. J., Vol-II: 363
 Rosenberg, R., Vol-I: 20, 22
 Rosener, J. B., Vol-II: 458
 Rosenfeld, D., Vol-I: 105, 117
 Rosenfeld, S., Vol-II: 414
 Rosengard, D. S., Vol-II: 647
 Rosenhall, U., Vol-I: 244
 Rosenholtz, S. J., Vol-II: 352
 Rosenkrantz, P. S., Vol-I: 28; Vol-II: 104, 188, 678
 Rosenthal, N. B., Vol-I: 30
 Rosenthal, R., Vol-I: 306, 318, 412–413, 441; Vol-II: 295, 386
 Rosette, A. S., Vol-II: 351
 Rosik, C. H., Vol-II: 361
 Rosip, J. C., Vol-I: 438
 Roskos-Ewoldsen, B., Vol-I: 325, 329
 Rosoff, B., Vol-I: 36
 Rospenda, K. M., Vol-II: 436
 Ross, C. E., Vol-I: 463
 Ross, F. I., Vol-II: 482
 Ross, J., Vol-I: 218–219
 Ross, J. M., Vol-II: 361–362, 365
 Ross, L., Vol-I: 200
 Ross, L. T., Vol-II: 20, 284
 Ross, M., Vol-I: 63
 Ross, N., Vol-II: 487
 Ross, S. I., Vol-I: 284
 Ross, S. P., Vol-I: 330
 Rossano, L., Vol-I: 186
 Rosser, B. R. S., Vol-II: 362, 365
 Rosser, R. A., Vol-I: 220
 Rosser, S. V., Vol-I: 285, 287
 Rossi, A. S., Vol-II: 326
 Rossiter, M. W., Vol-I: 20, 21
 Rossouw, J. E., Vol-I: 185
 Rostosky, S. S., Vol-I: 69, 187; Vol-II: 114
 Rotella, S., Vol-II: 387
 Roter, D. L., Vol-I: 436; Vol-II: 523
 Roth, D. A., Vol-I: 461
 Roth, S. A., Vol-II: 255
 Roth, S., Vol-I: 354

- Rothbart, M., Vol-I: 196; Vol-II: 94, 193
 Rothblum, E., Vol-I: 63, 66, 71–72, 369; Vol-II: 193
 Rothblum, E. D., Vol-I: 66; Vol-II: 138, 411
 Rothenberg, A., Vol-I: 352
 Rotheram-Borus, M. J., Vol-I: 63, 68, 545
 Rothfield, P., Vol-I: 117
 Rothgerber, H., Vol-I: 446; Vol-II: 168
 Rothschild, L., Vol-I: 197
 Rothstein, A., Vol-II: 203
 Rottman, L., Vol-II: 287
 Rotundo, M., Vol-II: 426
 Roughgarden, J., Vol-II: 113
 Rounsley, C. A., Vol-I: 60, 71
 Roush, P. E., Vol-II: 675
 Rousset, S., Vol-I: 463
 Rovet, J. F., Vol-I: 220
 Rowatt, W. C., Vol-II: 362
 Rowe, J., Vol-I: 566–567
 Rowe, J. W., Vol-I: 227
 Rowe, M., Vol-II: 71
 Rowe, R., Vol-I: 548
 Rowen, C. J., Vol-II: 362
 Rowley, S. A. J., Vol-I: 496
 Royet, J. P., Vol-I: 249
 Rozee-Koker, P., Vol-I: 198
 Rozelle, R. M., Vol-II: 449
 Rozenkrantz, P. S., Vol-II: 64
 Rozin, P., Vol-II: 169, 649
 Rubenfeld, K., Vol-II: 296
 Rubenson, D. L., Vol-I: 344
 Rubin, A. M., Vol-II: 660
 Rubin, D. B., Vol-I: 318; Vol-II: 386
 Rubin, L. B., Vol-II: 299
 Rubin, L. R., Vol-II: 660
 Rubin, R. M., Vol-I: 573
 Rubin, Z., Vol-II: 297–298
 Rubinow, D. R., Vol-I: 458
 Rubinstein, G., Vol-I: 50; Vol-II: 26–27
 Rubio, V. J., Vol-I: 322
 Ruble, D., Vol-I: 8, 84, 465–518
 Ruble, D. N., Vol-I: 219, 505, 509, 527, 529–532, 549;
 Vol-II: 8, 330, 368, 387, 521
 Ruch, W., Vol-I: 172
 Ruddick, S., Vol-I: 32
 Rude, S. N., Vol-II: 452
 Rude, S. S., Vol-II: 35
 Ruderman, M. N., Vol-II: 455
 Rudkin, J. K., Vol-II: 613
 Rudman, L. A., Vol-I: 420; Vol-II: 290, 298–299, 347,
 449–450, 647, 660–661
 Rudolph, K. D., Vol-I: 445, 539, 545; Vol-II: 139
 Ruebelt, S. G., Vol-II: 205
 Ruehlman, L. S., Vol-II: 522
 Ruffin, M. T., Vol-I: 182
 Ruffine, S., Vol-II: 95
 Rufolo, A. M., Vol-I: 311
 Ruggiero, G., Vol-I: 321
 Ruiz de Esparza, C. A., Vol-II: 237
 Rukavishnikov, A. A., Vol-II: 26
 Rule, N. O., Vol-II: 451
 Rumery, S. M., Vol-II: 349
 Runco, M. A., Vol-I: 7, 343–355
 Runtz, M., Vol-II: 208
 Rupp, L. J., Vol-I: 110
 Rusbult, C. E., Vol-I: 64; Vol-II: 294–295
 Russ, S. W., Vol-I: 351–352, 354
 Russell, D., Vol-II: 103
 Russell, G. M., Vol-I: 69, 72, 103, 118–119
 Russell, J., Vol-II: 648
 Russell, M., Vol-II: 69
 Russell, S. T., Vol-II: 136, 138, 142
 Russo, N. F., Vol-I: 20, 25, 27, 370–371; Vol-II: 97
 Rust, P. C., Vol-I: 480; Vol-II: 363–365
 Ruth, J. E., Vol-I: 25, 259, 348
 Rutherford, A., Vol-I: 6, 19–36
 Rutland, A., Vol-I: 517
 Rutter, A., Vol-II: 322, 431
 Rutter, M., Vol-I: 532, 543
 Rutter, V., Vol-I: 64
 Rüttiger, L., Vol-I: 237
 Ruzek, S., Vol-II: 523
 Ryalls, B., Vol-I: 263
 Ryalls, B. O., Vol-I: 515
 Ryan, A. D., Vol-II: 455–456, 461
 Ryan, A. M., Vol-II: 633
 Ryan, C., Vol-I: 66
 Ryan, H., Vol-I: 187
 Ryan, K. D., Vol-II: 265
 Ryan, K., Vol-I: 218
 Ryan, L., Vol-I: 547
 Ryan, M. K., Vol-I: 193; Vol-II: 455–456, 461
 Ryan, R. M., Vol-II: 29, 297, 386, 388
 Ryan, S., Vol-I: 10, 243
 Ryb, G. E., Vol-II: 483
 Rydell, R. J., Vol-I: 433
 Ryff, C. D., Vol-I: 563–564
 Rysman, A., Vol-I: 395, 399
- S**
 Saad, L., Vol-II: 369–370
 Saal, F. E., Vol-II: 284
 Sabalis, R. F., Vol-II: 116–117
 Sabin, K., Vol-I: 187
 Sabo, D. F., Vol-II: 576
 Sachs-Ericsson, N., Vol-II: 224
 Sackett, P. R., Vol-II: 349, 426
 Sadalla, E. K., Vol-II: 285
 Sadava, S. W., Vol-I: 136; Vol-II: 167
 Sadetsky, N., Vol-II: 528
 Sadker, D., Vol-I: 283, 285, 388
 Sadker, M., Vol-I: 283, 285, 388
 Saegert, S., Vol-II: 626
 Safren, S. A., Vol-II: 136, 140, 142
 Sagarin, B. J., Vol-I: 392

- Sagas, M., Vol-II: 646
 Sage, G. H., Vol-II: 570
 Sager, C., Vol-II: 156
 Sagi, E., Vol-I: 244
 Sagrestano, L. M., Vol-II: 52
 Sahm, W. B., Vol-I: 503
 Saidel, T., Vol-I: 187
 Sailer, C. A., Vol-II: 365
 Saitta, M. B., Vol-I: 421
 Sajjadi-Bafghi, S. H., Vol-I: 354
 Sakuma, N., Vol-I: 222, 326
 Salas, E., Vol-II: 340, 343, 347
 Salem, D., Vol-II: 619
 Sales, E., Vol-II: 330
 Salguero, G., Vol-I: 243
 Salili, F., Vol-II: 56
 Salinero, J., Vol-I: 243
 Salomone, R. C., Vol-I: 289, 291
 Salovey, P., Vol-I: 397, 399, 418, 439; Vol-II: 454
 Saltaris, C., Vol-I: 545
 Salthouse, T. A., Vol-I: 567–568
 Salvy, S.-J., Vol-I: 456, 461
 Salzinger, S., Vol-II: 621
 Samad, A., Vol-I: 328
 Samar, R., Vol-I: 390
 Samelson, F., Vol-I: 23
 Sameroff, A. J., Vol-II: 383–384
 Sampson, E. E., Vol-I: 31
 Sampson, R. J., Vol-I: 546
 Samuel, L., Vol-II: 553
 Samuels, C. A., Vol-II: 24
 Sanbonmatsu, D. M., Vol-I: 198
 Sanchez, B., Vol-II: 623
 Sanchez, D. T., Vol-I: 92; Vol-II: 291, 299
 Sanchez, L., Vol-II: 409–410, 412
 Sanchez-Hucles, J., Vol-II: 460, 615
 Sandberg, D. E., Vol-I: 140
 Sanderman, R., Vol-II: 501, 548, 552
 Sanders, B., Vol-I: 318
 Sanders, G., Vol-I: 224, 226, 324
 Sanders, C. E., Vol-II: 386
 Sanders, S., Vol-I: 187
 Sandfort, T. G. M., Vol-II: 135, 224, 369
 Sandler, J. C., Vol-II: 604
 Sandman, D., Vol-II: 228
 Sando, I., Vol-I: 245; Vol-I: 243
 Sandoval, C., Vol-I: 31
 Sandstrom, M. J., Vol-I: 547
 Sandstrom, N. J., Vol-I: 329
 Sandvik, E., Vol-I: 434
 Sani, F., Vol-I: 496, 500
 Sanikhani, M., Vol-II: 367
 Sankar, P., Vol-I: 179
 Sansanwal, D. N., Vol-I: 347
 Santacreu, J., Vol-I: 322
 Santana, V., Vol-II: 195
 Santoni, V., Vol-I: 328
 Santor, D. A., Vol-II: 82
 Santos de Barona, M., Vol-I: 198
 Santosh, C., Vol-I: 330
 Sapadin, L. A., Vol-II: 283
 Sapienza, P., Vol-I: 262, 300
 Saracho, O. N., Vol-I: 354
 Saragovi, C., Vol-II: 23–25, 43
 Sarah, E., Vol-II: 383, 385
 Sargent, S. L., Vol-II: 656
 Sarigiani, P. A., Vol-I: 547
 Saris, R. N., Vol-I: 35
 Sarlund-Heinrich, P., Vol-II: 209
 Saron, C., Vol-II: 54
 Sartore, M. L., Vol-II: 646
 Sartucci, F., Vol-I: 239
 Sarwer, D., Vol-II: 163
 Sasanuma, S., Vol-I: 222, 326
 Sasao, T., Vol-II: 620, 623–624, 634
 Sasse, D. K., Vol-I: 13, 53, 535, 544, 567–568; Vol-II: 13, 99, 155, 157, 159–161
 Sato, H., Vol-I: 243, 245
 Sauts, S. J., Vol-I: 317
 Sauaia, A., Vol-II: 531
 Saucier, D. A., Vol-I: 323; Vol-II: 658
 Saucier, D. M., Vol-I: 7, 53, 143, 215–227, 264, 321, 328–330, 535, 567–568; Vol-II: 158, 170
 Saucier, G., Vol-II: 28
 Sauls, S. J., Vol-I: 317
 Saunders, A., Vol-I: 548
 Saunders, B. E., Vol-II: 195
 Sausa, L. A., Vol-II: 367–368
 Sava, S., Vol-I: 328
 Savic, I., Vol-I: 225, 249
 Savin-Williams, R., Vol-I: 10, 63, 480
 Savin-Williams, R. C., Vol-I: 194, 540; Vol-II: 10, 140, 359–371
 Sawalani, G. M., Vol-I: 546
 Sawrey, D. K., Vol-I: 269
 Sax, L., Vol-I: 236–237, 278–281, 284, 287–288
 Saxberg, J. K. J., Vol-I: 220
 Sayer, L. C., Vol-II: 405, 409, 446
 Scalliet, P. G. M., Vol-II: 527
 Scalora, M. J., Vol-II: 322
 Scantlebury, K., Vol-I: 283; Vol-II: 385
 Scarborough, E., Vol-I: 20–21, 26
 Scarce, R., Vol-II: 591–592, 596
 Scaringi, V., Vol-I: 138
 Scarr, S., Vol-I: 193, 204
 Schacher, S., Vol-II: 258
 Schaefer, C., Vol-II: 505
 Schaefer, K., Vol-I: 324
 Schafer, A., Vol-I: 443
 Schaffer, D. R., Vol-II: 295
 Schaie, K. W., Vol-I: 569
 Schalamon, J., Vol-II: 482
 Schane, R. E., Vol-II: 546
 Schank, J. C., Vol-I: 248
 Schappert, S. M., Vol-II: 474, 521

- Schare, M. L., Vol-II: 164
 Scharrer, E., Vol-II: 645–646, 649
 Scharrón-del-Río, M. R., Vol-II: 233
 Schat, A. C. H., Vol-II: 431
 Scheffer, I. E., Vol-II: 598
 Scheffler, S., Vol-II: 207
 Schei, B., Vol-II: 207
 Scheier, M. F., Vol-II: 434
 Schein, V. E., Vol-II: 342–344, 347, 677
 Schellhase, A., Vol-II: 646
 Schelling, T., Vol-I: 511
 Schelp, L., Vol-II: 483
 Schenk, E., Vol-II: 482
 Schenk, F., Vol-I: 329
 Scher, M., Vol-I: 45; Vol-II: 222–223, 230–231, 237
 Scherer, C. R., Vol-I: 392
 Scherer, K. R., Vol-I: 435, 441
 Schermer, F., Vol-II: 165
 Scheurich, J., Vol-I: 118
 Schiaffino, A., Vol-II: 479
 Schiappa, E., Vol-II: 656
 Schiedel, D. G., Vol-I: 562–564
 Schieman, S., Vol-I: 435
 Schienle, A., Vol-I: 443
 Schiffman, M., Vol-I: 226
 Schillace, M., Vol-II: 113
 Schiller, J. S., Vol-II: 519
 Schilling, E. A., Vol-II: 497
 Schippers, M. C., Vol-II: 348, 456
 Schlaug, G., Vol-I: 244
 Schlegel, A., Vol-I: 159, 161
 Schlegel, R., Vol-I: 549
 Schleicher, A., Vol-I: 244
 Schleicher, T. L., Vol-II: 344, 346
 Schlich, P., Vol-I: 463
 Schmader, T., Vol-I: 97
 Schmalz, D. L., Vol-II: 571
 Schmidt, C. E., Vol-II: 548
 Schmidt, F., Vol-II: 75
 Schmidt, S., Vol-I: 243
 Schmitt, D., Vol-II: 362
 Schmitt, D. P., Vol-II: 285–287
 Schmitt, J. P., Vol-II: 285
 Schmitt, N., Vol-II: 652
 Schmitz, J. A., Vol-II: 228
 Schmitzer-Torbert, N., Vol-I: 265
 Schmoll, F., Vol-I: 362
 Schnabel, P., Vol-II: 135, 224
 Schneider, B. W., Vol-II: 430
 Schneider, E. C., Vol-II: 529, 545
 Schneider, H., Vol-II: 553, 629
 Schneider, J., Vol-I: 363; Vol-II: 339
 Schneider, J. A., Vol-II: 161
 Schneider, K. S., Vol-II: 685
 Schneider, K. T., Vol-II: 433
 Schneider, L. J., Vol-II: 196
 Schneider, M., Vol-II: 629
 Schneider, S., Vol-II: 290
 Schneider, S. L., Vol-II: 648
 Schnell, F. I., Vol-II: 579
 Schnurr, S., Vol-I: 395
 Schober, C., Vol-I: 69
 Schofield, M., Vol-II: 484
 Schoggen, P., Vol-II: 633
 Scholtz, A. W., Vol-I: 245
 Schoning, S., Vol-I: 221, 223
 Schooler, D. L., Vol-II: 660
 Schope, R., Vol-I: 68
 Schope, R. D., Vol-I: 565; Vol-II: 340
 Schork, M. A., Vol-I: 227
 Schrimshaw, E. W., Vol-I: 64; Vol-II: 371
 Schröder, H., Vol-II: 619
 Schroeder, M., Vol-I: 7, 62
 Schruijer, S. G. L., Vol-II: 349
 Scheingart, D. E., Vol-I: 227
 Schulenberg, J. E., Vol-II: 224, 384
 Schuler, R., Vol-I: 544
 Schulman, G. I., Vol-II: 339, 341
 Schultheiss, O. C., Vol-II: 42–45, 48, 51–58
 Schultz, A. M., Vol-II: 578
 Schultz, H. K., Vol-II: 165, 168
 Schultz, W. W., Vol-I: 483
 Schupak-Neuberg, E., Vol-II: 658
 Schuster, C. R., Vol-II: 529
 Schwabacher, S., Vol-I: 193, 197
 Schwartz, J. H., Vol-I: 64, 66, 236
 Schwartz, P., Vol-I: 390; Vol-II: 291–292, 298, 363, 412
 Schwartz, P. M., Vol-I: 548
 Schwarz, N., Vol-II: 648
 Schwarzer, R., Vol-II: 619
 Schwarzwald, J., Vol-I: 242; Vol-II: 460
 Schweingruber, H., Vol-I: 531
 Schweinle, W., Vol-II: 329
 Schwesinger, G. C., Vol-I: 23
 Schwochau, S., Vol-II: 430
 Schyns, B., Vol-II: 448
 Scott, C. L., Vol-II: 654, 660
 Scott, C. R., Vol-II: 327
 Scott, J., Vol-II: 156
 Scott, K., Vol-II: 620
 Scott, K. A., Vol-II: 343, 451
 Scott, L., Vol-II: 621
 Scott, R. P. J., Vol-I: 11
 Scruggs, T. E., Vol-II: 385
 Sczesny, S., Vol-I: 8, 411–422; Vol-II: 8, 342, 448–449
 Seals, D., Vol-II: 320
 Sears, B., Vol-II: 139
 Sears, D. O., Vol-I: 185
 Sears, R. B., Vol-I: 187
 Seashore, H. G., Vol-I: 320
 Seccombe, K., Vol-II: 101
 Sechler, E. S., Vol-I: 198
 Sechzer, J. A., Vol-I: 371
 Sedgwick, E. K., Vol-I: 193, 195; Vol-II: 228

- Sedlacek, W. E., Vol-II: 228
 Seeff, L. C., Vol-II: 544
 Seeley, J., Vol-II: 142
 Seeley, J. R., Vol-I: 543; Vol-I: 543
 Seem, S. R., Vol-II: 104, 192–193
 Seeman, T. E., Vol-I: 227; Vol-II: 143
 Sefl, T., Vol-II: 624
 Segal, D. L., Vol-II: 67, 690
 Segal, M., Vol-II: 686–689, 692
 Segall, A., Vol-II: 475
 Segall, M. H., Vol-I: 164, 166; Vol-II: 311
 Segebarth, C., Vol-I: 249
 Segrist, D., Vol-I: 195
 Segrist, K., Vol-I: 372
 Seibert, S. E., Vol-II: 454
 Seidlitz, L., Vol-I: 436
 Seidman, E., Vol-II: 388–389, 576, 619–620, 633
 Seil, D., Vol-II: 116–118, 121
 Sekaquaptewa, D., Vol-I: 198; Vol-II: 447
 Seligman, M., Vol-II: 232
 Seligman, M. E. P., Vol-II: 146
 Sell, I., Vol-I: 486
 Sellers, A., Vol-I: 138; Vol-II: 522
 Sellers, J. G., Vol-I: 222; Vol-II: 20
 Sellers, R. M., Vol-I: 496–497
 Sells, L. W., Vol-II: 379–380
 Selnow, G. W., Vol-I: 392
 Selwyn, N., Vol-II: 652
 Selwyn, P. A., Vol-II: 534
 Semyonov, M., Vol-II: 446
 Sen, M. G., Vol-I: 500–501
 Senchak, M., Vol-II: 282
 Sengelaub, D. R., Vol-I: 323
 Senin, I. G., Vol-II: 26
 Senko, C., Vol-II: 48
 Sensibaugh, C., Vol-II: 283
 Sentis, K. P., Vol-II: 158
 Sepekoff, B., Vol-I: 66
 Seraphine, A. E., Vol-II: 319
 Serbin, L. A., Vol-I: 500–501, 511, 514, 531
 Serdula, M. K., Vol-I: 467; Vol-II: 153, 473
 Serewicz, M. C. M., Vol-II: 290–291
 Sergi, I., Vol-I: 321
 Serrano-Garcia, I., Vol-II: 613, 627
 Sershen, H., Vol-I: 365
 Seto, M. C., Vol-I: 367; Vol-II: 285
 Settle, A. G., Vol-II: 226
 Settle, R. G., Vol-I: 248
 Sever, L. M., Vol-II: 371
 Seward, G. H., Vol-I: 25–26, 204
 Sexton, T. L., Vol-II: 269
 Sexton, V. S., Vol-I: 20
 Seyfried, S., Vol-II: 622
 Seymour, J. D., Vol-II: 473
 Seymour-Smith, S., Vol-II: 475
 Shabsigh, R., Vol-I: 568
 Shackelford, S., Vol-II: 285–286
 Shackelford, T. K., Vol-II: 343, 346–347, 350
 Shadish, W. R., Vol-I: 81, 82–83, 89, 96
 Shaefer, C., Vol-I: 146
 Shafer, M. E., Vol-II: 31
 Shaffer, D., Vol-I: 68
 Shaffer, D. R., Vol-II: 576
 Shaffer, M. A., Vol-II: 502, 504, 509
 Shah, P., Vol-I: 202
 Shanahan, M. J., Vol-I: 559, 574
 Shanklin, E., Vol-I: 160
 Shannon, C. A., Vol-II: 436
 Shapiro, J. R., Vol-I: 85
 Shapiro, M. F., Vol-II: 534
 Shapiro, R. J., Vol-I: 346
 Shapiro, R., Vol-II: 134
 Shapka, J. D., Vol-II: 32
 Sharma, D., Vol-I: 349
 Sharma, G. K., Vol-II: 482
 Sharma, V. P., Vol-I: 347, 354
 Sharpe, L. T., Vol-I: 237
 Sharpe, M. J., Vol-II: 24
 Sharpe, S., Vol-II: 282
 Sharps, M. J., Vol-I: 327
 Shaul, M. P., Vol-II: 546
 Shauman, K. A., Vol-I: 304, 308
 Shavelson, R. J., Vol-II: 31
 Shaver, P., Vol-II: 282, 294
 Shaver, P. R., Vol-II: 281, 297
 Shaw, H., Vol-I: 86
 Shaw, H. E., Vol-II: 658
 Shaw, L. H., Vol-II: 652
 Shaw, M., Vol-II: 205
 Shaw, S. M., Vol-II: 473, 478
 Shea, D. L., Vol-I: 317
 Shea, M. T., Vol-II: 195
 Sheehe, P. R., Vol-I: 248
 Sheffield, C. J., Vol-I: 91
 Shefte, S., Vol-II: 453
 Sheikh, C., Vol-I: 386
 Sheinberg, M., Vol-II: 255
 Sheldon, J. P., Vol-I: 194
 Sheldon, K. M., Vol-II: 29, 45
 Shellenbarger, S., Vol-II: 170
 Shelton, B., Vol-II: 405, 407, 409–412
 Shen, X., Vol-I: 238
 Shen, Y.-C., Vol-II: 414
 Shepard, D., Vol-II: 235
 Shepard, D. S., Vol-II: 224–226, 236–237
 Shepard, R. N., Vol-I: 221, 238, 318
 Shepherd, M., Vol-II: 633
 Sherer, M., Vol-II: 525, 548
 Sheridan, P. M., Vol-II: 117
 Sherif, C. W., Vol-I: 29, 108, 401; Vol-II: 341
 Sherman, E. M. S., Vol-II: 605
 Sherman, J. A., Vol-I: 27, 317
 Sherman, J. J., Vol-I: 241
 Sherman, J. W., Vol-II: 167

- Sherman, S. J., Vol-I: 517
 Sherr, L., Vol-II: 473
 Sherrod, N., Vol-II: 229, 241
 Sherrod, N. B., Vol-I: 49, 51
 Sherry, D. F., Vol-I: 266
 Sherry, J. L., Vol-II: 650–651, 657
 Sherwin, B., Vol-I: 458
 Sherwood, A., Vol-I: 436
 Sherwood, D., Vol-II: 579
 Sheu, H. B., Vol-II: 228
 Shide, D. J., Vol-I: 457
 Shidlo, A., Vol-I: 62, 69
 Shields, C. G., Vol-II: 255
 Shields, S. A., Vol-I: 22–23, 81, 200, 363, 381, 433, 436, 444; Vol-II: 443
 Shiffman, K. S., Vol-II: 167, 647–648
 Shiffman, S., Vol-I: 439; Vol-II: 454
 Shih, M., Vol-I: 11, 284, 353, 433
 Shih, P. C., Vol-I: 322
 Shikany, J. M., Vol-II: 543
 Shildrick, M., Vol-I: 31
 Shilts, R., Vol-II: 453
 Shimada, K., Vol-I: 245
 Shin, J. K., Vol-II: 228
 Shinn, M., Vol-II: 628, 633
 Shinsako, S. A., Vol-II: 436
 Shipman, K., Vol-I: 434
 Shirley, L., Vol-I: 496
 Shiverick, S. M., Vol-I: 506
 Shkolnikov, V. M., Vol-II: 472
 Shoda, Y., Vol-II: 65, 67
 Shoham, V., Vol-II: 266
 Sholl, M. J., Vol-I: 329
 Shope, J. T., Vol-II: 476
 Shore, L. M., Vol-II: 350
 Short, S., Vol-II: 478
 Shorter-Gooden, K., Vol-I: 512
 Showers, C. J., Vol-I: 299; Vol-II: 30
 Shrader, C. B., Vol-II: 351, 456
 Shrestha, A. B., Vol-I: 326
 Shroff, H., Vol-II: 154
 Shroff, K., Vol-II: 164
 Shryne, J. E., Vol-I: 483
 Shugarman, L. R., Vol-II: 529
 Shukla, J. P., Vol-I: 347, 354
 Shullman, S. L., Vol-II: 424
 Shulman, S. R., Vol-II: 204
 Shultz, S. R., Vol-I: 221, 323
 Shweder, R. A., Vol-I: 163
 Siahpush, M., Vol-II: 479
 Siann, G., Vol-II: 382, 391
 Sibley, C. G., Vol-II: 362
 Sidanius, J., Vol-I: 198; Vol-II: 362
 Siebert, E. R., Vol-I: 220
 Siefert, K., Vol-I: 570
 Siegel, A. W., Vol-I: 329
 Siegel, J. M., Vol-I: 544
 Siegel, K., Vol-II: 371
 Siegel, L. J., Vol-II: 136, 140
 Siever, M. D., Vol-II: 172
 Sigerson, K., Vol-II: 342–343
 Sigle-Rushton, W., Vol-II: 297
 Sigmon, S. T., Vol-II: 77
 Sigmundson, H. K., Vol-I: 194
 Sigmundson, K., Vol-II: 366
 Signorella, M. L. 312, 385; Vol-I: 327, 500–502, 508, 514–516
 Signorielli, N., Vol-II: 167, 644–647
 Siladi, M., Vol-I: 508
 Silakowski, T. D., Vol-I: 392
 Silberman, E. K., Vol-II: 195
 Silberstein, L., Vol-II: 168
 Silberstein, L. R., Vol-II: 156
 Silk, J., Vol-I: 536
 Silva, P., Vol-I: 543
 Silva, P. A., Vol-I: 548
 Silver, C., Vol-I: 123
 Silver, C. B., Vol-I: 567, 570
 Silver, W. L., Vol-I: 246
 Silverman, B. E., Vol-I: 438
 Silverman, I., Vol-I: 221–222, 263, 265, 318, 438, 514
 Silverstein, L. B., Vol-II: 10, 253–273
 Silverstein, L. R., Vol-II: 166
 Silverstein, L. S., Vol-II: 223–233
 Silverstein, O., Vol-II: 255
 Silverstein, S., Vol-II: 449
 Silverthorn, P., Vol-I: 547
 Silvestri, M., Vol-II: 453, 457
 Simantov, E., Vol-II: 228
 Simcock, G., Vol-I: 509
 Simi, N. L., Vol-II: 203, 212
 Siminerio, L., Vol-II: 550
 Simkins, B. J., Vol-II: 351, 456
 Simkins-Bullock, J., Vol-I: 381
 Simmons, D., Vol-II: 95
 Simmons, R. G., Vol-II: 389
 Simner, J., Vol-I: 204
 Simon, A., Vol-II: 650
 Simon, R. V., Vol-II: 137
 Simon, R. W., Vol-I: 302, 434–435, 540
 Simon, T., Vol-II: 620
 Simon, W., Vol-II: 289
 Simone, D. H., Vol-II: 203
 Simonelli, C. J., Vol-II: 318
 Simonoska, R., Vol-I: 244
 Simons, R. L., Vol-I: 544; Vol-II: 139
 Simonton, D. K., Vol-I: 345–347
 Simon-Tuval, T., Vol-II: 524
 Simpson, J. A., Vol-II: 286, 293
 Simpson, P. A., Vol-I: 433, 435
 Simpson, R., Vol-I: 572
 Simpson, W. G., Vol-II: 351, 456
 Sinclair, S., Vol-I: 497; Vol-II: 77
 Sinding, C., Vol-I: 108

- Sing, R., Vol-II: 576–577
 Singer, B. H., Vol-I: 227
 Singh, A. A., Vol-II: 205
 Singh, D., Vol-I: 226
 Singh, J., Vol-I: 172, 226
 Singh, V., Vol-II: 456
 Singleton, E., Vol-II: 242
 Singleton, S. B., Vol-I: 91
 Sinha, D., Vol-I: 166
 Sirarenios, G., Vol-I: 220
 Sirin, S. R., Vol-II: 340
 Sirkin, M., Vol-I: 52
 Sjölund, B., Vol-I: 241
 Sjomeling, M., Vol-II: 661
 Sjöqvist, F., Vol-II: 474
 Skay, C. L., Vol-II: 203
 Skeen, P., Vol-I: 68
 Skelton, R. W., Vol-I: 328
 Skidmore, J. R., Vol-I: 51–52, 145
 Sklarsky, K. G., Vol-II: 521
 Skodol, J. B., Vol-II: 103
 Skogstad, A., Vol-II: 424, 429
 Skouteris, H., Vol-II: 173
 Skowronski, J. J., Vol-I: 497
 Skrypnek, B. J., Vol-II: 69
 Skrzypiec, G., Vol-I: 463
 Skultety, K. M., Vol-I: 563, 571
 Slabbekoorn, D., Vol-I: 222–225, 270, 324
 Slaby, R. G., Vol-I: 496, 511
 Slade, D., Vol-I: 396
 Slap, G. B., Vol-II: 230
 Slapion-Foote, M. J., Vol-II: 432
 Slater, A., Vol-II: 156, 166, 168
 Slater, A. M., Vol-I: 504
 Slaytor, E., Vol-II: 485
 Sledge, W. H., Vol-II: 272
 Slevin, K. F., Vol-I: 108
 Sloane, P. D., Vol-II: 523
 Sloman, S. A., Vol-I: 199
 Slone, M., Vol-I: 512
 Slonje, R., Vol-II: 320
 Slykhuis, D., Vol-I: 330
 Small, D., Vol-I: 247, 384
 Small, D. M., Vol-I: 247
 Smalley, K. B., Vol-I: 138
 Smalley, R., Vol-II: 24
 Smart, R., Vol-II: 235
 Smeets, P. A., Vol-I: 247
 Smetana, J. G., Vol-I: 511; Vol-II: 340
 Smiler, A. P., Vol-I: 6, 43, 53, 133–152; Vol-II: 6, 225
 Smircich, L., Vol-II: 452
 Smit, E., Vol-II: 567
 Smith, A. G., Vol-II: 42
 Smith, B. L., Vol-II: 541
 Smith, C. A., Vol-I: 361–374; Vol-II: 8, 325
 Smith, C. P., Vol-II: 43
 Smith, C., Vol-I: 8, 20, 413; Vol-II: 330
 Smith, D. A., Vol-II: 551
 Smith, D. A. F., Vol-II: 496, 499–501
 Smith, D. W. E., Vol-II: 482
 Smith, D., Vol-I: 103, 105, 115; Vol-II: 620
 Smith, E., Vol-I: 443
 Smith, G. S., Vol-II: 482
 Smith, J. L., Vol-I: 418, 438, 496, 512
 Smith, J., Vol-I: 109, 559, 569–570; Vol-II: 123
 Smith, L. D., Vol-I: 202
 Smith, L. K., Vol-I: 220
 Smith, M. D., Vol-I: 393; Vol-II: 434
 Smith, M., Vol-I: 248
 Smith, M. E., Vol-I: 238, 463
 Smith, P., Vol-II: 272
 Smith, P. H., Vol-II: 485
 Smith, P. K., Vol-I: 418, 438; Vol-II: 320
 Smith, R. A., Vol-II: 444
 Smith, R. L., Vol-I: 147
 Smith, R. M., Vol-I: 321
 Smith, S., Vol-II: 166
 Smith, T. E., Vol-I: 531, 536, 538
 Smith, Y. S., Vol-II: 367
 Smithies, C., Vol-I: 107, 111
 Smith-Lovin, L., Vol-I: 390; Vol-II: 281, 283
 Smith-Rosenberg, C., Vol-I: 20
 Smithson, I., Vol-I: 285
 Smolak, L., Vol-I: 6, 81–98; Vol-II: 6, 156, 164–165, 168, 170–171, 174
 Smolen, J. S., Vol-II: 545
 Smollar, J., Vol-II: 282
 Snarey, J., Vol-I: 564
 Sneed, J. R., Vol-I: 566
 Snelbecker, G. E., Vol-I: 351
 Snell, A. F., Vol-I: 136
 Snell, W. E., Vol-I: 52; Vol-II: 550
 Snihur, A. W. K., Vol-I: 221, 226
 Snodgrass, S. E., Vol-II: 282
 Snow, C. E., Vol-I: 307
 Snowden, L., Vol-II: 622–623
 Snyder, D. K., Vol-II: 210
 Snyder, E., Vol-I: 140; Vol-II: 571
 Snyder, H. N., Vol-I: 547
 Snyder, K., Vol-II: 460
 Snyder, L., Vol-II: 662
 Snyder, M., Vol-II: 69
 Snyder, P. J., Vol-I: 330
 Socarides, C. W., Vol-I: 50
 Socarides, C., Vol-I: 61
 Soderstrom, C., Vol-II: 483
 Soeters, J., Vol-II: 673, 676, 689
 Sofaer, S., Vol-II: 544
 Solberg, V. S., Vol-II: 228
 Solimeo, S., Vol-II: 549
 Sollie, D. L., Vol-II: 296
 Solomon, B., Vol-II: 282
 Solomon, C. R., Vol-II: 410
 Solomon, L., Vol-I: 456

- Solomon, M. R., Vol-II: 166
 Solomon, N. G., Vol-I: 269
 Solomon, S. E., Vol-II: 411
 Solomon, S. G., Vol-I: 237
 Somers, C. L., Vol-II: 165
 Sommer, K. L., Vol-I: 499; Vol-II: 324
 Sommers, C. H., Vol-I: 278, 286
 Son, L., Vol-I: 61, 140, 144, 564
 Sonenstein, F. L., Vol-I: 52, 137; Vol-II: 299
 Song, J., Vol-II: 326
 Sonnenberg, C. M., Vol-II: 296–297
 Sontag, L. M., Vol-I: 543
 SooHoo, S., Vol-II: 575
 Sorby, S. A., Vol-I: 332
 Sorter, R. G., Vol-II: 164
 Soskolne, V., Vol-II: 525, 548
 Soto, C. J., Vol-I: 570
 South, S. J., Vol-II: 284, 405, 409–410
 Southam, A. M., Vol-I: 483
 Southworth, A., Vol-II: 370
 Spacks, P., Vol-I: 399
 Spain, R. D., Vol-II: 460
 Spalding, L. R., Vol-II: 363–364, 411
 Spangler, W., Vol-II: 44–45, 48
 Spanswick, S. C., Vol-I: 226
 Sparks, G. G., Vol-II: 657
 Spasojevic, J., Vol-II: 144
 Spataro, S. E., Vol-II: 340
 Spaulding, L. R., Vol-I: 66
 Speakmon, G., Vol-II: 155
 Spears, B., Vol-II: 565
 Spears, R., Vol-II: 348
 Spector, P. E., Vol-I: 433; Vol-II: 436
 Spector-Mercel, G., Vol-I: 117
 Speed, H., Vol-II: 647
 Speer, P., Vol-II: 616
 Speer, P. W., Vol-II: 635
 Spees, J. M. G., Vol-II: 648
 Spelke, E. S., Vol-I: 220, 304, 306, 309
 Spence, I., Vol-I: 307, 328; Vol-II: 70, 651
 Spence, J. T., Vol-I: 14, 47, 50, 52, 134–136, 144, 146–147, 150–152, 192, 307, 460, 515; Vol-II: 14–15, 22–23, 295, 549, 569
 Spencer, M. B., Vol-I: 516
 Spencer, R., Vol-I: 113
 Spencer, S. J., Vol-I: 85, 306; Vol-II: 450, 660
 Spender, D., Vol-I: 195, 388; Vol-II: 383, 385
 Sperry, S., Vol-II: 163, 166
 Spetch, M. L., Vol-I: 329
 Speziale, B., Vol-II: 258
 Spicer, R. S., Vol-II: 482
 Spidel, A., Vol-II: 604
 Spitzberg, B. H., Vol-II: 283
 Spitze, G., Vol-II: 405, 409–410
 Spitzer, B. L., Vol-I: 90; Vol-II: 167
 Spitzer, M., Vol-I: 330
 Spitzer, R. L., Vol-II: 73, 103, 112
 Sprague, J., Vol-I: 123
 Sprangers, M., Vol-II: 545
 Sprecher, S., Vol-I: 481; Vol-II: 289, 297, 299–300, 327
 Spreen, O., Vol-II: 605
 Spritzer, K., Vol-II: 552
 Spritzer, M. D., Vol-I: 269
 Spruijt-Metz, D., Vol-I: 460
 Srull, T. K., Vol-I: 196
 St. John, S. C., Vol-II: 365
 St. Lawrence, J., Vol-II: 473, 626
 Stacey, J., Vol-I: 107
 Stack, L., Vol-II: 623
 Stafford, J., Vol-II: 436
 Stafford, L., Vol-II: 293, 296
 Stage, F. K., Vol-II: 47, 390
 Stainton-Rogers, W., Vol-I: 122
 Stake, J. E., Vol-II: 9, 19–36
 Stake, R. E., Vol-I: 9, 112
 Staley, C. M., Vol-I: 392
 Staller, K. M., Vol-I: 106
 Stallworth, L. M., Vol-II: 362
 Stam, H. J., Vol-I: 117
 Standley, T. C., Vol-II: 645
 Stanford, K., Vol-I: 282, 301–302
 Stangor, C., Vol-I: 1, 495, 503, 510; Vol-II: 1
 Stanley, J. C., Vol-I: 165, 304
 Stanton, A. L., Vol-II: 434, 543, 546–547
 Stanton, G. C., Vol-II: 31
 Stanton, S. J., Vol-II: 52
 Stapleton, J. T., Vol-II: 553
 Stapleton, K., Vol-I: 392
 Stapp, J., Vol-I: 14, 47, 135, 146, 192, 515; Vol-II: 14, 22, 295
 Star, S. L., Vol-II: 112
 Starek, J., Vol-II: 568
 Stark, R., Vol-I: 443
 Starkes, J. L., Vol-I: 322
 Starkman, M. N., Vol-I: 227
 Starks, R., Vol-I: 386
 Starr, A., Vol-I: 249
 Starr, J. M., Vol-I: 302
 Staten, J. L., Vol-II: 528
 Statham, A., Vol-I: 285
 Stattin, H., Vol-I: 543
 Staudinger, U. M., Vol-I: 567
 Stayner, D. A., Vol-II: 272
 Steadman, L., Vol-II: 173
 Stechuchak, K. M., Vol-II: 519
 Steeds, R. P., Vol-I: 242
 Steel, P., Vol-II: 436
 Steele, C., Vol-I: 194
 Steele, C. M., Vol-I: 84–85, 284–285, 327, 353, 430, 569; Vol-II: 48, 66, 141, 387, 450, 660–661
 Steele, J., Vol-II: 66
 Steer, R. A., Vol-II: 70, 214
 Steffen, V. J., Vol-I: 421; Vol-II: 313, 674
 Steffens, M. C., Vol-II: 363, 369

- Stefic, E. C., Vol-II: 324
 Stein, J. A., Vol-II: 24
 Stein, R. I., Vol-II: 658
 Stein, R. T., Vol-II: 339
 Stein, T. S., Vol-II: 103
 Steinberg, A., Vol-II: 155
 Steinberg, L., Vol-I: 536–537, 549; Vol-II: 76
 Steinberg, M. B., Vol-II: 478
 Steindl, R., Vol-I: 245
 Steiner-Pappalardo, N. L., Vol-II: 296
 Steinmetz, S. K., Vol-II: 318
 Stelzner, S. P., Vol-II: 633
 Stenberg, A. E., Vol-I: 244
 Stephens, C., Vol-II: 486–487
 Stephenson, N., Vol-I: 115
 Stepper, S., Vol-I: 446
 Stericker, A., Vol-I: 363
 Sterling, B., Vol-I: 383
 Sterling, B. S., Vol-II: 340
 Stermer, S. P., Vol-I: 97
 Stern, A., Vol-II: 340
 Stern, E., Vol-I: 171
 Stern, K., Vol-I: 248
 Stern, R. L., Vol-II: 545
 Stern, R. M., Vol-I: 245
 Stern, S. R., Vol-II: 644, 646, 648–649
 Sternberg, M. R., Vol-II: 533
 Sternberg, R. J., Vol-I: 413, 417; Vol-II: 72, 168
 Stets, J. E., Vol-I: 436
 Stevens, D., Vol-II: 415
 Stevens, D. P., Vol-II: 415
 Stevens, J., Vol-II: 160
 Stevens, K., Vol-I: 278–281, 287–288
 Stevens, M. A., Vol-I: 45; Vol-II: 10, 221–243
 Stevens-Miller, M., Vol-II: 367
 Stevenson, H. W., Vol-I: 307
 Stevenson, M. R., Vol-I: 195, 531; Vol-II: 631
 Stewart, A. J., Vol-I: 9, 20, 36, 193, 429, 447, 559–575;
 Vol-II: 9, 42, 45–46, 49, 53–54, 58
 Stewart, A., Vol-I: 103, 110
 Stewart, D., Vol-I: 392; Vol-II: 346
 Stewart, J. H., Vol-II: 528
 Stewart, L., Vol-I: 281
 Stibal, J., Vol-II: 430
 Stice, E., Vol-I: 86, 544; Vol-II: 155, 658
 Stickler, T. R., Vol-II: 266
 Stier, D., Vol-II: 51
 Stiles-ShIPLEY, J., Vol-II: 574
 Still, L., Vol-II: 505
 Stiner, M. C., Vol-I: 267
 Stinson, F. S., Vol-II: 133
 Stiver, I., Vol-I: 105
 Stiver, I. P., Vol-II: 192, 208, 214
 Stock, S. A. K., Vol-II: 543
 Stockard, J., Vol-II: 24, 30
 Stockdale, M. S., Vol-II: 284, 430, 434, 436, 457
 Stockman, A., Vol-I: 237
 Stockton, M., Vol-I: 479
 Stogdill, R. M., Vol-II: 678
 Stollenwerk, B., Vol-II: 543
 Stoller, R. J., Vol-I: 50; Vol-II: 117–118
 Stone, J., Vol-I: 105, 353; Vol-II: 647, 661
 Stone, K. J., Vol-II: 520
 Stonecypher, J. F., Vol-II: 188, 193
 Stoner, S. A., Vol-I: 92–93
 St-Onge, R., Vol-I: 240, 320
 Stoppard, J., Vol-II: 96
 Stoppard, J. M., Vol-II: 69, 96
 Stormer, S., Vol-II: 159
 Stormshak, E. A., Vol-II: 24, 27
 Story, M., Vol-II: 156
 Stoverinck, M. J., Vol-II: 474
 Strack, F., Vol-I: 240, 320
 Strassberg, D. S., Vol-I: 72
 Straub, R. O., Vol-I: 459–460
 Straube, T., Vol-I: 243
 Straus, M. A., Vol-II: 210
 Strauss, A. L., Vol-I: 111
 Strauss, E., Vol-II: 605
 Strauss, J., Vol-I: 432; Vol-II: 176
 Strayer, F. F., Vol-I: 511
 Street, A. E., Vol-II: 436
 Street, R. L. Jr., Vol-II: 522
 Strelan, P., Vol-II: 172
 Stricker, G., Vol-II: 221
 Strickland, B. R., Vol-II: 97
 Strickland, G., Vol-I: 68
 Striegel-Moore, R., Vol-I: 246; Vol-II: 168
 Striegel-Moore, R. H., Vol-II: 156, 171, 473
 Striepe, M. I., Vol-II: 206, 284
 Strobel, M. G., Vol-I: 350
 Stroh, L. K., Vol-I: 433, 435; Vol-II: 452
 Strongegger, W. J., Vol-II: 473
 Strong, R. A., Vol-I: 328, 331
 Stroop, J. R., Vol-I: 237–238
 Strough, J., Vol-I: 539
 Strouse, G. A., Vol-II: 651
 Strube, M. J., Vol-II: 160
 Struening, E. L., Vol-II: 145
 Strul, S., Vol-II: 26–27
 Strycker, L., Vol-II: 622
 Stryker, S., Vol-II: 33
 Stuart, A., Vol-I: 243, 363
 Stuart, V., Vol-II: 242
 Stuart-Smith, S., Vol-I: 363
 Stubbe, M., Vol-I: 395
 Stubbs, A. D., Vol-I: 202
 Stubbs, M. L., Vol-I: 544
 Stuck, B. A., Vol-I: 249
 Stucky, B. D., Vol-I: 546
 Stueve, A., Vol-II: 620
 Stuhlmacher, A. F., Vol-I: 96
 Stull, D. E., Vol-II: 295
 Stumpf, H., Vol-I: 318–319

- Stunkard, A. J., Vol-I: 457
 Sturla, E., Vol-I: 529
 Sturman, T. S., Vol-II: 43
 Stürzebecher, E., Vol-I: 243
 Styne, D. M., Vol-I: 534
 Su, J., Vol-II: 473
 Suarez-Orozco, C., Vol-II: 160
 Suarez-Orozco, M. M., Vol-II: 160
 Subotnik, R., Vol-I: 350–351
 Subramaniam, P. R., Vol-II: 228
 Subramanian, S. V., Vol-I: 179
 Suchindran, C., Vol-I: 534; Vol-I: 534
 Sue, D., Vol-II: 223, 227
 Sue, D. S., Vol-II: 223
 Sue, D. W., Vol-II: 231, 265, 268, 566
 Sue, S., Vol-II: 554
 Sugarman, D. B., Vol-II: 316
 Sugimura, K., Vol-I: 574
 Sugrue, P. A., Vol-II: 154
 Suguru, S., Vol-II: 289
 Suh, E. J., Vol-II: 21
 Suito, J., Vol-II: 413
 Suizzo, M. A., Vol-II: 294, 198; Vol-I: 138
 Sulak, P., Vol-I: 241
 Sullivan, E., Vol-II: 449
 Sullivan, G., Vol-II: 171
 Sullivan, H. S., Vol-I: 560
 Sullivan, J. G., Vol-II: 133
 Sullivan, K., Vol-I: 317
 Sullivan, M., Vol-II: 411
 Sullivan, M. A., Vol-I: 163
 Sullivan, O., Vol-II: 404–405, 408–409, 416
 Sullivan, Q., Vol-I: 481
 Sullivan, S., Vol-I: 65
 Summerfield, A. B., Vol-I: 435
 Summers, A., Vol-II: 645, 647
 Sunday, S., Vol-I: 36
 Supple, A. J., Vol-II: 602
 Susman, E. J., Vol-I: 534, 543
 Susskind, J. E., Vol-I: 517
 Sussner, B. D., Vol-I: 159
 Sutfin, E., Vol-II: 411
 Sutherland, D., Vol-II: 477
 Sutherland, R. J., Vol-I: 221, 226, 264, 328
 Sutton, S. K., Vol-I: 236, 242, 351
 Sutton-Smith, B., Vol-I: 236
 Suyemoto, K. L., Vol-II: 68
 Suzuki, K., Vol-I: 246
 Svansson, L., Vol-II: 483
 Swaab, D., Vol-II: 116
 Swaab, D. F., Vol-I: 218, 224–225; Vol-II: 116
 Swami, V., Vol-II: 160
 Swaminathan, H., Vol-II: 67, 76, 81–82
 Swan, S., Vol-II: 424, 433, 685
 Swanberg, J. E., Vol-II: 402
 Swann, J., Vol-I: 388
 Swann, S., Vol-II: 367–368
 Swann, W. B., Vol-II: 31
 Swann, W. B. Jr., Vol-II: 456
 Swanson, C., Vol-I: 437
 Swanson, C. L., Vol-I: 437
 Swanson, J., Vol-II: 102
 Swarr, A., Vol-I: 539
 Swartz, M., Vol-II: 134
 Swearer, S. M., Vol-I: 538
 Sweeney, D., Vol-II: 659
 Sweet, S., Vol-I: 570
 Sweeting, H., Vol-II: 475, 480
 Swift, C., Vol-II: 613–614, 618, 628–629
 Swim, J., Vol-I: 393
 Swim, J. K., Vol-I: 144, 147–148, 151–152, 393; Vol-II: 170, 457
 Swinburn, B. A., Vol-II: 160
 Swiss, D. J., Vol-II: 453
 Swody, C. A., Vol-II: 428
 Sworowski, L. A., Vol-II: 546
 Symons, D., Vol-II: 285
 Syngal, S., Vol-II: 529
 Szalacha, L., Vol-I: 290
 Szasz, T., Vol-II: 125
 Szecsenyi, J., Vol-II: 519
 Szinovacz, M., Vol-II: 410
 Szkrybalo, J., Vol-I: 495–496
 Szymanski, D. M., Vol-I: 94; Vol-II: 205, 509
- T**
- Tabachnick, B., Vol-I: 88
 Tabar, L., Vol-II: 526
 Taft, A. J., Vol-II: 484
 Tagaris, G. A., Vol-I: 239
 Tager, D., Vol-I: 53; Vol-II: 225
 Tajfel, H., Vol-I: 496, 513; Vol-II: 348
 Takahashi, H., Vol-I: 243, 245
 Takahashi, M., Vol-I: 567
 Takeuchi, S., Vol-I: 246, 432
 Talbani, A., Vol-II: 288
 Tamis-LeMonda, C. S., Vol-I: 496, 500, 505; Vol-II: 225
 Tamkins, M. M., Vol-II: 346, 450
 Tamres, L. K., Vol-II: 433
 Tan, E. S. N., Vol-I: 62
 Tan, U., Vol-I: 324
 Tang, C. S., Vol-II: 320
 Tang, C. S.-K., Vol-I: 145–146
 Tang, T. N., Vol-II: 301
 Tanghe, A., Vol-I: 497
 Tanidjojo, L., Vol-II: 646
 Tanke, E. D., Vol-II: 69
 Tannen, D., Vol-I: 379, 385–386, 388–391, 393–395, 398; Vol-II: 253
 Tanner, J. L., Vol-II: 384
 Tanner, L., Vol-II: 672, 676–677, 687
 Tanner, L. M., Vol-II: 673, 676, 686–688
 Tanner-Smith, E. E., Vol-II: 647

- Tantleff, S., Vol-II: 159
 Tantleff-Dunn, S., Vol-II: 153, 166–167, 658
 Taps, J., Vol-II: 540–541
 Taraban, C., Vol-II: 295
 Tarasiuk, A., Vol-II: 524
 Tarmina, M. S., Vol-II: 486
 Tartre, L. A., Vol-II: 386
 Tarule, J. M., Vol-I: 32, 105, 198
 Tashiro, T., Vol-II: 297
 Tasker, F., Vol-I: 67
 Tasker, R., Vol-I: 224
 Tassinary, L. G., Vol-I: 434
 Tata, S. P., Vol-II: 228
 Tatla, S., Vol-II: 288
 Tatum, C., Vol-II: 532–533
 Tatum, C. M., Vol-I: 184
 Tauna, N., Vol-II: 169
 Tavis, C., Vol-I: 403; Vol-II: 117
 Taylor, A., Vol-I: 318
 Taylor, B., Vol-I: 535–536
 Taylor, D., Vol-II: 98
 Taylor, D. G., Vol-I: 239, 266.
 Taylor, D. L., Vol-II: 68, 98
 Taylor, K., Vol-II: 501
 Taylor, L., Vol-I: 187, 506; Vol-II: 368
 Taylor, L. D., Vol-II: 167, 658
 Taylor, M. G., Vol-I: 506, 544
 Taylor, R., Vol-II: 485
 Taylor, S., Vol-II: 314, 546
 Taylor, S. E., Vol-II: 30, 70, 141,
 143, 434, 498, 503–505,
 507, 553
 Taylor, T., Vol-II: 121, 125
 Taylor, V., Vol-I: 107, 110, 118, 195
 Tedeschi, J. T., Vol-II: 435
 Tedeschi, R. G., Vol-II: 279
 Tegano, D. W., Vol-I: 350
 Teh, K., Vol-II: 115
 Teillon, S. M., Vol-I: 227
 Tellegen, A., Vol-I: 14, 135; Vol-II: 15, 70, 79–81
 Templin, T., Vol-II: 551
 ten Have, M., Vol-II: 369
 Tenenbaum, G., Vol-II: 579
 Tenenbaum, H. R., Vol-I: 307
 Tennant, C., Vol-II: 502
 Tennen, H., Vol-II: 434, 511, 546
 Teo, T., Vol-I: 30, 34
 Tepper, B. J., Vol-I: 242, 457; Vol-II: 346
 Terenzini, P. T., Vol-I: 285
 Terenzio, M., Vol-II: 614
 Terlecki, M., Vol-I: 332
 Terlecki, M. S., Vol-I: 271, 326
 Terman, L. M., Vol-I: 134, 192, 204, 365
 Terndrup, A. I., Vol-I: 64
 Terracciano, A., Vol-I: 166, 442
 Terracciano, A. Jr., Vol-II: 25, 447
 Tessema, M. T., Vol-II: 677
 Tetenbaum, T. J., Vol-I: 135, 192
 Tetlock, P. E., Vol-I: 200
 Tewksbury, R., Vol-II: 111
 Thayer, J. F., Vol-I: 200
 Thayer, S. E., Vol-II: 652
 Theis, K. A., Vol-II: 542
 Thelan, M. H., Vol-II: 165
 Thelwall, M., Vol-I: 391
 Theodore, P. S., Vol-II: 360–361
 Thijs, J., Vol-I: 498, 516
 Thill, K. P., Vol-II: 649
 Thinus-Blanc, C., Vol-I: 330
 Thissen, D., Vol-II: 76, 82
 Thoennes, N., Vol-II: 631
 Thoits, P. A., Vol-I: 496; Vol-II: 504
 Thomas, D. A., Vol-II: 295–296, 554
 Thomas, G., Vol-II: 21, 293, 325
 Thomas, H., Vol-I: 320
 Thomas, K., Vol-II: 165
 Thomas, M. D., Vol-II: 675
 Thomas, P. J., Vol-II: 675
 Thomas, V., Vol-II: 686
 Thomas-Hunt, M. C., Vol-II: 344, 349
 Thompson, A., Vol-II: 289
 Thompson, B. J., Vol-II: 203
 Thompson, D. E., Vol-II: 455, 457
 Thompson, E. H. Vol-I: 47, 52–53,
 134, 136, 146, 150; Vol-II: 281–282,
 294, 297
 Thompson, H. B., Vol-I: 22
 Thompson, J. K., Vol-I: 10, 20, 54, 88; Vol-II: 10,
 153–174, 568
 Thompson, J., Vol-II: 156
 Thompson, L., Vol-II: 405, 407, 410
 Thompson, M. M., Vol-II: 688
 Thompson, N. L., Vol-I: 117
 Thompson, S., Vol-II: 574
 Thompson, S. K., Vol-I: 140, 504
 Thompson, W. L., Vol-I: 22–23, 328
 Thomsen, T., Vol-I: 239, 324
 Thomson, D. A., Vol-II: 226
 Thomson, E., Vol-II: 410, 412
 Thomson, R., Vol-II: 282
 Thorndike, R. M., Vol-I: 172
 Thorne, B., Vol-I: 381, 401
 Thornhill, R., Vol-I: 91, 191, 268; Vol-II: 285–286
 Thornton, A. R., Vol-I: 243
 Thornton, M., Vol-I: 288
 Thorpe, G., Vol-I: 302
 Thrash, T. M., Vol-II: 44, 48
 Thunberg, M., Vol-I: 434
 Thureau, D., Vol-I: 485
 Thurstone, T. G., Vol-I: 318
 Tichenor, V., Vol-II: 409
 Tickle, J. J., Vol-I: 412
 Tiedemann, J., Vol-I: 306
 Tiedens, L. Z., Vol-II: 432

- Tiefer, L., Vol-I: 27; Vol-II: 112
 Tielsch, J. M., Vol-II: 483
 Tiggemann, M., Vol-I: 91, 98; Vol-II: 155–157, 159, 161, 165–166, 168, 171–173, 477, 573, 659
 Tillmann-Healy, L., Vol-I: 107
 Tillmann-Healy, L. M., Vol-I: 119
 Timberlake, S., Vol-II: 454, 458
 Timlin-Scalera, R. M., Vol-II: 228
 Timm, A., Vol-I: 187
 Timm, R., Vol-II: 195
 Timmerman, G., Vol-II: 425, 428
 Timmers, M., Vol-I: 430, 434, 440
 Tishelman, C., Vol-II: 545
 Tither, J. M., Vol-II: 284
 Tjaden, P., Vol-II: 631
 Tjosvold, D., Vol-II: 338
 Tlauka, M., Vol-I: 329, 330
 Tobach, E., Vol-I: 36
 Tobin, P., Vol-I: 318
 Tobin, R. M., Vol-I: 434, 441, 445
 Tobin-Richards, M. H., Vol-I: 535
 Todd, Z., Vol-I: 374
 Tokar, D. M., Vol-I: 136
 Tolkien, J. R. R., Vol-I: 191
 Toll, B. A., Vol-II: 477
 Tolman, D., Vol-I: 105, 113
 Tolman, D. L., Vol-I: 15, 137–138, 150; Vol-II: 15, 117, 284, 287, 290, 298–299
 Tomczak, R., Vol-I: 330
 Tomich, P. L., Vol-II: 547
 Toner, B. B., Vol-II: 95, 213
 Tong, S. T., Vol-II: 653
 Tooby, J., Vol-I: 261, 267
 Toohey, S., Vol-II: 633
 Tooke, W., Vol-II: 285
 Torgerson, D., Vol-II: 115
 Torges, C. M., Vol-I: 573
 Torgrud, L., Vol-II: 162
 Toro, P., Vol-II: 289, 300, 412, 620
 Toro-Morn, M., Vol-II: 289, 300, 412
 Torrance, E. P., Vol-I: 346, 349–350
 Torrance, H., Vol-I: 121
 Torre, M. E., Vol-I: 108
 Torres, S., Vol-II: 204, 627
 Torres-Burgos, N., Vol-II: 627
 Toth, E., Vol-I: 396; Vol-II: 169
 Tottenham, L. S., Vol-I: 221
 Tourish, D., Vol-II: 282
 Touyz, S. W., Vol-II: 165
 Tovar-Blank, Z. G., Vol-II: 226
 Tovée, M. J., Vol-II: 160
 Towle, E., Vol-I: 317
 Townsend, A. L., Vol-II: 195
 Townsend, D. W., Vol-I: 242
 Townsend, N. W., Vol-II: 402
 Toyokawa, T., Vol-II: 623
 Tracey, T. J., Vol-II: 197, 212, 226
 Tracy, A. J., Vol-I: 138; Vol-II: 117
 Trager, K. D., Vol-II: 650
 Trautner, H., Vol-I: 501
 Trautner, H. M., Vol-I: 501, 503, 517
 Travis, C. B., Vol-II: 11, 13, 81, 517–534
 Trawalter, S., Vol-II: 661
 Treasure, J., Vol-I: 247, 464
 Treichler, P., Vol-I: 385
 Treloar, C., Vol-II: 160
 Tremblay, A., Vol-I: 457
 Tremblay, L., Vol-I: 322
 Tremblay, P., Vol-II: 645
 Tremblay, S., Vol-I: 319
 Trepanier, M. L., Vol-II: 287
 Tresemer, D. W., Vol-I: 28
 Trevathan, W. R., Vol-II: 287
 Triandis, H. C., Vol-I: 160, 162–163, 169, 173
 Trickett, E., Vol-II: 614
 Tripp, T. M., Vol-II: 431
 Trivers, R. L., Vol-I: 260–261, 473; Vol-II: 285
 Troiden, R. R., Vol-I: 541
 Tropp, J., Vol-I: 328
 Trosch, S., Vol-II: 624
 Trost, M. R., Vol-II: 285
 Tröster, A. I., Vol-I: 330
 Trudeau, K. J., Vol-II: 550
 Truijen, S., Vol-I: 245
 Trujillo, N., Vol-II: 571
 Trusty, J., Vol-II: 384
 Truswell, A. S., Vol-I: 458
 Tsai, J. L., Vol-I: 435, 437, 442
 Tsang, J., Vol-II: 347
 Tschann, J. M., Vol-II: 301
 Tseng, S., Vol-II: 677
 Tso, A. W. K., Vol-II: 543
 Tsui, A. S., Vol-II: 350
 Tu, X., Vol-I: 487
 Tuccillo, L., Vol-II: 290
 Tucillo, J. A., Vol-II: 598
 Tucker, C. J., Vol-I: 144
 Tucker, K. L., Vol-II: 144, 577
 Tuggle, C. A., Vol-II: 647
 Tuinstra, J., Vol-II: 501, 552
 Tuiten, A., Vol-I: 321
 Tullmann, D. F., Vol-II: 543
 Tuna, C., Vol-II: 424
 Turgeon, L., Vol-II: 266
 Turner, C. S., Vol-II: 460
 Turner, C. W., Vol-I: 72; Vol-II: 255
 Turner, D. L., Vol-I: 134
 Turner, H., Vol-II: 319
 Turner, J. A., Vol-II: 236
 Turner, J. C., Vol-I: 513; Vol-II: 385
 Turner, J. R., Vol-I: 496
 Turner, K. L., Vol-I: 572
 Turner, L., Vol-II: 368

Turner, R. K., Vol-I: 538
 Turner, R. N., Vol-I: 497–498
 Turner, S. P., Vol-I: 122, 497–499
 Turnley, W. H., Vol-II: 340
 Turrell, G., Vol-II: 472
 Tuttle, G., Vol-I: 63
 Tutty, L. M., Vol-II: 208
 Tversky, B., Vol-I: 202
 Twenge, J. M., Vol-I: 91, 133, 135, 151, 298, 421, 480;
 Vol-II: 22, 134, 157, 329–330, 341, 659
 Tyler, T. R., Vol-II: 327
 Tylka, T. L., Vol-II: 156, 161, 173
 Tyrka, A. R., Vol-I: 535, 544
 Tyson, P., Vol-I: 50

U

Úgurbil, K., Vol-I: 239
 Ubeda, C., Vol-II: 482
 Uchida, A., Vol-I: 385–387
 Udell, W., Vol-I: 528
 Udry, J. R., Vol-I: 484, 530, 534
 Ueland, O., Vol-I: 462–463
 Ugawa, Y., Vol-I: 330
 Uher, R., Vol-I: 247, 464
 Uhlmann, E. L., Vol-I: 431; Vol-II: 342
 Uitenbroek, D. G., Vol-II: 473
 Ullrich, P. M., Vol-II: 553
 Ulsh, H. M., Vol-II: 97
 Umberson, D., Vol-II: 477, 498
 Underwood, M. K., Vol-I: 546
 Underwood, W., Vol-II: 327, 528
 Ungar, S., Vol-I: 202
 Unger, J. B., Vol-I: 460
 Unger, R., Vol-II: 34, 64, 71, 73, 168, 615, 620, 631,
 633, 672, 680, 682, 685, 691
 Unger, R. K., Vol-I: 2, 27, 29, 33, 106, 133, 194,
 364–365, 368, 381, 402, 460; Vol-II: 2
 Ungerleider, L. G., Vol-I: 236
 Unikel, E., Vol-II: 338
 Unruh, A. M., Vol-I: 240
 Upchurch, R., Vol-II: 501,
 510–511
 Updegraff, K., Vol-I: 536
 Urbana, S., Vol-II: 66
 Urbanski, L., Vol-I: 27
 Urberg, K. A., Vol-I: 501
 Urbina, S., Vol-II: 605
 Urey, J. R., Vol-I: 389
 Urland, G. R., Vol-II: 449
 Urwin, C., Vol-I: 118
 Ussher, J., Vol-II: 168–169
 Ussher, J. M., Vol-I: 117,
 367, 440
 Utz, R. L., Vol-II: 410
 UyBico, S. J., Vol-I: 184
 Uzzo, R. G., Vol-I: 463

V

Vablais, C. M., Vol-II: 75
 Vaccarino, F. J., Vol-I: 462
 Vaillant, G., Vol-I: 564
 Vaillant, G. E., Vol-I: 44, 562–563, 567;
 Vol-II: 51
 Vaitl, D., Vol-I: 443
 Valanis, B. G., Vol-II: 552
 Valdez, E., Vol-II: 412
 Valente, S. M., Vol-I: 223–224
 Valentin, I., Vol-II: 187
 Valentine, K., Vol-II: 290
 Valkenberg, P. M., Vol-II: 171, 654; Vol-I: 542
 Vallerand, R. J., Vol-II: 388
 van Amerom, G., Vol-II: 478
 van Asbeck, F. W., Vol-II: 483
 van Beek, Y., Vol-I: 414
 Van Cleave, E. F., Vol-II: 389
 van Dam, K., Vol-II: 71
 Van de Heyning, P., Vol-I: 245
 van de Poll, N. E., Vol-I: 225, 324
 van de Vijver, F., Vol-I: 165, 167, 169–172
 Van de Vliert, E., Vol-II: 413
 van den Berg, P., Vol-I: 88; Vol-II: 153
 Van Den Bosch, W. J. H. M., Vol-II: 228
 van den Brink, W., Vol-II: 100
 Van Den Eeden, S. K., Vol-II: 527
 Van Den Hoogen, H. J. M., Vol-II: 228
 Van der Heide, B., Vol-II: 653
 Van der Heijden, P. G. M., Vol-II: 603
 van der Kolk, B., Vol-II: 95, 195
 van der Meulen, J., Vol-II: 673, 676, 689
 van der Zaag, C., Vol-I: 244
 van Dolderen, M. S. M., Vol-I: 414
 van Engen, M. L., Vol-II: 338, 454, 458, 677
 Van Eetten, M. L., Vol-I: 547
 van Ginkel, W. P., Vol-II: 455
 Van Goozen, S. H., Vol-II: 367
 Van Goozen, S. H. M., Vol-I: 222, 224–225
 Van Gundy, K., Vol-I: 435
 van Hoeken, D., Vol-I: 247
 van Honk, J., Vol-I: 223, 321
 Van Houtte, M., Vol-I: 289–290
 Van Hove, G., Vol-I: 35
 Van Hulle, C. A., Vol-I: 445
 van Jaarsveld, C. H., Vol-II: 547–548
 van Kesteren, P. J., Vol-II: 113
 Van Kleef, G. A., Vol-II: 350
 van Knippenberg, D., Vol-II: 348, 350, 456
 Van Langen, A., Vol-II: 390
 Van Leuvan, P., Vol-II: 391
 Van Maanen, J., Vol-II: 594
 van Middendorp, H., Vol-II: 546
 Van Strien, J. W., Vol-I: 239,
 Van Strien, T., Vol-I: 457
 Van Toller, C., Vol-I: 248
 van Vianen, A. E. M., Vol-I: 435; Vol-II: 453, 455

- van Well, S., Vol-I: 145–146
 van Wijk, C. M. G., Vol-II: 474
 Van Winkle, B., Vol-II: 595
 Van Wuk, C. M. T. G., Vol-II: 228
 Vance, C. M., Vol-II: 432
 Vandell, D. L., Vol-II: 97
 Vandenberg, S. G., Vol-I: 221, 318, 322
 Vandevijvere, S., Vol-II: 473
 Vandewater, E. A., Vol-I: 563–565, 571
 Vanman, E. J., Vol-I: 434
 Vanni, D., Vol-II: 297
 Vanwesenbeeck, I., Vol-II: 655
 Vargas, P., Vol-II: 447
 Vartanian, L., Vol-I: 458
 Vartanian, L. R., Vol-I: 458, 466; Vol-II: 167
 Vartia, M., Vol-II: 429
 Vasey, P. L., Vol-II: 122
 Vasilyeva, M., Vol-I: 326
 Vásquez, E., Vol-II: 554
 Vasquez, H., Vol-II: 634–635
 Vasta, R., Vol-I: 308, 319–320, 326, 328
 Vaughter, R. M., Vol-I: 29
 Vaz, K. M., Vol-I: 116
 Vazquez, R., Vol-I: 187
 Veach, P. M., Vol-I: 531
 Vecchi, T., Vol-I: 323
 Vecchio, R. P., Vol-II: 262, 269–271, 458, 677
 Vederhus, L., Vol-I: 319
 Velázquez, J. A., Vol-I: 165
 Veldhuizen, S., Vol-II: 476
 Velting, D. M., Vol-I: 68
 Veniegas, R. C., Vol-II: 68
 Venn, C., Vol-I: 118
 Ventrone, N. A., Vol-II: 289–290, 298
 Verbaten, M. N., Vol-I: 242
 Verbrugge, L. M., Vol-II: 511, 519
 Verdi, A. F., Vol-II: 338
 Vereeck, L., Vol-I: 245
 Verette, J., Vol-II: 294
 Vergara, T., Vol-I: 368
 Verhofstadt, L. L., Vol-II: 501–502, 507
 Verini, I., Vol-I: 202
 Verkuyten, M., Vol-I: 498, 516
 Verma, J., Vol-II: 289
 Vernon, L. J., Vol-II: 195
 Vernon, M. K., Vol-II: 384
 Vernon, M. L., Vol-II: 297
 Vernon, S. W., Vol-II: 544
 Veroff, J., Vol-II: 42–43, 46–47, 52, 55–56
 Verstervelt, C. M., Vol-II: 204
 Verwijmeren, T., Vol-II: 294
 Vessey, J. T., Vol-II: 224
 Vestergaard, M., Vol-II: 598
 Viaud-Delmon, I., Vol-I: 329
 Victor, R. G., Vol-II: 543
 Vida, M., Vol-II: 388, 390, 573
 Vidaurri, M., Vol-I: 226
 Viera, A. J., Vol-II: 520
 Vierikko, E., Vol-II: 322
 Vigfusdottir, T. H., Vol-II: 165
 Vigier, B., Vol-I: 217
 Viken, R., Vol-II: 322
 Villeponteaux, L. A., Vol-II: 195
 Villimez, C., Vol-II: 174
 Vincent, J., Vol-II: 572, 647
 Vincent, M. A., Vol-II: 156
 Vincent, T., Vol-II: 614
 Vinnicombe, S., Vol-II: 456
 Vinokur, A. D., Vol-II: 686
 Virshup, L. K., Vol-I: 496
 Visio, M., Vol-II: 430, 571
 Visscher, B. R., Vol-II: 553
 Vissers, J. A., Vol-II: 483
 Visweswaran, K., Vol-I: 110
 Vitale, A. M., Vol-II: 114, 119, 124–125
 Vitale, S., Vol-I: 236
 Vito, D., Vol-II: 204
 Vizzard, J., Vol-I: 458
 Vladar, K., Vol-I: 245
 Voci, A., Vol-I: 497
 Vogel, D. L., Vol-I: 194, 437; Vol-II: 228–229, 231–232, 235
 Vogel, S. R., Vol-I: 28; Vol-II: 64, 104, 188, 678
 Vohs, K. D., Vol-II: 24, 289
 Volkwein, K. A. E., Vol-II: 579
 Volle, F., Vol-II: 618
 Von Brunschot, M., Vol-I: 548
 von Cramon, D. Y., Vol-I: 245
 von Hippel, W., Vol-II: 447
 Von Korff, M., Vol-I: 241
 Vondracek, F. W., Vol-II: 384
 Voracek, M., Vol-I: 441
 VossHall, L. B., Vol-I: 248
 Vounatsou, P., Vol-II: 486
 Vowels, C. L., Vol-II: 658; Vol-I: 567
 Voydanoff, P., Vol-II: 407
 Voyer, D., Vol-I: 218, 300, 318–321, 325
 Voyer, S., Vol-I: 221, 263, 326
 Vrana, S. R., Vol-I: 442
 Vrangalova, S., Vol-II: 10, 359–371
 Vroom, V. H., Vol-II: 678
 Vrugt, A., Vol-I: 411, 419–420

W
 Wade, N. G., Vol-II: 228–229
 Wager, T. D., Vol-I: 443
 Wagner, B., Vol-II: 340
 Wagner, B. M., Vol-I: 544–545
 Wagner, C., Vol-II: 363, 369
 Wagner, D. G., Vol-II: 339, 343
 Wagner, G. A., Vol-II: 476
 Wagner, S. H., Vol-II: 659
 Wahrman, R., Vol-II: 343, 350
 Wainwright, N., Vol-II: 171

- Waisberg, J., Vol-II: 104
 Waismel-Manor, R., Vol-II: 448, 452–453, 455
 Wajcman, J., Vol-II: 457
 Wakitani, Y., Vol-I: 236
 Walbourn, L., Vol-I: 457, 462–463
 Waldegrave, C., Vol-II: 263, 269–270
 Walden, H., Vol-I: 456
 Waldman, D., Vol-II: 448
 Waldo, C., Vol-II: 622, 685
 Waldo, C. R., Vol-II: 195, 430, 433
 Waldron, J., Vol-II: 574
 Waldstein, S. R., Vol-I: 445
 Walker, A., Vol-II: 405, 407, 410
 Walker, A. J., Vol-II: 410
 Walker, E., Vol-I: 542
 Walker, G., Vol-I: 53; Vol-II: 255
 Walker, H. A., Vol-II: 339, 341
 Walker, K., Vol-II: 282–283
 Walker, L., Vol-II: 73, 94
 Walker, L. E. A., Vol-II: 72, 237
 Walker, S. G., Vol-II: 42
 Walkerdine, V., Vol-I: 117–118
 Wallace, J. M., Vol-I: 547
 Wallbott, H. G., Vol-I: 435
 Wallen, A. S., Vol-II: 346, 450
 Wallen, K., Vol-I: 220
 Wallentin, M., Vol-I: 245
 Waller, D., Vol-I: 329
 Waller, G., Vol-II: 658
 Waller, N. G., Vol-II: 82
 Waller, P. F., Vol-II: 476
 Wallerstein, N., Vol-I: 186
 Walrath, C., Vol-II: 478
 Walsh, F., Vol-II: 255
 Walsh, J. L., Vol-I: 542
 Walsh, M., Vol-I: 283
 Walsh, M. R., Vol-I: 25
 Walsh, N., Vol-II: 474
 Walsh-Bowers, R., Vol-I: 369
 Walster, E., Vol-II: 287
 Walter, B., Vol-I: 260, 443
 Walter, L. C., Vol-II: 546
 Waltermaurer, E., Vol-II: 195
 Walters, E. E., Vol-II: 473
 Walters, L., Vol-I: 68
 Walters, M., Vol-II: 255
 Walther, J. B., Vol-II: 653
 Walton, M., Vol-I: 201
 Walworth, J., Vol-II: 119
 Walzer, S., Vol-II: 293, 297
 Wampold, B. E., Vol-I: 83; Vol-II: 221, 241–242
 Wampold, E. B., Vol-II: 234
 Wandersman, A., Vol-II: 613
 Wang, B., Vol-II: 543
 Wang, J., Vol-II: 486
 Wang, P. S., Vol-II: 527
 Wang, S., Vol-I: 114
 Wang, V. O., Vol-II: 272
 Wang, X. Y., Vol-I: 236
 Wansink, B., Vol-I: 247, 463
 Ward, L., Vol-I: 112, 144, 150, 542
 Ward, L. M., Vol-I: 542; Vol-II: 171, 655
 Ward, M., Vol-I: 328, 542; Vol-II: 660
 Ward, R., Vol-I: 179, 542, 544; Vol-II: 410, 414
 Ward, T., Vol-II: 242
 Warden, D., Vol-II: 510
 Wardlaw, D., Vol-II: 620
 Wardle, J., Vol-I: 456, 462
 Wardrop, J., Vol-II: 387
 Warin, J., Vol-I: 510
 Warner, M., Vol-I: 196
 Warner, M. B., Vol-II: 73
 Warner, S., Vol-II: 603
 Warnke, M., Vol-II: 94
 Warren, K., Vol-I: 283
 Warren, M. P., Vol-I: 534–535, 543
 Warren, W. H., Vol-I: 266
 Warrington, M., Vol-I: 289, 291
 Warshaw, M., Vol-II: 195
 Wartell, M. S., Vol-I: 325
 Wasco, S. M., Vol-II: 12, 613–636
 Washington, N., Vol-I: 512
 Wasserman, L. M., Vol-I: 237
 Waterman, A. S., Vol-I: 566
 Waterman, P. D., Vol-I: 179
 Waters, H. S., Vol-I: 263
 Waters, P. L., Vol-I: 532
 Watson, C., 195
 Watson, D., Vol-II: 33
 Watson, D. R., Vol-I: 243
 Watson, J., Vol-II: 607
 Watson, K. R., Vol-II: 487
 Watson, L. F., Vol-II: 484
 Watson, N., Vol-II: 154
 Watson, N. V., Vol-I: 222, 266
 Watson, W. L., Vol-II: 482
 Watt, H. M. G., Vol-II: 11, 379–394
 Watts-Jones, D., Vol-II: 255
 Watzlawick, P., Vol-II: 264
 Waxman, S., Vol-I: 199
 Way, N., Vol-I: 107
 Wayne, J. H., Vol-II: 425
 Weatherall, A., Vol-I: 201
 Weatherall, R., Vol-II: 478
 Weaver, J., Vol-I: 242; Vol-II: 656–657
 Webb, R. M., Vol-I: 310
 Webber, S. S., Vol-II: 348
 Webb-Johnson, G., Vol-I: 284
 Weber, G. N., Vol-II: 365
 Weber, K., Vol-II: 545
 Webley, P., Vol-I: 330
 Webster, B., Vol-I: 369
 Webster, L., Vol-I: 135
 Webster, M., Vol-II: Jr., Vol-II: 345

- Wechsler, D., Vol-I: 301–302, 320, 569;
Vol-II: 70
- Weden, M. M., Vol-II: 476
- Weeks, L. E., Vol-II: 318
- Weeks, R., Vol-II: 230
- Weel, C. V., Vol-II: 474
- Wegener, D. T., Vol-I: 151
- Wegesin, D. J., Vol-I: 226
- Wegner, D. M., Vol-I: 460
- Wei, R., Vol-II: 653
- Weiffenbach, J. M., Vol-I: 246
- Weightman, D. R., Vol-I: 226
- Weil, E., Vol-I: 288–289
- Weimann, G., Vol-II: 342, 346
- Weinberg, G., Vol-II: 359
- Weinberg, M., Vol-I: 63, 66
- Weinberg, M. K., Vol-I: 113
- Weinberg, M. S., Vol-I: 475
- Weinberg, R., Vol-II: 570
- Weinberger, D. R., Vol-I: 245
- Weinberger, J., Vol-II: 44
- Weinblatt, M. E., Vol-II: 545
- Weiner, B., Vol-I: 200
- Weingarten, H. P., Vol-I: 462, 464
- Weinraub, M., Vol-I: 504, 510
- Weinrich, J. D., Vol-II: 365
- Weinstein, M., Vol-II: 158
- Weinstein, R. S., Vol-I: 284
- Weinstein, S., Vol-II: 369
- Weinstein, S. E., Vol-I: 457, 460
- Weintraub, J. K., Vol-II: 42, 434
- Weintraub, W., Vol-II: 42, 434
- Weir, T., Vol-I: 437
- Weis, L., Vol-I: 103, 106, 114
- Weis, S., Vol-I: 245
- Weisenberg, M., Vol-I: 242
- Weiser, L., Vol-I: 396
- Weiss, E. L., Vol-II: 137
- Weiss, J. T., Vol-II: 364
- Weiss, M. G., Vol-II: 486
- Weiss, M. R., Vol-II: 570
- Weiss, R. L., Vol-II: 268
- Weiss, T., Vol-I: 243
- Weissman, M. M., Vol-II: 134
- Weisstein, N., Vol-I: 26–27, 366
- Weitlauf, J. C., Vol-II: 74
- Weitzel-O'Neill, P. A., Vol-II: 345
- Weizenbaum, F. B., Vol-I: 456, 458
- Welander, G., Vol-II: 483
- Weller, A., Vol-I: 248
- Weller, L., Vol-I: 248
- Wellman, B., Vol-II: 281
- Wells, A., Vol-I: 396
- Wells, B., Vol-I: 480
- Wells, S., Vol-II: 314–315
- Welsh, G. S., Vol-II: 76
- Welsh, K. M., Vol-II: 54, 483
- Welshimer, K. J., Vol-I: 53
- Welton, A. L., Vol-I: 327
- Wendler, C., Vol-II: 379, 388
- Wenk, N. M., Vol-II: 197, 202
- Wennberg, P., Vol-II: 204
- Wenzlaff, R. M., Vol-I: 460
- Werbart, A., Vol-II: 204
- Werbel, J. D., Vol-II: 351, 456
- Werbs, M., Vol-I: 243
- Werlen, E., Vol-II: 621
- Werner, A., Vol-II: 546, 549
- Werner, O., Vol-I: 171–173
- Wert, S. R., Vol-I: 397, 399
- Wertheim, E. H., Vol-II: 165, 168, 173
- Weseen, S., Vol-I: 106
- Wesman, A. G., Vol-I: 320
- Wesselink, P., Vol-II: 170
- West, A., Vol-I: 351–352, 354
- West, C., Vol-I: 2, 120, 367, 389–390, 394, 401; Vol-II:
295, 406–407, 523
- West, C. M., Vol-II: 258
- West, P., Vol-II: 480
- Westad, F., Vol-I: 462
- Westbury, E., Vol-II: 208
- Westen, D., Vol-I: 259; Vol-II: 95, 234
- Wester, S., Vol-II: 228, 231–232, 235
- Wester, S. R., Vol-I: 437
- Westerman, D., Vol-II: 653
- Westheimer, K., Vol-I: 290
- Westling, E. W., Vol-I: 548
- Westmoreland, T., Vol-II: 487
- Weston, K., Vol-I: 67
- Weston, P. J., Vol-II: 530
- Westphal, W., Vol-I: 241
- Wetherell, M., Vol-I: 117, 192; Vol-II: 475
- Wetzel, R. D., Vol-II: 195
- Wetzels, P., Vol-II: 484
- Whalen, P. J., Vol-II: 285
- Whaley, A. L., Vol-II: 233
- Whallett, E. J., Vol-II: 483
- Wheaton, B., Vol-I: 531
- Wheelan, S. A., Vol-II: 338, 350
- Wheeler, R. C., Vol-II: 546
- Wheelwright, S., Vol-I: 309
- Whelan-Berry, K. S., Vol-I: 570
- Whetstone-Dion, R., Vol-II: 347
- Whiffen, V. E., Vol-II: 96–97
- Whissell-Buechy, D., Vol-I: 246
- Whitbeck, L. B., Vol-II: 384, 619
- Whitbourne, S. K., Vol-I: 563, 566, 571, 574
- White, A. J., Vol-I: 237, 248, 515
- White, D. R., Vol-I: 167; Vol-I: 501
- White, H. R., Vol-I: 530–531
- White, J., Vol-I: 442
- White, J. B., Vol-II: 364
- White, J. D., Vol-II: 365
- White, J. L., Vol-II: 227, 236

- White, J. W., Vol-I: 95; Vol-II: 315
 White, K. J., Vol-II: 23
 White, K. M., Vol-I: 560, 562
 White, S. W., Vol-II: 297
 Whitehead, A., Vol-II: 173
 Whitehead, J., Vol-I: 97
 Whiteman, S., Vol-I: 511
 Whiteman, S. D., Vol-I: 501, 537
 Whitesell, N. R., Vol-I: 532
 Whitley, B. E. Vol-I: 194, 480
 Whitley, B. E. Jr., Vol-II: 24, 360–362, 458, 652
 Whitney, K., Vol-II: 348
 Whitt, E. J., Vol-I: 285
 Whittemore, A. S., Vol-II: 527
 Whittle, S., Vol-II: 112, 368
 Whorf, B., Vol-I: 400
 Whorf, B. L., Vol-I: 361
 Whorley, M. R., Vol-I: 54, 136, 145
 Wichstrom, L., Vol-I: 95, 544
 Wichstrøm, L., Vol-II: 369
 Wick, D. P., Vol-II: 43
 Wickens, C. D., Vol-I: 238
 Widiger, T. A., Vol-II: 73, 77, 95
 Widman, D., Vol-I: 223, 330
 Widom, C. S., Vol-II: 137
 Widrow, L., Vol-I: 49
 Wiedenbauer, G., Vol-I: 329
 Wiederman, M. W., Vol-II: 164
 Wieling, E., Vol-II: 260, 263
 Wiesenthal, D. L., Vol-II: 315
 Wigboldus, D. H. J., Vol-I: 418
 Wigfield, A., Vol-I: 510, 569; Vol-II: 379, 388–389
 Wilchins, R., Vol-I: 364; Vol-II: 114, 121, 123, 125
 Wilchins, R. A., Vol-II: 368
 Wilczynski, C., Vol-I: 396
 Wild, B., Vol-I: 239
 Wild, W., Vol-II: 690
 Wildman, B., Vol-I: 381
 Wildman, H. E., Vol-I: 389
 Wilgenbusch, T., Vol-II: 32
 Wilhelm, J. A., Vol-I: 136
 Wilkie, J., Vol-II: 414
 Wilkinson, L., Vol-I: 4, 83; Vol-II: 4
 Wilkinson, L. C., Vol-I: 284
 Wilkinson, R. G., Vol-II: 272
 Wilkinson, S., Vol-I: 31, 113, 117–118, 198
 Wilkinson, W., Vol-II: 120
 Wilkinson, W. W., Vol-II: 361
 Willard, B., Vol-II: 93
 Willems, P. P., Vol-II: 384
 Willemssen, T. M., Vol-II: 338, 358
 Williams, A. E., Vol-I: 242
 Williams, C., Vol-I: 10, 63, 262, 299;
 Vol-II: 166
 Williams, C. C., Vol-I: 262, 531; Vol-II: 386
 Williams, C. L., Vol-I: 221, 323;
 Vol-II: 79, 341
 Williams, D., Vol-I: 63
 Williams, D. H., Vol-I: 221, 224
 Williams, D. R., Vol-I: 228; Vol-II: 228
 Williams, D. T., Vol-II: 647
 Williams, J., Vol-I: 108; Vol-II: 402, 452
 Williams, J. E., Vol-I: 133, 150, 169, 170, 221; Vol-II:
 312, 343
 Williams, J. H., Vol-II: 428–429
 Williams, J. K., Vol-I: 327
 Williams, J. M., Vol-II: 483
 Williams, K., Vol-II: 297
 Williams, K. Y., Vol-II: 348, 350, 413–414
 Williams, M. B., Vol-II: 103
 Williams, R. W., Vol-I: 63, 66, 236, 323, 540, 570
 Williams, S. K., Vol-I: 536
 Williams, S. L., Vol-II: 317
 Williams, W. M., Vol-I: 283, 300, 480
 Williamson, S., Vol-II: 573
 Willig, C., Vol-I: 122
 Willis, R., Vol-II: 486
 Willis, S., Vol-I: 241; Vol-II: 384, 386
 Willis, S. L., Vol-I: 569, 574
 Willis, T., Vol-I: 96
 Willness, C. R., Vol-II: 436
 Willoughby, T., Vol-II: 652
 Wills, C., Vol-I: 246
 Wills, T. A., Vol-II: 501, 504–505
 Wilson, B. D. M., Vol-II: 613
 Wilson, C. J., Vol-II: 236, 242
 Wilson, D. B., Vol-I: 89, 477; Vol-I: 396
 Wilson, E. M., Vol-I: 216–217
 Wilson, E. O., Vol-I: 36, 259
 Wilson, G. D., Vol-I: 225–226
 Wilson, H. C., Vol-I: 248
 Wilson, I., Vol-II: 112–114, 122
 Wilson, I. B., Vol-II: 553
 Wilson, J., Vol-I: 289
 Wilson, J. F., Vol-I: 329
 Wilson, J. R., Vol-II: 383
 Wilson, K., Vol-II: 122
 Wilson, M. S., Vol-II: 362
 Wilson, P. A., Vol-II: 383
 Wilson, R. S., Vol-I: 568
 Wilson, T., Vol-II: 626
 Wilson, V., Vol-I: 302
 Wilson-Glover, A., Vol-II: 527
 Wilson-Smith, D. N., Vol-II: 340
 Wimbush, J. C., Vol-II: 602
 Winch, G., Vol-I: 512
 Windle, M., Vol-I: 49
 Windle, R. C., Vol-I: 49
 Wing, R. R., Vol-I: 459
 Wingard, D. L., Vol-II: 547
 Wingood, G., Vol-II: 626
 Wink, P., Vol-I: 567
 Winkel, J., Vol-I: 321
 Winkler, D., Vol-I: 444

- Winner, E., Vol-I: 317
 Winslow, D., Vol-II: 672, 680
 Winstead, B. A., Vol-II: 295
 Winter, D., Vol-II: 41–43, 45, 50, 52–55, 57–58
 Winter, D. G., Vol-I: 562, 573
 Winter, S., Vol-I: 369
 Winters, K., Vol-II: 111, 122–125
 Winters, K. K., Vol-II: 119
 Wintrup, G., Vol-II: 579
 Wirth, M. M., Vol-II: 52, 54
 Wirth, R. J., Vol-I: 95
 Wisco, B. E., Vol-II: 141
 Wise, E. A., Vol-I: 241
 Wisniewski, A. A., Vol-I: 219
 Wisniewski, A. B., Vol-II: 115
 Wisniewski, N., Vol-II: 137
 Wissow, L., Vol-I: 69
 Wissow, L. S., Vol-II: 138
 Witelson, S. F., Vol-I: 225
 Witkin, H. A., Vol-I: 319
 Wittert, G., Vol-I: 223
 Wittig, M. A., Vol-I: 319
 Wituk, S., Vol-II: 633
 Wobbles, T., Vol-II: 548
 Woike, B., Vol-II: 43, 45
 Wold, C., Vol-II: 552
 Wolf, N., Vol-II: 153
 Wolf, R., Vol-I: 69
 Wolf, R. C., Vol-II: 138
 Wolf, T., Vol-I: 66
 Wolf, Y., Vol-I: 242
 Wolfe, D., Vol-II: 405
 Wolford, J. L., Vol-I: 328
 Wolgers, G., Vol-I: 323
 Wolke, D., Vol-I: 282
 Wollett, A., Vol-I: 117
 Woltz, D. J., Vol-I: 321
 Wong, L. K., Vol-II: 460
 Wong, A. C., Vol-I: 236
 Wong, L., Vol-I: 106
 Wong, M., Vol-I: 431
 Wong, M. M., Vol-II: 282
 Wong, P. T. P., Vol-II: 295
 Wong, T. Y., Vol-II: 483
 Wong, Y. J., Vol-II: 226, 238
 Wood, C. H., Vol-I: 503
 Wood, D., Vol-I: 571; Vol-II: 34
 Wood, J. T., Vol-II: 283, 294
 Wood, J. W., Vol-II: 286
 Wood, K. R., Vol-I: 195
 Wood, N., Vol-I: 248
 Wood, P. K., Vol-II: 135, 137, 288
 Wood, W., Vol-I: 35, 84, 167–168, 201, 203, 313, 389, 393, 415, 421, 434, 446, 475, 481; Vol-II: 168, 311, 324, 329, 339, 343, 345, 347–349, 387, 461, 677
 Woodard, E. H., Vol-II: 662
 Wood-Barcalow, N., Vol-II: 173
 Woodcock, R., Vol-I: 301
 Woodford, M. S., Vol-II: 224
 Woodhill, B. M., Vol-II: 24
 Woodruff, P. G., Vol-II: 546
 Woods, D., Vol-II: 532
 Woods, E., Vol-I: 69
 Woods, E. R., Vol-II: 138
 Woods, K. E., Vol-II: 320
 Woods, S., Vol-I: 282
 Woods, S. C., Vol-I: 247
 Woods, W. J., Vol-I: 186
 Woodson, J. C., Vol-II: 115
 Woodwell, D. A., Vol-II: 518
 Woodzicka, J. A., Vol-I: 438
 Woolard, J. L., Vol-I: 651
 Woolf, V., Vol-I: 345–347
 Woolley, S. R., Vol-II: 255
 Woolsey, L., Vol-I: 198
 Worchel, S., Vol-II: 343
 Worell, J., Vol-I: 35; Vol-II: 92–94, 117, 192, 201, 205, 211, 213
 Wornian, K., Vol-II: 648
 Worrell, T. R., Vol-II: 190, 644, 647
 Worsley, A., Vol-I: 463
 Worthman, C., Vol-I: 534
 Worthman, C. M., Vol-I: 548; Vol-II: 133
 Wortley, P. M., Vol-I: 187
 Wortman, C., Vol-II: 410
 Wortman, C. B., Vol-II: 140
 Wosinska, W., Vol-II: 347
 Wraga, M., Vol-I: 327
 Wrase, J., Vol-I: 240, 243
 Wren, B., Vol-II: 112
 Wright, C., Vol-I: 96
 Wright, C. I., Vol-I: 240
 Wright, D. L., Vol-II: 602
 Wright, H. N., Vol-I: 248
 Wright, J. C., Vol-I: 226, 518
 Wright, J. D., Vol-I: 383, 543; Vol-II: 383, 543
 Wright, L. W. Jr., Vol-II: 360, 363, 371
 Wright, M., Vol-I: 226
 Wright, O., Vol-II: 650
 Wright, P., Vol-II: 483
 Wright, R., Vol-I: 328
 Wright, T. M., Vol-I: 318
 Wrightsman, L., Vol-I: 47
 Wrightsman, L. S., Vol-I: 145
 Wrisberg, C. A., Vol-II: 229
 Wrosch, C., Vol-I: 573
 Wu, T. Y., Vol-II: 476
 Wu, X. C., Vol-II: 137
 Wunderlich, A. P., Vol-I: 330
 Wüstenberg, T., Vol-I: 324
 Wuyts, F., Vol-I: 245
 Wyke, S., Vol-II: 474
 Wylie, R. C., Vol-II: 31
 Wysocki, C. J., Vol-I: 248

Wysocki, V. H., Vol-I: 97

X

Xavier, J. M., Vol-II: 120

Xie, Y., Vol-I: 304, 308

Xin, K. R., Vol-II: 350

Xu, J., Vol-II: 352, 526, 530, 542

Y

Yablonsky, L., Vol-II: 591

Yager, T. J., Vol-I: 140

Yagil, D., Vol-II: 433

Yahr, J., Vol-I: 504

Yamada, E. M., Vol-II: 338

Yamauchi, Y., Vol-I: 246

Yamaura, A., Vol-I: 245

Yancey, A. K., Vol-I: 544

Yang, A. S., Vol-I: 549

Yang, E. Y., Vol-I: 243

Yang, K., Vol-I: 162

Yang, X., Vol-II: 76, 81–82

Yang, Y., Vol-II: 33

Yanico, B. J., Vol-I: 135; Vol-II: 32

Yarab, P., Vol-II: 283

Yardley, L., Vol-I: 103, 110

Yarhouse, M. A., Vol-I: 62

Yarnold, P. R., Vol-I: 135

Yassin, A. A., Vol-I: 483

Yates, A., Vol-I: 482

Yates, L., Vol-II: 388

Ybarra, O., Vol-II: 299

Yee, D. K., Vol-I: 457; Vol-II: 156, 384

Yee, M., Vol-I: 516

Yeh, M., Vol-II: 232

Yelland, C., Vol-II: 156, 161

Yellin, J., Vol-II: 655

Yeo, R. A., Vol-I: 227, 264

Yesavage, J. A., Vol-I: 49

Yetton, P. W., Vol-II: 678

Yik, M. S. M., Vol-II: 26

Yin, D., Vol-II: 528

Yip, P. S., Vol-II: 485

Yodanis, C. L., Vol-I: 91

Yoder, J. D., Vol-I: 31, 91, 148; Vol-II: 34, 55, 57, 341, 344, 346, 349, 449, 677, 679

Yoder, K., Vol-II: 619

Yoon, K. S., Vol-II: 384

Yopchick, J. E., Vol-I: 438

Yoshimura, I., Vol-I: 246

Yost, M. R., Vol-II: 53, 58

Young, J., Vol-II: 320

Young, J. M., Vol-I: 332

Young, K., Vol-I: 505; Vol-II: 623

Younger, M. R., Vol-I: 289, 291, 515

Youniss, J., Vol-II: 282, 324

Youniss, R. P., Vol-II: 282, 324

Yousem, D. M., Vol-I: 249

Yrope, Y., Vol-I: 418

Yu, J. H., Vol-I: 10, 186

Yu, K. K., Vol-II: 485

Yu, W., Vol-II: 525

Yuan, A. S. V., Vol-II: 169

Yuen, H. P., Vol-II: 485

Yunger, J. L., Vol-I: 142, 512

Yutzy, S. H., Vol-II: 195

Yzerbyt, V., Vol-I: 134

Yzerbyt, V. Y., Vol-I: 418

Z

Zabin, L. S., Vol-II: 476

Zachar, P., Vol-II: 231

Zacks, E., Vol-I: 64; Vol-II: 257

Zacks, R. T., Vol-I: 432

Zahn, J., Vol-II: 566

Zahn-Waxler, C., Vol-I: 435, 543

Zakrisson, I., Vol-II: 362

Zalk, S. R., Vol-I: 516–517

Zambarano, R. J., Vol-I: 226

Zamutt, A., Vol-I: 562

Zand, D., Vol-II: 24, 289, 292

Zane, N., Vol-II: 232

Zangari, M., Vol-II: 255

Zani, A., Vol-I: 239

Zanna, M. P., Vol-I: 195

Zapf, D., Vol-II: 424

Zaridze, D., Vol-II: 481

Zaslavsky, A. M., Vol-II: 518

Zawacki, T., Vol-II: 284

Zebrowitz, L. A., Vol-II: 451

Zeedyk, M. S., Vol-I: 105; Vol-II: 64, 72

Zeidner, M., Vol-I: 439

Zeinier, R., Vol-I: 236

Zeira, A., Vol-II: 628

Zelditch, M. Jr., Vol-II: 345, 352

Zelkowitz, P., Vol-I: 531

Zellman, G., Vol-II: 330

Zellner, D. A., Vol-I: 459

Zeman, J., Vol-I: 434

Zemitis, O., Vol-I: 393

Zera, D., Vol-I: 541

Zewdie, S., Vol-II: 450

Zhang, J., Vol-I: 173

Zhang, X., Vol-I: 167

Zhou, J., Vol-II: 116, 350

Zhou, J. N., Vol-I: 224

Zhuang, H., Vol-I: 248

Ziebland, S., Vol-I: 51

Zilbergeld, B., Vol-I: 485

Zilberman, M. L., Vol-II: 476

Zilles, K., Vol-I: 244

Zillmann, D., Vol-I: 242; Vol-II: 657, 661

Zimmerman, D. H., Vol-I: 2, 120, 367, 389–390, 401;

Vol-II: 1, 115, 295, 406, 523

Zimmerman, H., Vol-I: 389, 394

- Zimmerman, L. I., Vol-II: 686
Zimmerman, M., Vol-II: 633
Zimmerman, T. S., Vol-II: 648
Zingales, L., Vol-I: 262, 300
Zinn, A., Vol-I: 218
Zinser, O., Vol-I: 330
Zivian, M. T., Vol-I: 90; Vol-II: 167
Zlotnick, C., Vol-II: 195, 619
Zoino, J., Vol-II: 159
Zones, J. S., Vol-II: 159
Zormeier, M. M., Vol-II: 283
Zosuls, K., Vol-I: 496, 500–501, 504, 509–510
Zosuls, K. M., Vol-I: 509
Zou, S., Vol-I: 236
Zozulya, S., Vol-I: 247
Zubeck, J. P., Vol-I: 246
Zubek, J., Vol-II: 30
Zucker, A. N., Vol-I: 563, 567
Zucker, K. J., Vol-I: 139, 141–142, 495, 510–511; Vol-II: 112–118, 122, 340, 367–368
Zuckerman, A., Vol-II: 506
Zuckerman, D., Vol-II: 527
Zuckerman, H., Vol-I: 345–346, 348, 354
Zuckerman, M., Vol-II: 48
Zuidhoek, S., Vol-I: 240
Zuloaga, D. G., Vol-I: 217–218
Zumpe, D., Vol-I: 483
Zurbruggen, E. L., Vol-I: 475; Vol-II: 43, 50, 53, 58, 291
Zuriff, G. E., Vol-I: 193
Zurkovsky, L., Vol-I: 323
Zuroff, D., Vol-II: 43, 82
Zuroff, D. C., Vol-II: 43, 82
Zuschlag, M. K., Vol-I: 566
Zusho, H., Vol-I: 248
Zusman, M. E., Vol-II: 283
Zwicker, A., Vol-II: 11, 495–512
Zylan, K. D., Vol-I: 247

Subject Index

Note: Volumes followed by locators refer to locators of respective volume numbers.

A

- AAMFT, *see* American Association of Marriage and Family Therapists (AAMFT)
- AAS, *see* Anabolic-androgenic steroids (AAS)
- AASP, *see* Association for Applied Sport Psychology (AASP)
- AAUW, *see* American Association of University Women (AAUW)
- Abilities, academic, Vol I: 7, 284, 297–313
- availability of intervention, Vol I: 312
 - beyond girls and mathematical ability, Vol I: 311–312
 - complexity of questions, Vol I: 300
 - constellations of, Vol I: 313
 - effect size *vs.* practical significance, Vol I: 311
 - extend gender differences research cross-nationally, Vol I: 313
 - and gender, Vol I: 300
 - intelligence, Vol I: 300–302
 - mathematical ability, Vol I: 302–305
 - verbal ability, Vol I: 305
 - gender and preferences, Vol I: 308–309
 - differences, Vol I: 312–313
 - explanations, Vol I: 309–310
 - gender similarities/differences, Vol I: 297–298
 - explanations, Vol I: 306–308
 - implications, Vol I: 311
 - methodologies, Vol I: 297–298
 - intelligence, Vol I: 300–302
 - gender similarities/differences in means, Vol I: 301
 - gender similarities/differences in variance, Vol I: 301–302
 - mathematical ability, Vol I: 302–305
 - aptitude *vs.* grades, Vol I: 304–305
 - gender similarities/differences in means, Vol I: 302–303
 - gender similarities/differences in variance, Vol I: 303–304
 - statistics, Vol I: 298–300
 - meta-analyses, Vol I: 298
 - variance ratio, Vol I: 299
 - verbal ability, Vol I: 305
 - gender similarities/differences in means, Vol I: 305
 - gender similarities/differences in variance, Vol I: 305
- Ability and occupational choice, Vol II: 386–387
- differential aptitude test, Vol II: 386
 - mathematics achievement data, Vol II: 386
- ABR, *see* Auditory brain stem responses (ABR)
- Abuse, Vol I: 10, 13, 29–30, 67–68, 71, 92, 106–107, 165, 182, 261, 399, 545, 549; Vol II: 10, 13, 35, 50, 53, 76, 92–93, 95–96, 98, 100, 102–104, 119, 121–122, 125, 137–139, 143–144, 146, 162, 189–191, 194, 196, 199, 201, 205, 208–210, 222, 224, 226–227, 230, 235, 255, 258, 261, 311, 316–318, 329, 367, 369, 431, 473–476, 479–484, 486–487, 522, 574–575, 579, 589, 591–592, 594, 596, 614, 620–621, 625–626, 631–632, 673, 680–682, 684, 690
- Abuse of authority, military, Vol II: 681–682, 690
- Academic abilities, Vol I: 7, 284, 297–313; Vol II: 7, 384
- Academic preferences, Vol I: 7, 297, 308–313; Vol II: 7
- Accidental violence, Vol II: 311–312
- Achievement
- behaviors, expectations and values, Vol II: 573
 - motivation, Vol II: 2, 41, 45–49, 56, 57
 - definition, Vol II: 41, 45
 - implicit/explicit measures, Vol II: 48–49, 49
 - motive to avoid success, Vol II: 47–48
- Acquired Immunodeficiency Syndrome (AIDS), Vol II: 104, 121, 125, 533, 542, 553, 626–627, 690
- Active aggression, Vol II: 427
- Actual power, Vol I: 416–418
- ADAM, *see* Androgen decline in the aging male (ADAM)
- Adaptation to Life*, Vol I: 44–45
- ADF, *see* Australian Defence Force (ADF)
- Adolescence
- future directions, Vol I: 548–550
 - gender identity changes
 - “configured gender identity,” Vol I: 529
 - “general gender identity,” Vol I: 529

Adolescence (*cont.*)

- intensification hypothesis, Vol I: 530–532
 - See also* Gender intensification hypothesis
 - global identity changes, Vol I: 528–529
 - development of self, Vol I: 528
 - stage theory of development, Vol I: 528
 - person-in-context, *see* Person-in-context influences
 - role of gender in development of psychopathology, Vol I: 543–548
 - See also* Psychopathology, role of gender in development of
- Adolescent Femininity Ideology Scale (AFIS), Vol I: 15, 138, 150
- Adolescent Masculinity in Relationships Scale (AMIRS), Vol I: 137
- Adolescents
- body dissatisfaction
 - Argentinean and Swedish, cross-cultural comparison, Vol II: 156
 - development and physical activity, Vol II: 576–577
 - instrumentality and expressiveness mediated gender differences
 - internalizing/externalizing symptoms, Vol II: 23
 - interpersonal stressors, impact on, Vol II: 139
 - LGB, peer violence victims, Vol II: 138
 - media influences
 - boys, risk of muscle dysmorphia, Vol II: 99
 - self-esteem, Vol II: 30–31
 - sexual minority, Vol II: 136, 138, 142, 143
 - suicidal ideation, Vol II: 153
 - fashion, Vol II: 153
 - fiction, Vol II: 153
 - function, Vol II: 153
- Adrenalectomy, Vol I: 226
- Adrenocorticotrophic hormone secretion, Vol II: 116
- Adult development and aging, Vol I: 44, 559–575
- future directions, Vol I: 573–575
 - gender and aging bodies, Vol I: 566–570
 - ADAM, Vol I: 568
 - age-related changes, Vol I: 567
 - AMS, Vol I: 568
 - increasing body image satisfaction, Vol I: 567
 - menopause/andropause, Vol I: 568
 - PADAM, Vol I: 568
 - gender and aging minds, Vol I: 568–570
 - CVLT, Vol I: 569
 - mitigated stereotypes, Vol I: 569
 - WAIS-R, Vol I: 569
 - gender and changes in social roles across lifespan, Vol I: 570–573
 - changing work and family roles, Vol I: 571–573
 - concept of marriage, change in, Vol I: 572
 - empty nest syndrome, Vol I: 571
 - gender/roles/well-being, Vol I: 570–571
 - parenting and grandparenting issues, Vol I: 572
 - retirement, Vol I: 572

- gender and personality in adulthood, Vol I: 560–566
 - See also* Personality and gender in adulthood
- Adulthood, after puberty, Vol I: 220–226
- activational effects, Vol I: 222
 - andropause, Vol I: 222
 - assumptions, Vol I: 221
 - homosexual individuals, Vol I: 225
 - commisural system, Vol I: 225
 - MRT, Vol I: 221
 - naming tasks, Vol I: 222
 - navigational tasks, Vol I: 221
 - object location memory, Vol I: 221
 - recalling landmarks, Vol I: 221
 - transgendered individuals
 - FtM/MtF, Vol I: 224
 - verbal ability/memory/fluency, Vol I: 222
- Advanced Placement (AP), Vol I: 281
- AERA, *see* American Educational Research Association (AERA)
- Aesthetic Plastic Surgery, Vol I: 163
- AFEOS, *see* Armed Forces Equal Opportunity Survey (AFEOS)
- Affect Intensity Measure (AIM), Vol I: 434, 436
- Affiliation–intimacy motivation, Vol II: 41, 49–52, 54, 57
 - physiological correlates, Vol II: 51–52
 - relationships, Vol II: 50–51
- AFIS, *see* Adolescent Femininity Ideology Scale (AFIS)
- “A game for every girl and every girl in a game,” NAAF, Vol I: 565
- Agency, Vol I: 9, 14, 47, 53, 90, 95, 135, 150, 201, 362, 367, 386, 415, 568, 570; Vol II: 9, 15, 23, 25, 27, 43, 100, 174, 190, 198, 290–291, 299, 343–348, 352, 448, 451, 549–550, 593–594, 608
- Aggression
- accidental violence, Vol II: 311
 - active, Vol II: 427
 - in children, peer violence, Vol II: 319–321
 - adolescence, Vol II: 320
 - cyberbullying, Vol II: 320–321
 - gender differences, Vol II: 320
 - greater levels in boys, Vol II: 320
 - preschoolers, Vol II: 319
 - controlled laboratory study, Vol II: 314–315
 - greater aggression in men, Vol II: 314
 - lower levels of stranger aggression against women, Vol II: 314
 - manipulation, Vol II: 315
 - definition, Vol II: 311–312
 - expressions of aggression in everyday life
 - personal experiences of violence, Vol II: 315–316
 - future directions
 - aggression/prosocial behavior in other cultures, Vol II: 330
 - aggression/prosocial behavior, interactions, Vol II: 328–329

- lack of social context in laboratory, Vol II: 329–330
- use of psychology student samples, effects, Vol II: 330
- gender and criminal behavior, Vol II: 316
- indirect aggression, Vol II: 312
- intimate partner violence and aggression, Vol II: 316–317
 - “common couple violence,” Vol II: 317
 - Conflict Tactics Scale, Vol II: 316
 - “intimate terrorist,” Vol II: 317
 - man on woman, Vol II: 316
 - woman on man, Vol II: 317
- malicious rumors, Vol II: 312
- nonviolent aggression, Vol II: 312
- physical aggression, Vol II: 312
- rape, Vol II: 321–322
 - sample of married battered women, Vol II: 321
- “relational aggression,” Vol II: 312
- relationship manipulation, Vol II: 312
- sibling violence, Vol II: 318–319
 - brother-to-brother, Vol II: 319
- social ostracism, Vol II: 312
- stereotypes of gender and aggression, Vol II: 312–314
 - BSRI, Vol II: 313
 - levels of provocation, Vol II: 313
 - Richardson Conflict Response Questionnaire, Vol II: 313
- verbal aggression, Vol II: 312
- and violence towards children/elderly family members, Vol II: 317–318
 - caretakers’ stress and depression, Vol II: 317
 - DHHS, Vol II: 317
 - NCEA, Vol II: 318
 - NEAIS, Vol II: 318
 - parental stress, Vol II: 318
 - physical child abuse, Vol II: 317
- workplace violence, Vol II: 322
 - expressed hostility/obstructionism/overt aggression, Vol II: 322
 - interpersonal violence, Vol II: 322
 - organization violence, Vol II: 322
- Aging bodies, Vol I: 9, 566–568
 - ADAM, Vol I: 568
 - age-related changes, Vol I: 567
 - AMS, Vol I: 568
 - increasing body image satisfaction, Vol I: 567
 - menopause/andropause, Vol I: 568
 - PADAM, Vol I: 568
 - See also* Adult development and aging
- Aging male syndrome (AMS), Vol I: 568
- Aging minds, Vol I: 559, 567–570
 - CVLT, Vol I: 569
 - mitigated stereotypes, Vol I: 569
 - WAIS-R, Vol I: 569
 - See also* Adult development and aging
- “Agoraphobia,” Vol II: 99, 100
- Agreeableness, Vol I: 434, 441, 445
- AIDS, *see* Acquired Immunodeficiency Syndrome (AIDS)
- AIM, *see* Affect Intensity Measure (AIM)
- AIS, *see* Androgen-insensitivity syndrome (AIS)
- AJCP, *see* *American Journal of Community Psychology* (AJCP)
- Ally McBeal*, Vol II: 655
- Almeida’s cultural context model, Vol II: 261
- Alpha socializers (men), Vol II: 654
- Alzheimer’s disease and long-term care, Vol II: 523–525
- Ambient stimuli, Vol II: 428
- Ambiguous genitalia, Vol I: 218; Vol II: 116
- Ambivalent Sexism Inventory, Vol I: 144, 147–148
- American Association of Marriage and Family Therapists (AAMFT), Vol II: 260
- American Association of University Women (AAUW), Vol I: 282
- American Bar Association Commission on Women in the Profession, Vol II: 601
- American College Personnel Association, Vol I: 45, 46
- American Educational Research Association (AERA), Vol II: 601, 604
- American Journal of Community Psychology* (AJCP), Vol II: 614, 616–617, 628–629, 633
- American Journal of Men’s Health*, Vol I: 48
- American Psychological Association (APA), Vol I: 2–4, 8–9, 73–74, 91, 94–96, 98–100, 111–113, 118, 121–122, 162, 192–193, 221, 223, 233, 563–564, 568, 587, 590, 601, 604, 609; Vol II: 2–4, 8–9, 24–25, 27, 59, 69, 70–71, 121–122, 195, 197, 202, 367–373, 486
 - diagnostic system, Vol II: 73
 - guidance, Vol I: 367
 - society, Vol II: 221
 - style manual, Vol I: 369–371, 373
- American Psychiatric Association Ethics Code, Vol II: 66
- American psychological association division 35, Vol I: 2, 47; Vol II: 2
- American psychological association division 44, Vol I: 70
- American psychological association division 51, Vol II: 257
- American Psychology-Law Society, Vol II: 587
- American Woman and Politics, Vol II: 337
- AMIRS, *see* Adolescent Masculinity in Relationships Scale (AMIRS)
- AMS, *see* Aging male syndrome (AMS)
- Anabolic-androgenic steroids (AAS), Vol II: 162, 474
- “Androcentric ideology of contemporary science,” Vol I: 36
- Androcentrism, Vol I: 60, 373, 382
- Androgen decline in the aging male (ADAM), Vol I: 568
- Androgen-insensitivity syndrome (AIS), Vol I: 218
- Androgen receptors (ARs), Vol I: 218

- Androgens, Vol I: 83, 215–220, 222–224, 241–242, 249, 270, 323–324, 533, 568
- Androgyny, Vol I: 14, 28, 50, 52, 134–135, 140, 192, 352–366, 530, 532, 570
 shift theory, Vol I: 354
- Andropause, Vol I: 222, 223, 484, 568; Vol II: 99
- Androstenedione, Vol I: 248
- Animal Liberation Front (1993), Vol II: 592
- Antecedents of gender identity and stereotyping, Vol I: 499, 502–507
 cognitive development, Vol I: 502–504
 constancy, Vol I: 503
 level of classification skills, Vol I: 503
 conceptual distinctions of gender categories and labeling, Vol I: 504
 essentialism, Vol I: 506–507
 category-based reasoning, Vol I: 506
 presence of “andro” or “estro,” Vol I: 506
 parent and sociocultural influences, Vol I: 504–505
 communication, Vol I: 505
 society at large, Vol I: 505
 under-representation in media, Vol I: 505
 perceptual distinctions of gender categories, Vol I: 504
- Antidepressant medications, prescription of, Vol II: 520
- Anti-Mullerian hormone, Vol I: 216–217
- Anti-nepotism, Vol I: 21, 25
- Antisocial and deviant behaviors, Vol II: 423–424
- Antisocial personality disorder (APD), Vol II: 94–95, 193
- Anxiety, Vol I: 9, 10, 13, 63, 85, 91, 146, 240–242, 287, 317, 330, 399, 420, 430, 432–433, 435, 437, 441, 444–445, 472, 485–488, 538, 545
- AP, *see* Advanced Placement (AP)
- APA, *see* American Psychological Association (APA)
- APA Board of Social and Ethical Responsibility in Psychology, Vol I: 370
- APA style, Vol I: 369–371, 373
- APD, *see* Antisocial personality disorder (APD)
- Appraisal processes
 appraisals of incivility, Vol II: 433
 primary appraisal, Vol II: 432
 sentimental stereotypes, Vol II: 432
 sexual harassment appraisals, Vol II: 433
- APSE, *see* Associated Press Sports Editors (APSE)
- APSE websites and newspapers, Vol II: 572
- Aptitude *vs.* grades, Vol I: 304–305
- Armed Forces Equal Opportunity Survey (AFEOS), Vol II: 682
- Army Culture and Climate Survey, Vol II: 690
- ARs, *see* Androgen receptors (ARs)
- Arthritis, Vol II: 500, 507, 519, 552, 554
- Assertiveness training, Vol I: 2, 382–383, 385
 critique of, Vol I: 382–383
 woman-blaming approach, Vol I: 383
 research on, Vol I: 383
 gender-based evaluations of speech style, Vol I: 383
 sex of model and participant, Vol I: 383
 sex of target actor and respondent, Vol I: 383
- Associated Press Sports Editors (APSE), Vol II: 572–573
- Association for Applied Sport Psychology (AASP), Vol II: 568
- Association for women in psychology (AWP), Vol I: 27
- Athletes and non-athletes, differences, Vol II: 569
- Atlas of World Cultures*, Vol I: 167
- Attainment value, Vol I: 310
- Attention seekers (women), Vol II: 654
- Attention-seeking behavior, Vol II: 94
- Attitudes toward gender roles, Vol II: 2, 404, 408, 410–411, 625, 627
- Attitudes Toward the Male Role Scale, Vol I: 47, 52
- Attitudes toward Women Scale (AWS), Vol I: 136, 144, 146–148, 151
- Audition and vestibular perception
 ABR, Vol I: 243
 anatomical analyses, cytoarchitectonic methods, Vol I: 244
 electromotile properties, Vol I: 243
 loudness sensitivity, Vol I: 243–244
 OAE, Vol I: 243
 pitch perception, Vol I: 244
 sound detection mechanisms, Vol I: 243
 sound localization, Vol I: 244
 supramodal language network, Vol I: 245
 vestibular apparatus, Vol I: 245
 disorders in women, Vol I: 245
 estrogen therapy, Vol I: 246
 function/malfunction results, Vol I: 245
 morphometric analysis, Vol I: 245
- Auditory brain stem responses (ABR), Vol I: 243
- Australian Defence Force: Career and Family Study*, Vol II: 681
- Australian Institute for Health & Welfare, Vol II: 473
- Australian Men’s Health Forum, Vol I: 47
- Australian Psychological Society, Vol I: 44
- Autosomal DSD, Vol I: 218, 219
- Availability of intervention, Vol I: 312
 visual-spatial ability, Vol I: 312
- AWS, *see* Attitudes toward Women Scale (AWS)
- B**
- BAB, *see* Beauty and the Beast (BAB)
- Balancing work/family, military context, Vol II: 402, 686–688
- Barna research group poll, Vol II: 370–371
- Battersers, Vol I: 391
- BDD, *see* Body dysmorphic disorder (BDD)
- BDI, *see* Beck Depression Inventory (BDI)
- Beauty ideal, Vol II: 157, 159–160, 166, 174
- Beauty and the beast (BAB), Vol II: 656
- Beck Depression Inventory (BDI), Vol II: 70, 80, 82, 214
- Bed nucleus of stria terminalis (BSTc), Vol II: 116
- Behavioral maintenance, Vol II: 293–294, 296
- Behavioral risk factors, Vol II: 472–473, 476

- Behavior setting theory, Vol II: 633
- Bem Sex Role Inventory (BSRI), Vol I: 14, 47, 50, 134–139, 143, 145, 151, 352, 366, 499; Vol II: 14–15, 22–23, 287, 312, 323, 657
- Benevolent sexism, forms, Vol II: 137, 290
- Bent twig model, Vol I: 325
- Berdache, Vol II: 114
- Berdahl's sex-based harassment theory, Vol II: 430
- BFI, *see* Big Five (BFI) personality factors
- Bicultural stress, Vol II: 618
- Big Five, Vol II: 9, 25, 26, 28, 29
See also Five-factor model (FFM)
- Big Five (BFI) personality factors, Vol I: 9, 143, 434, 441
agreeableness, Vol I: 434, 441
assertiveness, Vol I: 441
conscientiousness, Vol I: 441
extraversion, Vol I: 441
neuroticism, Vol I: 441
- Binet–Simon scale, Vol I: 301–302
- Binge-eating disorder, Vol II: 162
- Biopsychosocial determinants, Vol II: 1
- Bisexuality, Vol I: 61–66, 69–70, 72, 367, 480; Vol II: 363–365, 371
- Bissu of South Sulawesi, Vol II: 114
- Black and White adolescent participants, Vol II: 339
- Block Design tests, Vol I: 263, 265, 320
- Blood oxygen level dependent functional magnetic resonance imaging (BOLD fMRI), Vol I: 237, 239
- Blueprint for manhood (masculinity ideology), Vol II: 226
- BMI, *see* Body mass index (BMI)
- BMS, *see* Brannon Masculinity Scale (BMS)
- Board of Ethnic Minority Affairs, Vol I: 370
- Boas–Benedict–Mead approach, Vol I: 259
- Body cognitions, Vol II: 158–161
appearance-related information, Vol II: 158
body-ideal internalization, Vol II: 159–161
body schematicity, Vol II: 158–159
- Body dysmorphic disorder (BDD), Vol II: 10, 99, 158, 161–162
- Body feelings
appearance anxiety, Vol II: 157–158
body dissatisfaction, Vol II: 155–156
body shame, Vol II: 156–157
- Body image
adolescent suicidal ideation, Vol II: 153
fashion, Vol II: 153
fiction, Vol II: 153
function, Vol II: 153
gender and body behaviors, Vol II: 161–164
gender and body cognitions, Vol II: 158–161
gender and body feelings, Vol II: 155–158
gender and body perceptions, Vol II: 153–155
differences in literature, Vol II: 153
and muscularity, Vol II: 575–576
and physical activity, Vol II: 575
sport and eating disorders, Vol II: 574–575
and sport participation, Vol II: 574
tripartite model of social influence, Vol II: 166–168
See also Body image, theory
- Body image, theory
gender socialization, Vol II: 168–170
objectification theory, Vol II: 170–172
tripartite model of social influence
media, Vol II: 166–168
parents, Vol II: 164–165
peers, Vol II: 165–166
- Body mass index (BMI), Vol II: 29, 155, 529
- Body perceptions, Vol II: 153–155
fragmented vs. functional, Vol II: 154
overestimate vs. underestimate, Vol II: 155
third person vs. first person, Vol II: 154
- Body shape, Vol II: 161, 172–173, 473–474
- Body weight, influence on screening practices, Vol II: 545
- BOLD fMRI, *see* Blood oxygen level dependent functional magnetic resonance imaging (BOLD fMRI)
- Borderline personality disorder (BPD), Vol II: 94–95
- Bowen's systems theory, Vol II: 255
- BPD, *see* Borderline personality disorder (BPD)
- Brain development, Vol I: 279, 280, 289
boys, Vol I: 289
girls, Vol I: 280
- Brain differences, Vol I: 84, 225
- Brain imaging, Vol I: 7, 235, 239–240, 242, 244–245, 247, 249, 250
gustation, Vol I: 246–247, 249
techniques, Vol I: 250; Vol II: 7
EEG, Vol I: 250
fMRI, Vol I: 250
PET, Vol I: 250
- Brain parts, nasal epithelium, Vol I: 247
amygdala, Vol I: 247
hippocampus, Vol I: 248
orbitofrontal cortex, Vol I: 247
- Brannon Masculinity Scale (BMS), Vol I: 52, 136–137
- Breadwinner/good provider, Vol II: 1, 227, 229, 402, 409
- Breast cancer research, Vol II: 528
- Breast Evaluation Clinic, Vol II: 526
- British high school, survey, Vol II: 478
substance and level of use, gender differences, Vol II: 478
- British Medical Journal*, Vol II: 169
- British Time Use study, Vol II: 478
- Brooks' mastery model, Vol II: 256
- Brunswikian lens model, Vol I: 416
- BSRI, *see* Bem Sex Role Inventory (BSRI)
- BSTc, *see* Bed nucleus of stria terminalis (BSTc)
- Building social capital, barriers, Vol II: 454–455
old boys' networks, Vol II: 454

- Bullying, Vol I: 11, 282, 290, 538; Vol II: 11, 31, 315, 319–320, 328–329, 367, 423–424, 427, 429–430, 433–434, 681
- Buss' framework of aggression
 dichotomies of aggression, Vol II: 427
 social roles theory, Vol II: 427
 workplace bullying/aggression concerns, outcomes
 three-part model (Neuman and Baron), Vol II: 427
- C**
- CAH, *see* Congenital adrenal hyperplasia (CAH)
- California Achievement Tests (CAT), Vol I: 302
- California Personality Inventory (CPI), Vol I: 566
- California Psychological Inventory, Vol I: 351
- California Q-Sort test, Vol I: 351
- California Verbal Learning Test (CVLT), Vol I: 569
- Canadian Forces Attrition Information Questionnaire (CFAIQ), Vol II: 686
- Canadian Forces (CF), Vol II: 672
- Canadian Research Institute for Advancement of Women (CIRAW), Vol II: 534
- Cancer, Vol II: 525–529
 breast cancer, Vol II: 526–527
 colorectal cancer, Vol II: 529
 lung cancer, Vol II: 528–529
 prostate cancer, Vol II: 527–528
 health-care systems, Vol II: 527
- Cancer Genetics Network (CGN), Vol I: 185–186
- Cape Verdean community, Vol II: 627
- CAPS, *see* Cognitive-affect personality system (CAPS)
- Cardiac/cardiovascular reactivity, Vol I: 442–443
- Cardiovascular agents, Vol II: 520
- Cardiovascular disease, Vol II: 162–163, 542–543
- Career aspirations, Vol I: 288; Vol II: 330, 388, 402, 660
- Career success, Vol I: 310; Vol II: 46, 48
- Career Incentive Act (1977), Vol I: 281
- Career-oriented feminists, Vol II: 371
- Career progression and leadership, Vol II: 677–679
- Care work, Vol II: 346
- Carol Gilligan's theory, Vol I: 32
- CAT, *see* California Achievement Tests (CAT)
- Catholics, teachings about homosexuality, Vol II: 370–371
- CBAQ-F, *see* Child Behavior and Attitude Questionnaire for Females (CBAQ-F)
- CBPR, *see* Community-based participatory research (CBPR)
- CCM, *see* Cultural context model (CCM)
- Cell biology and internal molecular processes, Vol II: 525
- Center for Sex Offender Management, Vol II: 598
- Centers for Disease Control and Prevention (CDC), Vol II: 480, 520, 523–525, 530, 531–533, 541, 576
- Central nervous system agents, Vol II: 520
- Centre for Gender Research, University of Oslo, Vol I: 44
- CF, *see* Canadian Forces (CF)
- CFAIQ, *see* Canadian Forces Attrition Information Questionnaire (CFAIQ)
- CFNI, *see* Conformity to Feminine Norms Inventory (CFNI)
- CGN, *see* Cancer Genetics Network (CGN)
- Characteristics of group members
 descriptive beliefs, Vol II: 448
 prescriptive beliefs, Vol II: 448
- Charter of Human Rights and Freedoms, Vol II: 690
- Chemical senses, Vol I: 246–249
 nasal epithelium
 androstene, Vol I: 248
 human pheromone, Vol I: 248
 main brain areas, Vol I: 247
 menstrual synchrony, Vol I: 248
 olfactory receptor, Vol I: 247
 tipof- the-nose phenomenon, Vol I: 248
 VNO, Vol I: 248
- tongue
 basic tastes, Vol I: 246
 glossopharyngeal, Vol I: 246
 gustation, Vol I: 247
 PROP, Vol I: 246
 PTC, Vol I: 246
 sex-specific patterns, Vol I: 247
 taste buds of tongue, Vol I: 246
 vagus, Vol I: 246
 visual food stimuli, Vol I: 247
See also Brain parts, nasal epithelium
- Chicago lesbian community's strategies, Vol II: 258
- Child Behavior and Attitude Questionnaire for Females (CBAQ-F), Vol I: 140–141
- Child Behavior and Attitude Questionnaire for Males (CBAQ-M), Vol I: 140–141
- Childcare, Vol I: 11, 110, 312, 475, 485, 572; Vol II: 11, 137, 266, 282, 401, 403, 404, 407, 409, 411, 413, 445, 500, 647, 687, 689
- Child Gender Socialization scale, Vol I: 144
- Childhood, behavior in, Vol I: 219–220
 cognitive and motor skills, Vol I: 220
 fantasy play, Vol I: 219
 gonadal activity, Vol I: 219
- Childhood, gender identity and stereotyping, Vol I: 495–496
- Childhood sexual abuse (CSA), Vol II: 76, 138, 144, 201, 208
- Cholesterol lowering (statins), Vol II: 520
- Cholinesterase inhibitors, Vol II: 524
- Chronic illness, diagnosis/treatment of
 adjustment to chronic illness
 absence of psychological disorders, research, Vol II: 546
 maintenance of adequate functional status, Vol II: 547
 quality of life, impact on, Vol II: 547

- ways for (Stanton, Collins, and Sworowski), Vol II: 546
- AIDS mortality rates in men/women, Vol II: 542
- causes of death, US
- breast and cervical tumors in men, Vol II: 541
 - cardiovascular/cerebrovascular diseases, cancers, Vol II: 541
 - lung and prostate cancers in men, Vol II: 542
- 'chronic,' defined, Vol II: 543
- differences in adjustment
- agency and communion, Vol II: 549–550
 - dyadic coping and interpersonal context, Vol II: 550–552
 - psychological adjustment, Vol II: 547–549
- disease knowledge
- CVD, disease knowledge and risk perception, Vol II: 544
 - Homko's findings, Vol II: 543–544
 - mortality risks, findings, Vol II: 543
- early disease diagnosis, Vol II: 545
- future research
- cultural and religious implications, Vol II: 553–554
 - sexual minority status, Vol II: 552–553
- HIV/AIDS research, Vol II: 542
- Promundo's challenges for AIDS prevention (Greig), Vol II: 542
- reaction to diagnosis
- emotional functioning in men/women (Lövgren), Vol II: 545
 - men's adaptive help-seeking strategies (Addis and Mahalik), Vol II: 545
- screening practices
- body weight, influence in, Vol II: 545
 - colorectal cancer screening, barriers/facilitators, Vol II: 544
 - health insurance status, criteria for, Vol II: 544
 - Medicare eligibility, US, Vol II: 544
- Chronicle of Higher Education, Vol II: 337
- Chronic Obstructive Pulmonary Disease (COPD), Vol II: 228, 548
- Chronic strain in women, causes/effects, Vol II: 137
- CIRAW, *see* Canadian Research Institute for Advancement of Women (CIRAW)
- Civil Rights Act of 1964, Vol II: 187
- Classroom, gendered, Vol I: 277–291, 279–286
- biological and learning differences, Vol I: 287
 - hard-wired brains, Vol I: 279, 287
 - disadvantage, Vol I: 279
 - in educational attainment, explanations, Vol I: 286–290
 - biological and learning differences, Vol I: 287
 - cultural factors, Vol I: 289
 - gender equity programs, Vol I: 287
 - single-sex education vs. co-education, Vol I: 288
- educational benefits, Vol I: 291
- gendered classroom, Vol I: 279–286
- gendered curriculum, Vol I: 281
 - peer interactions, Vol I: 281
 - teacher behaviors, Vol I: 283
- gendered curriculum, Vol I: 281
- gendered structure of education, Vol I: 277–279
- peer interactions, Vol I: 281
- co-educational classroom, Vol I: 282
- race/ethnicity with gender, intersects, Vol I: 290
- teacher behaviors, Vol I: 283
- Black students, Vol I: 283–284
 - drop-out rate, Vol I: 284
 - Hispanic students, Vol I: 284
 - White students, Vol I: 283
- Client's *biological sex versus* the client's *gender presentation*, Vol II: 193
- Client Therapy with Women Scale (CTWS), Vol II: 201
- Clinical assessment, Vol II: 125, 238, 598, 603
- Code of menstrual invalidism, Vol I: 26
- Coeducation, Vol I: 26, 282, 288–289, 291
- Co-educational school, Vol I: 288
- Coercive femininity, Vol II: 117
- Coercive power, Vol I: 416
- Cognitive ability tests, Vol II: 68, 70
- Wechsler Adult Intelligence Scales, Vol II: 70
- Cognitive-affect personality system (CAPS), Vol II: 67, 83
- Cognitive appraisal theory (1984), Lazarus and Folkman, Vol II: 432
- Cognitive maintenance, Vol II: 293
- unconscious inhibition of mimicry, Vol II: 294
- Cognitive mechanisms
- bereaved gay men, study of, Vol II: 144
 - community-based LGB/heterosexual adolescents, study, Vol II: 144–145
- Cognitive processes, Vol I: 5, 7, 84, 223, 238, 307, 317, 322–323, 331, 517; Vol II: 5, 7, 142, 145, 460
- spatial memory processes, Vol I: 322–323
 - spatial strategies, Vol I: 322
- Cognitive social learning theory, Vol I: 474–475, 477
- media models, Vol I: 475
 - sexual double standard, Vol I: 475
- Cognitive style, Vol I: 352–354, 545
- Colonialism, definition, Vol II: 270
- Colonoscopy, screening method, Vol II: 529
- Colorectal cancer screening, barriers/facilitators, Vol II: 544
- Coming of Age in Samoa*, Vol I: 159
- Commissural system, Vol I: 225
- Committee on Disability Issues in Psychology, Vol I: 370
- Committee on Ethical Guidelines for Forensic Psychologists, Vol II: 587, 590
- Committee on Lesbian and Gay Concerns, Vol I: 367, 370
- Committee on Psychosocial Aspects of Child and Family Health, Vol I: 67

- Committee on Women in the NATO Forces (CWINF), Vol II: 689
- Communication, Vol I: 5, 8, 11, 13–14, 63, 113, 117–118, 160, 184, 192–193, 195, 197–198, 200, 202–204, 313, 359–425, 540; Vol II: 5, 8, 11, 14, 23, 200, 210, 253, 261, 264–268, 294–296, 300, 320, 323–324, 327, 346, 351, 432, 456, 499, 521–525, 543, 552–553, 589–592, 619, 645, 654, 663, 673–674
- Community-based participatory research (CBPR), Vol I: 186
- Community psychologists, Vol I: 613–618, 620–626, 628–629, 631–635; Vol II: 35
- Community psychology, Vol II: 12, 613–635
 - gender observations
 - as contextual variable, Vol II: 625–628
 - gender treatment over time, Vol II: 628–629
 - as grouping variable, Vol II: 618–623
 - as process variable, Vol II: 623–624
 - reflections and future directions, Vol II: 629–635
 - integration of theory, Vol II: 613
 - research, gender treatment, Vol II: 613–635
 - conceptualization of gender, Vol II: 615–616
 - integration of theory, Vol II: 613
 - method, Vol II: 616–617
 - social ecological perspective, Vol II: 613
- Community-residing men and women, Vol II: 497
- Compassionate love, Vol II: 311, 323, 327–328
 - care for intimates/strangers, Vol II: 328
- Complementarity hypothesis, Vol I: 22
- Conceptions, gender, Vol I: 366, 401–402
- Confidentiality and anonymity, Vol II: 591–594, 602
- Confirmatory factor analyses (CFA), Vol I: 137, 147, 148, 150–151
- Conflict Tactics Scale, Vol II: 316
- Conflict Tactics Scale 2 (CTS-2), Vol II: 210
- Conformity to Feminine Norms Inventory (CFNI), Vol I: 139, 150
- Conformity to Male Norms Inventory (CMNI), Vol I: 52, 138–139
- Congenital adrenal hyperplasia (CAH), Vol I: 139, 141, 218–220, 307, 323–324, 366; Vol II: 112, 116
- Congressionally Directed Medical Research Program, Vol II: 528
- Construction, gender
 - women/men task performance, role in
 - doing housework is also “doing gender,” Vol II: 407
 - “feminine”/“masculine” duties categorization, Vol II: 407
 - See also* Gender theories
- Contemporary psychotherapy practice, Vol II: 271
- Contemporary trends in couples and family therapy, Vol II: 264–271
 - cultural competence and EBT, Vol II: 268–269
 - evidence-based treatment, Vol II: 264–265
 - physiology/socialization/power, empirical research on, Vol II: 265–266
 - problems with first-order change, Vol II: 266–268
 - social justice perspective, Vol II: 269–271
- Contextualization, future research, Vol II: 393
 - individual-level predictors, Vol II: 393
- Continuing problem of white, heterosexual privilege, Vol II: 254, 262–264
- Controlled laboratory studies, aggression, Vol II: 314–315
 - lower levels of stranger aggression against women, Vol II: 314
 - manipulation, Vol II: 315
 - men’s greater aggression, Vol II: 314
- Convenience sampling, Vol I: 181–182, 187
- Conventional heterosexual relationships, Vol II: 293
- Conventional/realistic personality, Vol II: 233
- Conversation, Vol I: 28, 51, 107, 113–115, 117–118, 344, 363, 379–380, 385–399, 401, 404, 412, 434, 436, 440, 500, 505, 515; Vol II: 21, 165, 207, 236, 239–240, 282, 290, 295, 312, 677
- Conversational control, Vol I: 388, 390, 397
- Conway’s calculations, Vol II: 113
- “Cooperating with a mental illness,” Vol II: 119
- COPD, *see* Chronic obstructive pulmonary disease (COPD)
- Coping, Vol II: 1, 11, 433–435, 495–511
 - emotion-focused, Vol II: 499
 - problem-focused, Vol II: 499
 - relationship-focused, Vol II: 499
 - sexual harassment
 - “affirmative defense” to, Vol II: 434
 - COPE, Vol II: 434
 - non-assertive techniques, women’s response to, Vol II: 434
 - transactional model, Vol II: 496
- Corticosterone, Vol I: 226
- Cortina’s multi-level theory, Vol II: 426
- Counseling men, Vol I: 13, 45, 54; Vol II: 13, 233, 242, 326
- Couples and family therapy, contemporary trends in, Vol II: 264–271
 - cultural competence and EBT, Vol II: 268–269
 - evidence-based treatment in couples therapy, Vol II: 264–265
 - physiology/socialization/power, empirical research on, Vol II: 265–266
 - problems with first-order change, Vol II: 266–268
 - research, Vol II: 268
 - social justice perspective, Vol II: 269–271
- Covert sexism, *see* Selective incivility theory
- CPI, *see* California Personality Inventory (CPI)
- Creative performance, Vol I: 343–344, 347, 349, 351–354
- Creative potential, Vol I: 343–344, 347, 349–355, 364
- Creative women, cases, Vol I: 344–347, 351–353
 - description of women, Vol II: 351

- Creativity, Vol I: 2, 7, 103, 343–355, 561
 androgyny and cognitive styles, Vol I: 352–353
 stereotype threat, Vol I: 353
 androgyny shift theory, Vol I: 354
 creative women, cases, Vol I: 344–346
 culture and gender, Vol I: 347–349
 arguments, Vol I: 348
 range of reaction, Vol I: 349
 gender differences
 in divergent thinking, Vol I: 349–350
 in personality indicators, Vol I: 350–352
 issues, Vol I: 343
 Creativity Styles Questionnaire-Revised (CSQ-R),
 Vol I: 352
 Crime dramas (*Medium, The Closer*), Vol II: 644
 Criminal behavior, gender and, Vol II: 316
 Critical consciousness, Vol II: 263, 269, 272, 631,
 633–635
 Cross-cultural communication, Vol I: 379, 385
 Cross-cultural community based research, Vol II: 633
 Cross-cultural comparison, Vol II: 156, 209, 311, 393
 Cross-cultural data, sources, Vol I: 49, 167–169
Atlas of World Cultures, Vol I: 167
Cross-Cultural Research Methods, Vol I: 167
Ethnographic Atlas, Vol I: 167
 fieldwork, Vol I: 167
 governmental and other statistics, Vol I: 167–168
Human Relations Area Files, Vol I: 167
Standard Cross-Cultural Sample, Vol I: 167
 study-specific data collections, Vol I: 168–169
 See also Cross-cultural research
 Cross-cultural research, Vol I: 65, 159–173, 332, 366;
 Vol II: 343
 advantages of, Vol I: 163–164
 increased variance of processes and variables,
 Vol I: 164
 isolation of variables, Vol I: 164
 search for universals and expansion of theory, Vol
 I: 163–164
 describing cultural elements, Vol I: 161
 describing social groups, Vol I: 160–161
 culture, Vol I: 160
 ethnicity and race, Vol I: 160
 nationality, Vol I: 160–161
 society, Vol I: 160
 issues with translation, Vol I: 170–173
 back-translation, Vol I: 171
 decentering, Vol I: 172
 equivalence of translation, Vol I: 171–172
 management of problems, Vol I: 172–173
 response styles, Vol I: 172
 nature of measurement issues, Vol I: 169–170
 five-factor personality theory, Vol I: 170
 natives, Vol I: 169
 sojourners, Vol I: 169
 psychological universals, Vol I: 161–162
 sources of cross-cultural data
Atlas of World Cultures, Vol I: 167
Cross-Cultural Research Methods, Vol I: 167
Ethnographic Atlas, Vol I: 167
 fieldwork, Vol I: 167
 governmental and other statistics, Vol I: 167–168
Human Relations Area Files, Vol I: 167
Standard Cross-Cultural Sample, Vol I: 167
 study-specific data collections, Vol I: 168–169
 study of culture, psychological approaches, Vol I:
 162–163
 cross-cultural psychology, Vol I: 162
 cultural psychology, Vol I: 162–163
 indigenous psychology, two groups, Vol I: 163
 types of research designs, Vol I: 164–167
 context sampling exploratory studies, Vol I:
 165–166
 generalizability studies, Vol I: 166
 psychological differences studies, Vol I: 165
 simply exploratory studies, Vol I: 165
 theory-driven studies, Vol I: 166–167
 Cross-cultural research designs, types of, Vol I: 164–167
 context sampling exploratory studies, Vol I: 165–166
 generalizability studies, Vol I: 166
 psychological differences studies, Vol I: 165
 simply exploratory studies, Vol I: 165
 theory-driven studies, Vol I: 166–167
 Cross-Cultural Research Methods, Vol I: 159–173
 Cross dressing/Cross-dresser, Vol I: 369; Vol II: 114, 367
 Cross-gender identification, Vol II: 112, 122–123
 Cross-sex friendships
 degree of sexual interest of men/women, Abbey's
 research, Vol II: 283
 “friends with benefits” relationships, study,
 Vol II: 283
 misperception, contributing factor to sexual
 harassment, Vol II: 284
 sexual activity, impact, Vol II: 283
 sexual tension, cause of, Vol II: 283
 Cross-sex interactions, Vol I: 10, 66, 187, 226, 362,
 385–386, 390, 401, 507, 532; Vol II: 283, 295
 CSA, see Childhood sexual abuse (CSA)
 CSQ-R, see Creativity Styles Questionnaire-Revised
 (CSQ-R)
 CTS-2, see Conflict Tactics Scale 2 (CTS-2)
 CTWS, see Client Therapy with Women Scale (CTWS)
 Cultivation theory, Vol II: 167
 Cultural context model (CCM), Vol II: 261, 269
 Cultural elements, Vol I: 161
 Cultural factors, gendered classroom, Vol I: 5, 14, 289,
 297, 308, 474, 484–486
 educational disadvantage, Vol I: 289
 LGBTQ students, Vol I: 290
 Cultural specificity, emotions, Vol I: 441–442
 basic expressions, Vol I: 441
 Culture of muscularity, Vol II: 160
 Curriculum, Vol I: 7, 118, 198, 281; Vol II: 7, 260,
 381, 565

CVLT, *see* California Verbal Learning Test (CVLT)
 CWINF, *see* Committee on Women in the NATO Forces
 (CWINF)
 Cyberbullying, Vol II: 320
 Cytoarchitectonic methods, Vol I: 244

D

Darwinian evolutionary theory, Vol I: 22, 260, 261, 271
 DAT, *see* Differential Aptitude Tests (DAT)
 DEBQ, *see* Dutch Eating Behavior Questionnaire
 (DEBQ)
Deepening Psychotherapy with Men, Vol I: 45
 Demand/Withdraw pattern/Sequence, Vol II: 499–500
 Department of Defense (DoD), Vol II: 528, 682
 Department of Defense Sexual Harassment Survey,
 Vol II: 682
 Department of Education, Science, and Training
 (DEST), Vol II: 380
 Department of Immigration and Multicultural Affairs,
 Vol II: 487
 Department of National Defence (DND), Vol II: 687, 690
Department of State v. Washington Post, Vol II: 593
 Dependent personality disorder (DPD), Vol II: 94, 193
 Dependent stressors, Vol II: 134–135
 Depression
 BDI theory, Vol II: 80, 82, 214
 biased theories, construct of depression, Vol II: 73–74
 child abuse, cause, Vol II: 317
 cognitive factors
 hopelessness, Vol II: 142
 rumination, Vol II: 142–143
 depression scale, Vol II: 74
 diagnostic criteria, Vol II: 96
 division of labor, direct/indirect effects, Vol II: 414
 gender, sexual orientation, and vulnerability to,
 Vol II: 133–147
 HABDI, Vol II: 206
 internalizing symptoms, Vol II: 23
 label of depression for women, arguments, Vol II:
 96–97
 maternal depression, GID cases, Vol II: 118
 negative spillover across work/family, outcomes, Vol
 II: 415
 neuroticism, mental health variable, Vol II: 25, 27, 29
 during the postpartum period, Vol II: 97
 Real Men, Real Depression public health campaign,
 Vol II: 241
 research in chronically ill populations, Vol II: 546
 stress-mediation model of vulnerability to
 depression, Vol II: 9
 undiagnosed condition in men, Vol II: 230
 women's vulnerability to
 lower body esteem (Hyde and colleagues),
 Vol II: 142
 negative attributional style, Vol II: 142
 rumination, Vol II: 141

DEST, *see* Department of Education, Science, and
 Training (DEST)
 Developmental job experiences, Vol II: 455
 DHHS, *see* US Department of Health and Human
 Services (DHHS)
 DHT, *see* Dihydrotestosterone (DHT)
 Diabetes and utilization of care, Vol II: 531
 health effects, Vol II: 530
 interventions and programs, Vol II: 531–532
 Diabetes Intervention Reaching and Educating
 Communities Together (DIRECT), Vol II:
 531
 Diagnosis, Vol I: 9, 12, 29, 141, 186, 219, 241; Vol
 II: 9, 12, 71–72, 74–75, 81, 91–100, 102,
 103, 105, 111–112, 118–119, 121–125, 135,
 191–196, 236, 270, 434, 501, 520, 522–523,
 525, 530–531, 533, 541–555
 Diagnosis and intervention, psychological testing,
 Vol II: 72
Diagnostic and Statistical Manual, Vol II: 9, 91,
 111, 192
 Dichotomies of aggression
 active–passive, Vol II: 427
 direct–indirect, Vol II: 427
 physical–verbal, Vol II: 427
 Diet of ideal media, Vol II: 167
 Difference as deficit, Vol I: 380, 400; Vol II: 8
 critique of Lakoff's model, Vol I: 381–382
 research on Lakoff's model, Vol I: 380–381
 women's speaking style, Vol I: 380
 Difference model of gender and language, Vol I: 380
 as deficit, *see* Difference as deficit
 as dominance, *see* Dominance approach,
 difference as
 Differential Aptitude Tests (DAT), Vol I: 302; Vol II: 386
 Differential social attention, Vol II: 118
 Digital rectal examination (DRE), Vol II: 527
 Dihydrotestosterone (DHT), Vol I: 216, 218
 DIRECT, *see* Diabetes Intervention Reaching and
 Educating Communities Together (DIRECT)
 Direct forms of aggression, Vol II: 427
 Director of Military Gender Integration and Employment
 Equity (DMGIEE), Vol II: 676
 Disclosure of potential conflict of interest, Vol II:
 597–598
 Discourse analysis, Vol I: 116–118, 362, 379, 389, 403
 Discrepancy strain, Vol I: 50
 Discrimination and prejudice, Vol II: 196, 362, 446–447
 Disease Control and Prevention (CDC), Vol II: 480, 520,
 523–525, 530–533, 541, 576
 Disease-modifying antirheumatic drugs, Vol II: 545
 Disorder of sex development (DSD), Vol I: 366; Vol II:
 218–219
 Distress, diagnosis, assessment, and sociocultural
 influences, Vol II: 192–196
 feminist therapy, Vol II: 196
 gender and sexism, Vol II: 192–193

- “Isms,” effects, Vol II: 193–195
- traumatic experiences, Vol II: 195–196
- Divergent thinking, Vol I: 349–350, 352
 - verbal and figural activities, Vol I: 349
- Diverse recruitment, research projects, Vol I: 179–188
 - examples, Vol I: 184–187
 - capture–recapture method, Vol I: 187
 - CBPR, Vol I: 186
 - clinical trial/observational study, Vol I: 185
 - convenience or snowball recruitment methods, Vol I: 186
 - diversity in a large clinical trial, WHI, Vol I: 185
 - psychological phenomena study, Vol I: 184–185
 - recruitment strategies for SMW, Vol I: 186–188
 - strategies for enhancing diversity, Vol I: 185–186
 - model of recruitment
 - contact stage, Vol I: 183
 - enrollment stage, Vol I: 183–184
 - preparatory stage, Vol I: 182–183
 - self-selection bias, Vol I: 182
 - types of recruitment, Vol I: 180–182
 - choosing recruitment strategy, difficulties, Vol I: 181–182
 - convenience sampling, Vol I: 181
 - eligibility criteria, Vol I: 182
 - population-based recruitment, Vol I: 180–181
 - purposive recruitment, Vol I: 181
- Diversity documents discriminatory treatment, Vol II: 632
- Division of labor
 - household labor, outcomes of
 - emerging focus on fairness evaluations, Vol II: 413–414
 - marital happiness, satisfaction and quality, Vol II: 413
 - psychological adjustment, Vol II: 414
 - work–family and family–work spillover, Vol II: 415
 - men at work/women at home, cultural template of asymmetrically permeable work/family roles, Vol II: 402
 - child care demands/family needs, women’s role, Vol II: 402
 - dual-earner families, Vol II: 402
 - household labor, history/importance, Vol II: 402–404
 - impact of industrialization on labor, Vol II: 403
 - labor sphere before twentieth century, Vol II: 403–404
 - modern conveniences, impact on household labor, Vol II: 403–404
 - specific social/environmental conditions, influence of, Vol II: 403
 - US Census Bureau’s recent American Community Surveys, Vol II: 402
 - methods of studying household labor, Vol II: 407–408
 - predictors of household labor, empirical findings
 - age and life course, Vol II: 410
 - attitudes toward gender roles, Vol II: 410–411
 - earnings, Vol II: 409
 - education, Vol II: 410
 - lesbian and gay couples and families, Vol II: 411–412
 - marital status and union type, Vol II: 411
 - race and ethnicity, Vol II: 412
 - women’s/men’s employment, Vol II: 408–409
 - theories of household labor
 - exchange/resource theories, Vol II: 404–406
 - gender theories, Vol II: 406–407
 - See also* Household labor theories
 - work and family
 - influence of jobs on family life, example, Vol II: 401–402
 - Rosabeth Moss Kanter’s perspective, Vol II: 401
- DMGIEE, *see* Director of Military Gender Integration and Employment Equity (DMGIEE)
- DND, *see* Department of National Defence (DND)
- DoD, *see* Department of Defense (DoD)
- DoD Sexual Harassment Survey, Vol II: 683
- Domestic labor, Vol II: 404–405, 411, 416, 478, 646
- Domestic violence, Vol I: 28, 30, 361; Vol II: 72, 137, 182, 191, 199, 258, 262, 484, 608, 631, 632
- Dominance, Vol I: 34, 90, 138, 200–201, 203, 239, 244, 269–270, 287, 289, 324–325, 353, 385, 387–391, 393, 397, 400, 403–404, 412, 414–419, 438, 537, 539; Vol II: 23, 51, 57, 102, 169, 255, 258–259, 261, 263, 266, 269, 282, 294, 337, 339, 347, 362, 426, 430, 448, 542, 569, 601, 627, 649
- Dominance approach, difference as, Vol I: 387
 - gender and inequality, Vol I: 387–388
 - dominant behavior, Vol I: 387
 - linguistic style, Vol I: 387
 - social status, Vol I: 387
 - interruptions, Vol I: 389–391
 - profanity, Vol I: 391–393
 - resisting and derogating women’s requests, Vol I: 391
 - batterers, Vol I: 391
 - nagging, Vol I: 391
 - talking time, Vol I: 388–389
 - in classrooms, Vol I: 388
 - volume of words/power relationship, Vol I: 388–389
 - verbal harassment as dominance, Vol I: 393
- Dominant behavior, Vol I: 387; Vol II: 346
 - of men, Vol I: 388
 - of women, Vol I: 387
- Double bind, Vol I: 27, 198, 383–385, 404, 433; Vol II: 94, 345–347, 351–352, 433, 450–451, 458–459
- Double jeopardy, Vol II: 135, 510
- DPD, *see* Dependent personality disorder (DPD)

- Dramedies (*Sex and the City*, *Desperate Housewives*), Vol II: 644
- DRE, *see* Digital rectal examination (DRE)
- Drive for muscularity, Vol II: 10, 99, 154, 158, 161, 170, 576, 659
- See also* Muscular-ideal internalization
- Drive for Thinness subscale of the Eating Disorders Inventory-2, Vol I: 165
- Drop-out rate, Vol I: 284, 290
- Drug therapy (treatment), Vol II: 97
- DSDs, *see* Disorders of sex development (DSDs)
- DSM, *see* Diagnostic and statistical manual of mental disorders (DSM)
- DSM-IV Casebook*, Vol II: 103
- DSM-IV* diagnostic category, definition, Vol II: 73
- DSM-IV* disorder, Vol II: 231
- Dual earner, Vol I: 537; Vol II: 402
- Dust bowl empiricism, *see* MMPI/MMPI-2
- Dutch Eating Behavior Questionnaire (DEBQ), Vol I: 457, 459
- Dyadic relationships, Vol II: 506
- Dynamic spatial ability, Vol I: 318, 322, 332
- Dysfunction strain, Vol I: 50–51
- E**
- Early women's sport and physical education
- "A game for every girl and every girl in a game," NAAF, Vol II: 565
- masculine model domination, Vol II: 565
- Roberta Park's historical analysis, Vol II: 565
- women's physical education programs, goals, Vol II: 565
- EAT-26, Vol I: 165
- Eating, amount of
- interactions, Vol I: 458–462
- desirable male partner/familiarity of partner, Vol I: 461
- disinhibited eating, Vol I: 459
- male–female dyads, Vol I: 462
- menstrual cycle, Vol I: 458–459
- negative alliesthesia, Vol I: 458
- partner sex/desirability/familiarity, Vol I: 460–461
- PMS, Vol I: 458
- rebound effects, Vol I: 460
- social influence, Vol I: 461–462
- stress and eating, Vol I: 459–460
- thought suppression and expression, Vol I: 460
- main effects
- caloric intake, Vol I: 457
- DEBQ, Vol I: 457
- difference in size, Vol I: 457
- impression management, Vol I: 457–458
- men eat more, reason, Vol I: 456
- RMR, Vol I: 457
- TFEQ, Vol I: 457
- weight gain, negative utility, Vol I: 457
- See also* Eating behavior, sex and gender differences
- Eating behavior, sex and gender differences
- amount eaten, Vol I: 456–462
- See also* Eating, amount of
- directions for future research, Vol I: 466
- food preferences, Vol I: 462–464
- See also* Food preferences
- hunger, Vol I: 464
- fasting ghrelin levels, Vol I: 464
- Eating disorders, Vol I: 10, 13
- attitudes, Vol I: 91–93, 97
- in men, Vol I: 54
- prevention, Vol I: 86, 87
- in women, Vol I: 247
- Eating Disorders Inventory-2, Vol I: 165
- EBP, *see* Evidence-based practice (EBP)
- EBPP, *see* Evidence-based practice in psychology (EBPP)
- EBT, *see* Evidence-based treatment (EBT) movement
- Eccles' developmental model, Vol II: 573
- ECJ, *see* European Court of Justice (ECJ)
- Economists' traditional human capital theories, Vol II: 445
- ECP, *see* Emergency Committee in Psychology (ECP)
- Education, Vol I: 5, 7, 15, 22, 28, 57, 71, 77–78, 118–119, 125, 135, 160, 170, 187, 199, 205–207, 209, 221, 239, 263, 269, 284–285, 290, 300, 337, 344–345, 379–383, 390, 405, 408, 410, 413, 415, 445–446, 472–473, 480, 487, 496, 524, 526, 528, 531–533, 542, 563–566, 578–579, 596, 601, 606, 615, 662, 689; Vol II: 7, 22, 28, 57, 77–78, 118–119, 170, 187, 199, 205–207, 209–210, 221, 239, 263, 269, 284–285, 290, 300, 337, 344–345, 379–383, 390, 405, 408, 410, 413, 415, 445–446, 472–473, 480, 487, 496, 524, 526, 528, 531–533, 563–566, 578–579, 596, 601, 606, 615, 689
- EEGs, *see* Electroencephalograms (EEGs)
- Effect sizes, Vol I: 4, 5, 14, 83, 89, 96, 220, 224, 241, 263, 265, 298–301, 303–306, 309, 311, 318–321, 324, 414–415, 418, 477; Vol II: 4, 5, 14, 21, 26, 30, 35, 283, 360, 386, 504, 643
- Effect size *vs.* practical significance, Vol I: 311
- Egalitarianism, Vol I: 146
- Egalitarian therapy relationship, promotion, Vol II: 203
- Ego dystonic homosexuality, Vol II: 103
- Electroencephalograms (EEGs), Vol I: 238–239, 250
- Electroencephalography (EEG), Vol I: 238, 249
- Electromyography, Vol I: 434
- Elevation of traditionally feminine values (Seward), Vol I: 26
- Elizabeth Cady Stanton, Vol II: 565
- man's claim to physical superiority, rejection, Vol II: 565

- Embedded figures test, Vol I: 263, 265–267, 320, 326, 373, 503, 560
- Emergency Committee in Psychology (ECP), Vol I: 23–24
- Emergent leadership, Vol II: 341–342, 351
social influence, advantage in, Vol II: 341
- Emerging media
cell phone use, gender differences, Vol II: 653
computer use
children's computer use, Calvert's survey, Vol II: 652
frequency of internet use, age factor interaction with gender, Vol II: 652
and internet, Vol II: 652
fictionalized websites, use
sexual double standard interaction effect, Vol II: 653
male adolescents, heavy gamers, Vol II: 652
Pew Internet and American Life project report, findings, Vol II: 652
SNS by younger adults, use of, Vol II: 653
See also Social networking sites (SNS)
See also Media
- Emotion(al), Vol I: 434
competence, Vol I: 439
MSCEIT, Vol I: 439
overwhelmed/cerebral labeled, Vol I: 439
expressed in behavioral contexts, Vol I: 436–437
stonewalling, Vol I: 437
and expression, self-report, Vol I: 434–436
general emotional experience and expression, Vol I: 434
measure, Vol I: 434
specific emotions, Vol I: 435–436
See also Expression/emotion, self-reported
functioning, neural substrates of, Vol I: 443
brain lateralization, Vol I: 443
fMRI/PET scans, Vol I: 443
limbic system activation, Vol I: 443
regulation, Vol I: 432–434
agreeableness, Vol I: 43
anxiety, negative/self deprecating thoughts, Vol I: 433
BFI personality factors, Vol I: 43
double bind emotionality, Vol I: 433
gender–emotion stereotypes, Vol I: 432
overreaction, and lack of expression, Vol I: 433
personality-related factors, Vol I: 432
positive/negative emotions, Vol I: 433
specific emotions stereotyped, control over, Vol I: 432
stereotype threat, Vol I: 433
surface acting, Vol I: 433
stereotypes, nature of, Vol I: 430–432
- Emotional contagion, Vol I: 239, 434, 446
- Emotional stoicism, Vol II: 236, 237, 546
- Emotion-centered couples therapy, Vol II: 264
- Emotion-focused coping, Vol I: 499; Vol II: 497–498, 503–504, 511
- Emotion/socialization, Vol I: 429–448
cultural specificity, Vol I: 441–442
emotion(al)
competence, Vol I: 439
expressed in behavioral contexts, Vol I: 436–437
functioning, neural substrates of, Vol I: 443
regulation, Vol I: 432–434
facial expressions/nonverbal behaviors, Vol I: 437–438
gender differences, etiology of, Vol I: 443–446
developmental perspective, Vol I: 444–445
distal/proximal cues, Vol I: 445–446
nonverbal decoding skill, Vol I: 438–439
physiological arousal, Vol I: 442–443
relationship specificity, Vol I: 439–440
self-reported emotion and expression, Vol I: 434–436
general emotional experience and expression, Vol I: 434
measure, Vol I: 434
specific emotions, Vol I: 435–436
stereotypes/display rules, Vol I: 430–432
accuracy of, Vol I: 432
emotional stereotypes, nature of, Vol I: 430–432
- Empathizers, Vol I: 309
- Empathy/nurturance and sensitivity to nonverbal cues, Vol II: 323–325
degree of empathy, variation in, Vol II: 325
interpersonal sensitivity, Vol II: 325
thinking based on nonverbal behavior, Vol II: 324
- Employer-based insurance programs, Vol II: 518
- Employment
protection, Vol II: 368
women and men
participation in housework, Vol II: 409
time availability hypothesis, Vol II: 408–409
See also Household labor
- Empty nest syndrome, Vol I: 2, 571, 572
- Endocrine disorders, Vol I: 218–219, 270, 483, 529; Vol II: 115
- Endogenous behavioral problems, Vol II: 93
- English-related skills, Vol II: 388
- Enzyme 5- α reductase, Vol I: 216, 529
- EP, *see* Evolutionary psychology (EP)
- Epidemiology, Vol II: 133–136, 526, 542
- Epidemiological studies, Vol II: 133–135, 224, 504
- Epistemological debates and methodological developments (1980s and 1990s), Vol I: 30
feminist empiricism, Vol I: 31–32, 35
feminist methods, Vol I: 33–34
principles (Gergen), Vol I: 33–34
feminist postmodernism, Vol I: 32–33
criticism, Vol I: 34
principles (Gergen), Vol I: 33–34
feminist standpoint epistemologies, Vol I: 32

- Epistemological debates (*cont.*)
 influence of political/cultural activities of women's movement, Vol I: 31
 NOW, Vol I: 30
 second-wave feminism, Vol I: 30
 EPLF, *see* Eritrean People's Liberation Front (EPLF)
 Equal Treatment Directive, Vol II: 368
 Erikson's theory, Vol I: 9, 560–566; Vol II: 9
 critiques of gender in
 Rochester Adult Longitudinal Study, Vol I: 563
 culture/sexual orientation/history in, Vol I: 565–566
 cohort influences on identity formation, Vol I: 566
 CPI, Vol I: 566
 ego integrity, Vol I: 561
 workable social identity, Vol I: 561
 developmental theory, critiques of, Vol I: 563–565
 additional stages, Vol I: 563
 cross-gender trade-off of qualities, Vol I: 565
 distal social roles, Vol I: 563
 ego integrity, Vol I: 565
 generativity, Vol I: 564–565
 intimacy and identity, Vol I: 564
 proximal family issues, Vol I: 563
 of personality development, Vol I: 560–561
 Eritrean People's Liberation Front (EPLF), Vol II: 676
 ERPs, *see* Event-related potentials (ERPs)
 Estradiol, Vol I: 215, 245, 270, 323
 Estrogen, Vol I: 83, 215, 218–219, 223, 241–242, 244, 246, 249, 323–324, 330, 459, 464, 480, 483–484, 487, 533, 534; Vol II: 115, 133, 524
 cyclic variations, Vol I: 241
 estradiol (E), Vol I: 215
 nociception/pro-nociceptive properties, Vol I: 242
 pain disorder effects, Vol I: 241
 in pain sensitivity, Vol I: 241
 therapy, Vol I: 246
 Ethical issues, Vol II: 591–599
 confidentiality and anonymity, Vol II: 591–594
 disclosure of potential conflict of interest, Vol II: 597–598
 harm, Vol II: 594–596
 informed consent, Vol II: 596–597
 interstate research, Vol II: 598–599
 Ethic of openness, Vol II: 295
 Ethnic backgrounds, Vol II: 157, 173, 476, 576, 634
 Ethnic or visible minorities, career progression of, Vol II: 677
 Ethnocentrism, Vol I: 34; Vol II: 139
Ethnographic Atlas, Vol I: 167
 Euclidean-based strategies, Vol I: 221, 330–331
 European Court of Human Rights, Vol II: 368–369
 European Court of Justice (ECJ), Vol II: 368
 European Union's Committee, Vol II: 98
 European Union trans persons, protections for, Vol II: 368
 Evaluation of FFM research/directions, study of gender issues, Vol II: 28–30
 Event-related potentials (ERPs), Vol I: 238–239, 243–244, 249
 Evidence-based practice (EBP), Vol II: 221, 233–234, 271–272
 Evidence-based practice in psychology (EBPP), Vol II: 221, 233
 Evidence-based treatment (EBT) movement, Vol II: 10, 254
 Evolutionary context, gender in, Vol I: 259–272
 advantageous trait, sex-specific, Vol I: 269–270
 empirical questions, Vol I: 271
 evolutionary explanations, Vol I: 265
 man the hunter, woman the gatherer, Vol I: 266–268
 hormonal variation in EP, Vol I: 270
 sex differences, causation of, Vol I: 271
 spatial cognition, sex differences, Vol I: 262
 classic literature, Vol I: 263
 navigation, Vol I: 264–265
 object location memory, Vol I: 263–264
 Evolutionary explanations, Vol I: 36, 195, 201–202, 242, 265–270, 325; Vol II: 651
 man who gets around hypothesis, Vol I: 268–269
 men hunt, women gather rule, Vol I: 266–268
 adaptation environment, Vol I: 267
 aiming, Vol I: 266
 gathering, Vol I: 267
 tool making, Vol I: 267
 tracking, Vol I: 266
 Evolutionary psychology (EP), Vol I: 7, 35, 49, 201–202, 259–263, 265, 271, 373, 471, 473–474
 biopsychosocial approach, Vol I: 262
 hypotheses, Vol I: 261
 sexual selection theory, Vol I: 473
 sexual strategies theory, Vol I: 474
 Evolutionary theory of mate preferences
 parental investment, Vol II: 285–287
 reproduction, pivotal factor for women, Vol II: 285
 SST, Buss and Schmitt (1993)
 Bem Sex Role Inventory (Bem, 1974), Vol II: 287
 conventional mate preference research, Vol II: 287
 short/long-term mating strategies, Vol II: 285
 women across ovulatory cycle/natural menstrual cycles, Vol II: 286
 women at peak fertility, Vol II: 286
 women's description of men as “nice guys” and “jerks,” Vol II: 286
 Exchange/resource theories, approaches
 exchange and resource perspectives, critiques, Vol II: 405–406
 relative resources and economic dependency
 neoclassical economic theory, Vol II: 405
 relative resources hypothesis, Vol II: 405

- time availability/constraints
 indicators, employment/marital/parental
 status/family composition, Vol II: 405
- Exercise, Vol I: 108, 110, 185, 367, 389, 396, 402,
 431, 444, 457, 486; Vol II: 29, 42, 44, 161,
 166–167, 233, 240, 263, 340, 344, 349–350,
 443, 476–478, 500, 524, 544, 550, 563–580
- Expectancy-value model, Vol I: 297, 310; Vol II:
 387–388
- Expectation states theory, research on, Vol II: 345
- Experiments of nature, Vol II: 115
- Expert power, Vol I: 416
- Explicit motives, Vol II: 42, 44, 49
- Exploratory/confirmatory factor analytic techniques, Vol
 II: 32
- Exploratory factor analysis (EFA), Vol I: 137–146,
 148–149, 151–152
- Expression/emotion, self-reported, Vol I: 434–436
- emotions, Vol I: 435–436
- feelings of dysphoric self-consciousness, Vol I:
 435
- feelings of vulnerability, Vol I: 435
- men emotions, Vol I: 435
- negative emotions, Vol I: 435
- positive emotions, Vol I: 435
- general emotional experience/expression, Vol I: 434
- AIM, Vol I: 434
- electromyography, Vol I: 434
- emotional contagion, Vol I: 434
- GSS, Vol I: 434
- measure, Vol I: 434
- Expressiveness/instrumentality/mental health, Vol II:
 24–25
- Externalizers, Vol I: 118, 442
- Extra-pair copulation/flirtation, Vol II: 286
- Extraversion, Vol I: 140, 413, 441
- Extrinsic questionnaire measures of achievement,
 Vol II: 48
- F**
- Facebook*, Vol II: 653–654
- Face-to-face talk, gossip, Vol I: 396
- Facial expressions/nonverbal behaviors, Vol I: 412,
 431–432, 437–438, 441
- non-Duchenne/Duchenne smiles, Vol I: 438
- Family therapy and couples counseling, issues, Vol II:
 253–273
- authors' social locations, Vol II: 254
- contemporary trends in, Vol II: 264–271
- cultural competence and EBT, Vol II: 268–269
- evidence-based treatment, Vol II: 264–265
- physiology/socialization/power, empirical
 research on, Vol II: 265–266
- problems with first-order change, Vol II: 266–268
- social justice perspective, Vol II: 269–271
- continuing problem of White, heterosexual privilege,
 Vol II: 262–264
- feminist revision of family therapy (1970–2000), Vol
 II: 254–255
- intersectionalities framework, Vol II: 261–262
- men from a feminist perspective, working with, Vol
 II: 256–257
- queering the discussion, Vol II: 257–259
- GLBT family studies, Vol II: 257
- tensions between race/ethnicity and gen-
 der/feminism, Vol II: 260–261
- Fantasy play, *see* Childhood, behavior in
- Fathering, Vol I: 2, 45, 269, 362; Vol II: 2, 272
- FBI, *see* Federal Bureau of Investigation (FBI)
- Fear
- about psychotherapy, Vol II: 223
- being controlled by others, Vol II: 56
- being in public, Vol II: 100
- in bisexual men, Vol I: 67; Vol II: 227, 230
- loss of respect and authority, Vol I: 121
- loss of control, Vol I: 444
- mental illness, Vol II: 100
- negative reprisals, Vol II: 368
- of behaving assertively, Vol I: 146
- of crime, Vol II: 620
- of drinking, Vol II: 240
- of femininity, Vol II: 237
- of generating anti-semitism, Vol II: 262
- of not being nurturing, Vol I: 146
- of physical unattractiveness, Vol I: 146
- of power, Vol II: 47, 56
- of rejection, Vol II: 49, 365
- of religious fundamentalism, Vol I: 67
- of safety, Vol I: 91
- of separation, Vol II: 73, 94
- of success, Vol I: 28; Vol II: 47–49
- of unemotional relationships, Vol I: 146
- of victimization, Vol I: 146
- weakness, Vol II: 52, 55
- Fecal occult blood testing (FOBT), Vol II: 529
- Federal Bureau of Investigation (FBI), Vol II: 608
- Federal Communications Commission-mandated
 educational television, Vol II: 645
- Federal Judicial Center's Research Division, Vol II: 601
- Federal rules of evidence, Vol II: 590
- Feel-good feminism, Vol II: 253
- Female-to-male (FtM) sex reassignment, Vol I: 224
- Female-to-male transsexuality, Vol II: 113
- Feminine beauty ideals, unrealistic nature of, Vol II: 157
- Feminine Gender Role Stress Scale (FGRS), Vol I: 146
- The Feminine Mystique* (Betty Friedan), Vol I: 27, 43
- Feminine speech styles, Vol I: 387
- Feminine-stereotype
- domains, Vol I: 414
- gender, Vol I: 443
- emotional, Vol I: 444
- Femininity, Vol II: 22
- Femininity, cultural models of, Vol II: 473
- Femininity effect in relationships, Vol II: 296

- Femininity Ideology Scale (FIS), Vol I: 139, 148–150
 Feminism and the women's movement scale (FWM), Vol II: 205
 Feminism in family therapy/tensions between race/ethnicity and gender, Vol II: 260–261
Feminism & Psychology, Vol I: 2, 27, 105, 107, 122; Vol II: 2
 Feminist approaches to working with men, Vol II: 254, 256
 Feminist empiricism, Vol I: 31–32, 35
 standpoint theory/postmodernism, Vol I: 31
 Feminist Identity Composite (FIC), Vol I: 149
 Feminist Identity Development Scale (FIDS), Vol I: 139, 149
 Feminist Identity Scale (FIS), Vol I: 139, 148–150; Vol II: 201
 Feminist family therapy, Vol II: 254, 256–257, 260, 262–263
 Feminist methods, Vol I: 33–34
 Feminist postmodernism, Vol I: 31–33, 403
 common to all feminist psychological approaches, Vol I: 32
 criticism, Vol I: 34
 feminist linguists concerns, Vol I: 403
 principles (Gergen), Vol I: 33–34
 Feminist practice, emergence of, Vol I: 29–30, 109
 Feminist praxis, Vol II: 211
 Feminist psychologists, Vol I: 1, 26, 28–31, 35–36, 192–195, 369; Vol II: 1, 189, 190
 Feminist psychology, Vol I: 20, 29, 35–36, 118, 201–202; Vol II: 64, 73, 190, 196
 Feminist psychotherapies, theory/research/ practice, Vol II: 187–215
 distress, diagnosis/assessment/sociocultural influences, Vol II: 192–196
 feminist therapy, meaning of, Vol II: 196
 gender and sexism, Vol II: 192–193
 “Isms,” effects, Vol II: 193–195
 traumatic experiences, Vol II: 195–196
 future research, Vol II: 211–214
 clients' perceptions and experiences of feminist therapy, Vol II: 212–213
 current and future practice, Vol II: 214–215
 efficacy, evaluation, and outcome research, Vol II: 213
 feminist/non-feminist practices, Vol II: 212
 feminist therapists, differentiation, Vol II: 211
 theoretical considerations, Vol II: 213–214
 outcome and evaluation research, Vol II: 205–211
 childhood sexual abuse, adult survivors of, Vol II: 208–209
 immigrant/international women, Vol II: 206–208
 men who abuse their partners, Vol II: 210
 perceptions, Vol II: 196–197
 praxis, Vol II: 198–205
 general practices, Vol II: 198–202
 therapeutic relationship, issues, Vol II: 202–205
 Feminist revision of family therapy, Vol II: 254–255, 261
 Feminist revolution in psychology, Vol I: 26–30
 emergence of a psychology for women, Vol I: 26–28
 emergence of feminist practice, Vol I: 29–30
 emergence of psychology for women, Vol I: 26–28
 The Feminine Mystique (Betty Friedan), Vol I: 27
 positivism's preferred method, limitations of, Vol I: 29
 Psychology Constructs the Female, Vol I: 26
 Psychology Constructs the Female; or, The Fantasy Life of the Male Psychologist, Vol I: 27
 sex differences research, Vol I: 28
 sex-typed behaviors, studies on, Vol I: 28
 Toward a Redefinition of Sex and Gender in Psychology, Vol I: 29
 Women and Madness (Phyllis Chesler), Vol I: 27
 Feminist self-disclosure inventory (FSDI), Vol II: 203
 Feminist standpoint position, Vol I: 105
 Feminist standpoint theory, Vol I: 31–33
 Carol Gilligan's theory, Vol I: 32
 maternal thinking, Vol I: 32
Feminist Theories and Feminist Psychotherapies: Origins, Themes, and Variations, Vol II: 191
 Feminist theorists, Vol II: 20, 22, 34, 65, 67, 83, 191, 256, 686
 Feminist Therapists (perceptions of), Vol I: 10, 30; Vol II: 10, 195–205, 211–213
 Feminist Therapy Behavior Checklist (FTB), Vol II: 200–202, 211
 Feminist Therapy Institute, Vol I: 30; Vol II: 198
 Feminist therapy, meaning, Vol II: 196
 Fetus development, Vol I: 216–219
 abnormalities, Vol I: 218–219
 AIS, Vol I: 218
 ambiguous genitalia, Vol I: 218
 CAH, Vol I: 219
 DSD, Vol I: 219
 endocrine disorders, Vol I: 218
 masculinization, Vol I: 218
 TS, Vol I: 218
 brain, Vol I: 217–218
 ARs, Vol I: 218
 INAH1, INAH2, INAH4, INAH3, Vol I: 217
 reproductive organs, Vol I: 216–217
 FOXL 2/FIG X, proteins, Vol I: 217
 Mullerian tract, Vol I: 216
 sertoli cells, Vol I: 216
 SRY gene, Vol I: 216
 WNT 4 gene, Vol I: 217
 Wolffian tract, Vol I: 216
 FFM, *see* Five-factor model (FFM)
 FFM traits, difference in, Vol II: 26–29
 FGRS, *see* Feminine Gender Role Stress Scale (FGRS)
 FIC, *see* Feminist Identity Composite (FIC)
 Fictionalized websites, Vol II: 653
 sexual double standard interaction effect, Vol II: 653

- FIDS, *see* Feminist Identity Development Scale (FIDS)
- First Change Sheet, Vol I: 370
- First-generation literature, pathologizing homosexuality, Vol I: 61–62
- change-of-orientation therapy, Vol I: 62
 - homosexuality, Vol I: 62
 - LGB identity, Vol I: 62
 - oedipal conflict, Vol I: 61
 - reparative or conversion therapies, Vol I: 61
 - sexual identity therapy, Vol I: 62
- First onsets vs. duration of depression
- biological changes, impact, Vol II: 134
 - factors associated (Nolen-Hoeksema and Hilt), Vol II: 134
- First psychological test, Vol II: 21
- FirstWave, Vol I: 21–23
- applied psychology after World War I, Vol I: 21
 - attention to “woman problem,” Vol I: 23
 - community of ideas debate, Vol I: 22
 - Laura Spelman Rockefeller Memorial Fund, Vol I: 21
 - The Mental Traits of Sex*, Vol I: 22
 - of feminism, Vol I: 20, 81
 - studies on mental and motor abilities during menstruation, Vol I: 23
 - studies to debunk stereotypes about women, Vol I: 23
 - variability hypothesis, test, Vol I: 22
 - women in higher education, Vol I: 21
 - young women of experimental psychology class, Vol I: 22
- FIS, *see* Femininity Ideology Scale (FIS); Feminist Identity Scale (FIS)
- Five-factor model (FFM), Vol II: 20, 25–30
- agreeableness, Vol II: 25
 - conscientiousness, Vol II: 25
 - extroversion, Vol II: 25
 - neuroticism, Vol II: 25
 - openness, Vol II: 25
 - research evaluation/directions, study of gender issues, Vol II: 28–30
 - traits, difference in, Vol II: 26–28
- Flexibility, Vol I: 172, 186, 192, 349, 350, 352–353, 355, 480, 485, 501–502, 530, 531
- Fluency, Vol I: 222, 224–225, 305, 312, 349, 350, 352
- FMRI, *see* Functional magnetic resonance imaging (fMRI)
- FOBT, *see* Fecal occult blood testing (FOBT)
- FOIA, *see* Freedom of Information Act (FOIA)
- Follicular phase, Vol I: 223, 241, 458, 465; Vol II: 286
- Food and Drug Administration (FDA), Vol II: 98
- Food preferences, Vol I: 455, 462–464
- appetite, definition, Vol I: 462
 - interactions, Vol I: 463–464
 - menstrual cycle, Vol I: 463–464
 - stress, Vol I: 464
 - main effects, Vol I: 463
 - acceptance of red meat, Vol I: 463
 - concern about appearance, Vol I: 463
 - low-calorie food, Vol I: 463
 - preference for chocolate, Vol I: 462
 - vegetarianism, largely female phenomenon, Vol I: 463
 - specific appetites, Vol I: 462
 - See also* Eating behavior, sex and gender differences
- Forensic psychology, gender research in, Vol II: 12, 587–608
- defining gender, Vol II: 588
 - ethical issues, Vol II: 591–599
 - confidentiality and anonymity, Vol II: 591–594
 - disclosure of potential conflict of interest, Vol II: 597–598
 - harm, Vol II: 594–596
 - informed consent, Vol II: 596–597
 - interstate research, Vol II: 598–599
 - goals and final disclaimer, Vol II: 588–589
 - methodological and epistemological pluralism, Vol II: 588
 - methodological issues, measurement, Vol II: 599–608
 - archival data, Vol II: 607–608
 - fairness and bias in measurement, Vol II: 604–606
 - reliance on self-report, Vol II: 607
 - reliance on simulation research, Vol II: 606–607
 - response bias, Vol II: 602–604
 - sampling, Vol II: 599–601
 - research, Vol II: 589–590
 - forensic vs. therapeutic roles, Vol II: 590
 - standards research in other contexts, Vol II: 589–590
- Formal task-oriented contexts, Vol I: 389
- The Forty-nine Percent Majority: The Male Sex Role*, Vol I: 44
- FOXL 2/FIG X, proteins, Vol I: 217
- Freedom of Information Act (FOIA), Vol II: 593
- Friends*, Vol II: 655
- Friendster*, Vol II: 653
- From “Fair Sex” to Feminism*, Vol II: 565
- FSDI, *see* Feminist self-disclosure inventory (FSDI)
- FTB, *see* Feminist Therapy Behavior Checklist (FTB)
- FtM, *see* Female-to-male (FtM) reassignment
- Functional magnetic resonance imaging (fMRI), Vol I: 237–239, 241–444, 247, 249–250, 443, 447, 487
- FWM, *see* Feminism and the women’s movement scale (FWM)
- G**
- Games Inventory, Vol I: 140–141, 151
- Gay and Lesbian Alliance Against Defamation (GLAAD), Vol II: 124
- Gay and lesbian individuals, sexual prejudice against, Vol II: 359–362
- homophobia and its discontents, Vol II: 359–360
 - etiological factors, environmental, Vol II: 360

- Gay and lesbian individuals (*cont.*)
 in-group domination, Vol II: 362
 internalized biphobia, Vol II: 365
 internalized homophobia, Vol II: 362
 religion, Vol II: 361–362
 sex and gender, Vol II: 360–361
 sexual prejudice against bisexual individuals, Vol II: 363–365
 sources of prejudice
 sex/gender/sexual orientation, Vol II: 363–365
- Gay men/lesbians in the military, Vol II: 689–691
 policy comparisons, Vol II: 690–691
- GDI, *see* Gender-Related Development Index (GDI)
- GEDAD, *see* Gender expression deprivation anxiety disorder (GEDAD)
- Gender
 attribution, Vol I: 364
 and body behaviors, Vol II: 161–164
 anabolic steroid use, Vol II: 162–163
 avoidance, Vol II: 164–168, 172
 BDD, Vol II: 162
 cosmetic surgery, Vol II: 163
 eating disorders, Vol II: 162
 flexible, Vol I: 368
 fluid, Vol I: 368
 identity, Vol I: 364
 queer, Vol I: 368
 roles, Vol I: 364
- Gender and gender collective, Vol I: 36
- Gender-appropriate activities, Vol II: 383, 385, 573
- Gender as contextual variable, Vol II: 618, 625–628
 cultural narratives, Vol II: 627–628
 individual gender-related attitudes, Vol II: 625–626
 relationships as context, Vol II: 626–627
- Gender as grouping variable, Vol II: 618–623
 demographic variable, Vol II: 620
 descriptive variable, Vol II: 618–620
 individual-level within an ecological framework, Vol II: 622
 intersecting variable, Vol II: 622–623
 risk or protective factor, Vol II: 620–621
 in theoretical relationship, Vol II: 621
- Gender aware therapy, Vol II: 237
- Gender based strategy, Vol II: 69
- Gender Behavior Inventory for Boys/CBAQ, Vol I: 140
- Gender bias
 bias in structural issues and statistical assumptions, Vol II: 77–78
 differential item endorsement probability, Vol II: 75
 different item meaning, reference groups, Vol II: 75–76
 gendered correlates of item bias, Vol II: 76
 in media
 analysis of *Monday Night Football*, Trujillo, Vol II: 571
 Italian coverage of 2004 Olympics, Vol II: 572
 Messner's research on gender stereotyping, Vol II: 571
 themes of, Vol II: 572
 operationalization, biased test construction
 differential item endorsement probability, Vol II: 75
 different item meaning, reference groups, Vol II: 75–76
 gender and social appropriateness of items, Vol II: 77
 MMPI-2 scales for rape victims/molested children, Vol II: 76
 PTSD assessment, Vol II: 74
 in personality assessment process
 assessment bias/criterion bias, Vol II: 73
 personality/psychopathology tests
 biased test construction, Vol II: 74–75
 social appropriateness of items, Vol II: 77
 theories
 androcentric understanding of personhood, Vol II: 73
 construct of depression, men/women, Vol II: 73–74
DSM-IV diagnostic category, Vol II: 73
- Gender coevolution, Vol II: 256
- Gender, combat, and warrior ethic, Vol II: 674–676
- Gender convergence, Vol II: 480
- Gender diagnosticity, Vol I: 143
- Gender differences, etiology of, Vol I: 363–365, 443–446
 developmental perspective, Vol I: 444–445
 distal/proximal cues, Vol I: 445–446
 feedback processes, Vol I: 446
 smiling, Vol I: 446
 in divergent thinking, Vol I: 349–350
 in personality indicators, Vol I: 350–352
 conceiving data, Vol I: 351
 description of women, Vol I: 351
 positive/negative side, Vol I: 350
- Gender differences in sexuality, Vol I: 471–488
 explaining gender differences in sexuality
 biological factors, Vol I: 482–484
 other factors, Vol I: 485–486
 self-reports, Vol I: 481–482
 socio-cultural factors, Vol I: 484–485
 future direction, Vol I: 487
 research on gender differences in sexual behaviors
 large surveys, Vol I: 478
 meta-analytic findings, Vol I: 476–478
 other sexual behaviors, Vol I: 478–479
- sexual attitudes
 gender and mate selection and retention, Vol I: 481
 gender differences in attitudes toward homosexuality, Vol I: 479–480
 gender differences in sexual desire, Vol I: 480–481
- theories

- cognitive social learning theory, Vol I: 474–475
- evolutionary psychology, Vol I: 473–474
- gender schema theory, Vol I: 476
- neo-analytic theory, Vol I: 473
- psychoanalytic theory, Vol I: 471–472
- social structural theory, Vol I: 475
- transgender, Vol I: 486–487
- Gender differences/roles
 - athletes and non-athletes, differences, Vol II: 569
 - Duda, research by, Vol II: 570
 - gender roles and gender conflict, Vol II: 570
 - gender stereotypes, Vol II: 570–571
 - McNally and Orlick, research by, Vol II: 570
 - ultramarathoners, Vol II: 569
 - Weinberg and colleagues, research by, Vol II: 570
- Gender dysphoria (GDI), Vol I: 71, 141–142, 369, 486–487
- Gender dysphoric disorder (GID), Vol I: 486
- Gendered behavior measures, Vol I: 139–143
 - CAH, Vol I: 139
 - CBAQ-F, Vol I: 140
 - CBAQ-M, Vol I: 140–141
 - Games Inventory, Vol I: 140
 - Gender Behavior Inventory for Boys/CBAQ, Vol I: 140
 - gender diagnosticity, Vol I: 143
 - gender dysphoria/GDI, Vol I: 141
 - gender identity, Vol I: 142
 - GID, Vol I: 139
 - GIDYQ-AA, Vol I: 141–142
 - Recalled Childhood Gender Identity/Gender Role Questionnaire, Vol I: 141
 - SRBS, Vol I: 142–143
- Gendered curriculum, Vol I: 281
- Gendered language, social roles, Vol I: 8, 402
- Gendered nature of workplace mistreatment concepts (Andersson and Pearson)
 - aggression, violence, and incivility, Vol II: 424
 - organizational deviance, definition, Vol II: 424
 - sexual harassment, Vol II: 424
 - workplace bullying, Vol II: 424
- frameworks of antecedents
 - Buss' framework of aggression, Vol II: 427–428
 - contextual influences on mistreatment, Vol II: 428
 - incivility, Vol II: 426–427
 - sexual harassment, Vol II: 425–426
- impact on men/women
 - psychological and physical consequences, Vol II: 436
 - work-related consequences, Vol II: 436–437
- profiles of targets and perpetrators
 - bullying, Vol II: 429–430
 - incivility, Vol II: 429
 - sexual harassment, Vol II: 430–431
 - workplace aggression/violence, Vol II: 431
- See also* Profiles (gendered) of targets and perpetrators
 - reactions to
 - appraisal processes, Vol II: 432–433
 - coping processes, Vol II: 433–435
 - escalating aggression, Vol II: 435
- Gender effects on group behavior, Vol II: 337–347, 351
 - communal and social behavior, Vol II: 337–339
 - Black and White adolescent participants, Vol II: 339
 - meta-analytic reviews, Vol II: 338
 - emergent leadership, Vol II: 341–342
 - gender stereotypes/effects, Vol II: 343
 - men's resistance to women's influence/leadership, Vol II: 342–343
 - social influence, Vol II: 339–341
- Gender Empowerment Measure (GEM), Vol I: 167, 168
- Gender equity programs, Vol I: 286, 287, 289
- Gender expression deprivation anxiety disorder (GEDAD), Vol II: 124
- Gender Gap Index (GGI), Vol I: 307
- Gender harassment, Vol II: 424, 502, 680–682, 686, 692
- Gender identity, Vol I: 8, 49–50, 60, 68, 70–72, 139, 141–142, 218, 260, 284, 364, 368–369, 440, 486, 495–518, 527–550
- Gender identity disorder (GID), Vol I: 9, 139, 141, 498, 510–511; Vol II: 111–125
- Gender identity disorder not otherwise specified (GIDNOS), Vol II: 112
- Gender identity disorder of childhood (GIDC), Vol II: 111–112
- Gender identity/GIDYQ-AA, Vol I: 141–142
- Gender inclusive language, Vol I: 363
- Gender-integrated executive teams, organizational effectiveness, Vol II: 456–457
- Gender intensification hypothesis, Vol I: 87, 529–532
 - gender-typed activities and behaviors, Vol I: 531–532
 - self-perceptions and self-concept, Vol I: 530–531
- Gender irrelevant strategy, Vol II: 69
- Gender/leader stereotypes, Vol II: 447–449, 450
- Gender marking, Vol II: 571–572
 - See also* Gender bias
- Gender/military psychology, Vol II: 671–691
 - gay men and lesbians, Vol II: 689–691
 - lesbians and gay men, policies comparisons, Vol II: 690–691
 - gender and harassment, Vol II: 679–686
 - harassment experiences, Vol II: 680–683
 - surveys, conclusions, Vol II: 684–686
 - segregation and progression
 - career progression of ethnic or visible minorities, Vol II: 677
 - gender and occupational segregation, Vol II: 672–674
 - gender, career progression, and leadership, Vol II: 677–679

- Gender/military psychology (*cont.*)
 gender, combat, and the “warrior ethic,” Vol II: 674–676
 gender differences in occupational stratification, Vol II: 676–677
 work–family issues, Vol II: 686–689
 balancing work and family, Vol II: 687–688
 work–family policies of various countries, Vol II: 688–689
- Gender/motivation for achievement, affiliation–intimacy, and power
 achievement motivation, Vol II: 45–49
 implicit/explicit measures, Vol II: 44–45, 48–49
 motive to avoid success, Vol II: 47–48
 advice and promising areas for future research, Vol II: 57–58
 affiliation–intimacy motivation, Vol II: 49–52
 physiological correlates, Vol II: 51–52
 relationships, Vol II: 50–51
 power motivation, Vol II: 52–55
 physiological correlates of power, Vol II: 54–55
 profligacy and responsibility training, Vol II: 53–54
 social contextual factors/social motives, Vol II: 55–57
 social motives in women/men, measuring, Vol II: 43–44
 social motives, reemergence of interest, Vol II: 42–43
- Gender neutral strategy, Vol II: 68
 pattern of performance, Vol II: 68
- Gender policing, Vol II: 430
- Gender, quantitative approaches, Vol I: 81–98
 research approaches in contemporary gender research, Vol I: 90–98
 scientific study, Vol I: 81–90
- Gender-Related Development Index (GDI), Vol I: 141, 168
- Gender-related personality theory, Vol II: 20
- Gender research, contemporary approaches, Vol I: 90–98
 content analysis
 gender and power, Vol I: 97
 portrayal of male and female characters on video game covers, Vol I: 97
 experiments, Vol I: 91–93
 contingency manipulation, Vol I: 93
 relationship contingency, Vol I: 92
 longitudinal studies, Vol I: 94–95
 meta-analysis
 advantage of, Vol I: 96
 hypermasculine or hostile masculine beliefs, Vol I: 96
 virtual negotiation, Vol I: 96
 nonexperimental quantitative methods, Vol I: 93–94
 advantage of a correlational design, Vol I: 94
 HLM, Vol I: 94
 latent growth modeling (LGM), Vol I: 95
- Gender Role Conflict Scale (GRCS), Vol I: 47, 52–53, 145
- Gender Role – Feminine (GF) Scale, Vol II: 79
- Gender role identity, Vol I: 48–50; Vol II: 236
- Gender Role – Masculine Scale (GM), Vol II: 79
- Gender-role socialization, Vol I: 6, 8, 11, 13, 15, 53, 64, 134, 143–144, 280–281, 287, 289, 326, 330, 429–448, 495, 535, 537; Vol II: 6, 8, 11, 13, 100, 230, 237, 256, 261, 265, 292, 546, 549, 554
- Gender-role stereotypes, Vol II: 21, 94, 382, 655, 661
- Gender role strain model (GRS), Vol II: 256
- Gender role stress/conflict, measures of, Vol I: 144–146
 FGRS, Vol I: 146
 GRCS, Vol I: 47, 52–53, 145
 MGRS, Vol I: 52–53, 145–146
 RABBM, Vol I: 145
 restrictive emotionality, Vol I: 137, 145
- Gender schema theory, Vol I: 476, 508
- Gender, scientific study, Vol I: 81–90
 content analysis, Vol I: 89–90
 double blind, Vol I: 82
 experimental approaches, Vol I: 83–85
 aspects of biological sex, Vol I: 84
 evolutionary theory, Vol I: 84
 fixed factor, Vol I: 84
 gender polarization, Vol I: 84
 prenatal hormone exposure, Vol I: 84
 stereotype threat, Vol I: 84
 stereotype threat in women, Vol I: 85
 longitudinal designs and statistical control, Vol I: 86–88
 advantage of, Vol I: 87
 ANOVA, Vol I: 88
 bias associated with unmeasured variables, Vol I: 88
 controls into correlational–longitudinal research, Vol I: 87
 correlational–longitudinal data, Vol I: 88
 eating disorders prevention programs, Vol I: 86
 fixed and variable risk factors, Vol I: 86
 relationship between self-surveillance and depression, Vol I: 87
 SEM, Vol I: 88
 meta-analysis, Vol I: 89–89
 application/procedures, Vol I: 89–89
 nonexperimental research, Vol I: 85–86
 between-groups design, Vol I: 85
 causal modeling, Vol I: 86
 correlational design, Vol I: 85
 Pearson correlation coefficient, Vol I: 85
 SEM, Vol I: 86
 relationship between independent and the dependent variable, Vol I: 82
 theory, Vol I: 82
 validity issues, Vol I: 83
 construct validity, Vol I: 83

- external validity, Vol I: 83
- field experiments, Vol I: 83
- hypothesis validity, Vol I: 83
- internal validity, Vol I: 83
- quasi-experimental design, Vol I: 83
- statistical validity, Vol I: 83
- Gender-segregated work adaptation, example
 - traditional/nontraditional gender theories, Vol II: 406
 - See also* Gender theories
- Gender sensitive approach, Vol II: 253
- Gender sensitives couples therapy, Vol II: 253
- Gender similarities/differences
 - explanations, Vol I: 306–308
 - implications, Vol I: 311
 - intelligence
 - means, Vol I: 301
 - variance, Vol I: 301–302
 - mathematical ability, Vol I: 302–305
 - aptitude *vs.* grades, Vol I: 304–305
 - means, Vol I: 302–303
 - variance, Vol I: 303–304
 - methodologies, Vol I: 297–298
 - expectancy-value model, Vol I: 297
 - narrative review approach, Vol I: 298
 - SEM, Vol I: 297
 - statistics used, Vol I: 298–300
 - meta-analyses, Vol I: 298
 - VR, Vol I: 299
 - summary, Vol I: 306
 - verbal ability, Vol I: 305
 - means, Vol I: 305
 - variance, Vol I: 305
- Gender similarities hypothesis, Vol I: 262, 306, 487, 569, 643; Vol II: 569, 643
- Gender socialization, Vol I: 134, 143–144, 281, 287, 289, 326, 330, 445, 495, 537; Vol II: 48, 153, 168–170, 174, 192, 213, 255–256, 496, 505, 509–510, 674
- Gender socialization scale, Vol II: 213
- Gender/socioeconomic status, Vol II: 480–482
- Gender-stereotyped beliefs, Vol II: 573
- Gender stereotypes, Vol I: 2–3, 8, 10–12, 14, 21, 84–85, 89–90, 97, 191, 193, 197–198, 222, 284, 286, 291, 297, 302, 306, 309–310, 318, 327, 362, 374, 381, 411, 421, 430–432, 436, 438, 471, 475–476, 499–502; Vol II: 91–105, 343, 521, 570, 660
 - agentive* qualities, Vol II: 447
 - boys' sports/girls' sports, ratings, Vol II: 571
 - communal* qualities, Vol II: 447
 - Eleanor Metheny, classic analysis
 - '*not socially appropriate*' sport for women, Vol II: 570
 - key masculine features (Kane and Snyder), Vol II: 571
 - and physician–patient communication, Vol II: 521–523
 - gender stereotypes, Vol II: 521
 - health beliefs and physician–patient communication, Vol II: 522–523
 - reporting style, Vol II: 522
- Gender stereotypes in diagnostic criteria, Vol II: 91
 - diagnostic categories replete with gender stereotypes, Vol II: 93–101
 - anxiety disorders, Vol II: 99–101
 - mood disorders, Vol II: 96–99
 - personality disorders, Vol II: 93–96
 - fundamental assumptions, Vol II: 92–93
 - issues that cut across diagnostic categories, Vol II: 101–104
 - gender-role factors in seeking treatment, Vol II: 104
 - poverty, Vol II: 101–102
 - race and racial discrimination, Vol II: 102–103
 - stereotypes concerning sexual orientation and identity, Vol II: 103–104
 - violence and abuse, Vol II: 102
- Gender/stress/coping, Vol II: 495
 - contextual model of stress and coping process, Vol II: 496f
 - gender differences: considered in context, Vol II: 497–498
 - models of, Vol II: 495–497
 - social support, gender differences in, Vol II: 504–509
 - perceived *vs.* received social support, Vol II: 506–507
 - social support networks, Vol II: 507–509
 - structural and functional aspects, Vol II: 505–506
 - stress, coping, and gender in diverse populations, Vol II: 509–510
 - stress/coping, gender differences, Vol II: 497–504
 - coping with chronic illness, Vol II: 500–502
 - coping with interpersonal stress, Vol II: 498–500
 - coping with work-related stress, Vol II: 502–504
 - in women and men, Vol II: 510–511
- Gender-syntonic interests, Vol II: 118
- Gender theories
 - gender construction
 - women/men task performance, role in, Vol II: 407
 - socialization and gender role
 - "expressive role," women, Vol II: 406
 - gender-segregated work adaptation, example, Vol II: 406
 - "instrumental role," men, Vol II: 406
 - major determinant of labor division, Vol II: 406
- Gender-typed traits and behaviors, Vol II: 625
- Gender variance, Vol I: 369; Vol II: 114, 120–121, 123, 125
- Generalizers, Vol I: 442
- General Social Survey (GSS), Vol I: 434
- Genes and Gender Collective, Vol I: 36
- Genital reassignment surgery (GRS), Vol I: 71
- GGI, *see* Gender Gap Index (GGI)

- GID, *see* Gender identity disorder (GID); Gender identity disorder (GID)
- GIDC, *see* Gender identity disorder of childhood (GIDC)
- GIDNOS, *see* Gender identity disorder not otherwise specified (GIDNOS)
- GIDYQ-AA, *see* Gender identity/GIDYQ-AA
- GLAAD, *see* Gay and Lesbian Alliance Against Defamation (GLAAD)
- Glamour* and *Cosmopolitan* approximates, Vol II: 172
- Glamour* magazine, Vol II: 166
- Glascocock's research
physical, verbal, and indirect aggression,
Vol II: 649
- Glass ceiling, Vol I: 404; Vol II: 337, 382, 676–677, 691
- Glass cliff, Vol II: 455–456, 461
- Glass escalator, Vol II: 341
- Glass slipper effect, Vol II: 661
- GlaxoSmithKline, Vol II: 523
- Global self-esteem
definition, Vol II: 30–31
extensive critical reviews, Vol II: 31
model of self-evaluation, Vol II: 31
- Glucocorticoids, Vol I: 215, 226–227
Cushing's disease, Vol I: 227
- Goal-oriented therapy process, Vol II: 235
- God's eye perspective, Vol II: 588
- Gonadal steroids, Vol II: 55, 115
- Gossip, Vol I: 393–399
feminist analysis, Vol I: 399
functions, Vol I: 396
face-to-face talk, Vol I: 396
organizational gossip, Vol I: 397
person talk, Vol I: 396
and gender, Vol I: 397
conceptions, Vol I: 398
on romantic relations, Vol I: 398
- Government-issued identification, Vol II: 368
- Graduate Record Examination (GRE), Vol II: 71, 72
- GRE, *see* Graduate Record Examination (GRE)
- Group behavior, Vol II: 10, 337, 338, 339, 347, 351
CEOs, women, Vol II: 337
future directions, Vol II: 351–352
gender effects on group behavior, Vol II: 337–342
emergent leadership, Vol II: 341–342
men's resistance to women's influence/leadership,
Vol II: 342–343
social influence, Vol II: 339–341
gender effects on group performance, Vol II: 347–351
mixed-gender groups, Vol II: 348–350
same-gender groups, Vol II: 347–348
gender stereotypes/effects, Vol II: 343–347
agency and double standard, Vol II: 343–345
communion and double bind, Vol II: 345–347
medical treatments advertisements, Vol II: 343
stereotypes, disadvantage lies in, Vol II: 343
- Group differences in depression
stress and sexual minorities' greater vulnerability to
depression, Vol II: 137–139
stress and women's greater vulnerability to
depression, Vol II: 137
stress factor, Vol II: 136
- Group interaction, experimental research on, Vol II: 343
- Group Membership by Chance, Vol II: 600
- Group performance, effects on, Vol II: 347–351
mixed-gender groups, Vol II: 348–350
same-gender groups, Vol II: 347–348
- GRS, *see* Gender role strain model (GRS)
- GSS, *see* General Social Survey (GSS)
- Guidelines for avoiding heterosexual bias in language*,
Vol I: 370
- Guidelines for avoiding racial/ethnic bias in language*,
Vol I: 370
- Guidelines for Avoiding Sexism in Psychological
Research, Vol I: 371
- Guidelines for Non-Handicapping Language in APA
Journals*, Vol I: 370
- Guidelines for nonsexist language in APA journals*, Vol
I: 370
- Guidelines for nonsexist use of language*, Vol I: 370
- Gustation, Vol I: 246, 247, 249
- H**
- Ha'aretz* (Newspaper), Vol II: 446
- HAART, *see* Highly Active Antiretroviral Therapy
(HAART)
- HABDI, *see* Hmong adaptation of the beck depression
inventory (HABDI)
- Handbook of Counseling and Psychotherapy with Men*,
Vol I: 45
- Handbook of Qualitative Methods*, Vol I: 106
- Harassment
experiences of military personnel, Vol II: 680–683
gender, Vol II: 424, 502, 656, 680–682, 692
in military, Vol II: 679–686
conclusions from surveys, Vol II: 684–686
harassment experiences, Vol II: 680–683
- Hard science, Vol II: 189
- Hard-wired brain, Vol I: 279, 287
- Harry Benjamin International Gender Dysphoria
Association, Vol II: 119
- Harvard Business School's MBA program, Vol II: 55
- Hate crimes, Vol II: 139, 143, 146–147, 367–368, 369
- Hazards of Being Male: Surviving the Myth of Male
Privilege*, Vol I: 44
- Hazing, definition, Vol II: 681
- Health behaviors, Vol II: 472–474
anorexia nervosa, Vol II: 474
behaviors, Vol II: 472–474
convergence, Vol II: 480
demographic/other social categories, Vol II: 478–479
gender/ socioeconomic status, Vol II: 480–482
health differences, gender, Vol II: 476–478

- health service use and health-related symptoms, Vol II: 474–475
- high-risk activities, Vol II: 480–485
- life expectancy, Vol II: 471–472
- patterns of risk, gendered, Vol II: 475–476
- socioeconomic context, Vol II: 479–480
- Health-care access and utilization, Vol II: 517–535
- Alzheimer's disease and long-term care, Vol II: 523–525
- long-term care, Vol II: 524–525
- ambulatory care, Vol II: 519
- preventive care and screening visits, Vol II: 519
- cancer, Vol II: 525–529
- breast cancer, Vol II: 526–527
- colorectal cancer, Vol II: 529
- lung cancer, Vol II: 528–529
- prostate cancer, Vol II: 527–528
- diabetes, Vol II: 530–532
- diabetes and utilization of care, Vol II: 531
- health effects, Vol II: 530
- interventions and programs, Vol II: 531–532
- gender stereotypes and physician–patient communication, Vol II: 521–523
- gender stereotypes, Vol II: 521
- health beliefs and physician–patient communication, Vol II: 522–523
- reporting style, Vol II: 522
- race and ethnicity, differences, Vol II: 519
- Health-care coverage, Vol II: 518
- Health differences, gender, Vol II: 476–478
- Health promotion
- physical activity, key factor, Vol II: 567
- Health Revitalization Act of 1993, Vol II: 534
- Health service use and health-related symptoms, Vol II: 474–475
- Hedge, Vol I: 380–381
- Hegemonic masculinity, Vol II: 226–227, 571
- Helping others, Vol II: 105, 325–326
- helping profession, Vol II: 326
- heroic actions/chivalry, Vol II: 326
- prosocial personality, Vol II: 326
- Help seeking, Vol I: 53–54; Vol II: 25, 103–104, 226, 228–229, 232, 234, 241–243, 475, 545–546, 618, 622
- Hemispherization, Vol I: 244
- Herrmann Brain Dominance Instrument, Vol I: 353
- He's Just Not That Into You* (Behrendt & Tuccillo, 2004), Vol II: 290
- Heterosexuality, Vol I: 61, 66, 103, 117, 196, 367, 385, 483, 499, 512
- Heterosexual relationships, *see* Heterosexuality
- Heterosexuals and sexual minorities
- developmental trends, Vol II: 136
- mood disorders in, Vol II: 135
- stress and vulnerability to depression
- adaptational effort, Vol II: 138
- discrimination, Vol II: 138–139
- hate crimes, Vol II: 139
- sexual minority stress, Vol II: 138
- victimization, Vol II: 138
- Hidden figures/patterns, *see* Embedded figures test
- Hierarchical linear modeling (HLM), Vol I: 94
- Higher arousal levels, *see* Fear
- Highly Active Antiretroviral Therapy (HAART), Vol II: 534
- High negative arousal, *see* Mild shock
- High-risk activities, health/health behaviors, Vol II: 482–485
- Hirja, transgendered social groups, Vol II: 115
- Histrionic personality disorder (HPD), Vol II: 94, 95
- HIV, *see* Human immunodeficiency virus (HIV)
- HIV risk-reduction interventions, Vol II: 624
- HLM, *see* Hierarchical linear modeling (HLM)
- Hmong adaptation of the beck depression inventory (HABDI), Vol II: 206
- Homonegativism, Vol II: 359, 360
- Homophobia, Vol II: 359–360, 362
- Homosexual individuals, *see* Homosexuality
- Homosexuality, Vol I: 59–64, 66, 69–72, 108, 225, 282, 366–367, 479–480, 484, 541; Vol II, 79, 103, 111, 114–115, 118, 122, 191, 225–226, 291, 359, 361–365, 369–371, 430, 449, 458, 486, 553, 645, 690–691
- Hopelessness, Vol II: 142
- Hormonal and Surgical Sex Reassignment, Vol II: 119
- Hormonal susceptibility, theories of, Vol II: 92
- Hormones, Vol I: 60, 71, 83–84, 185, 215–219, 222–227, 241–242, 244, 246–249, 270, 279–280, 307, 318, 323–324, 330–331, 364–365, 459, 465, 482–484, 533–534, 543, 545, 568; Vol II: 23, 51–52, 54–55, 58, 96–97, 99, 111, 115–116, 120, 313, 505, 528
- Hospital admissions and procedures, Vol II: 520
- National Hospital Discharge Survey records, Vol II: 520
- Hostile sexism, Vol II: 137
- Hostile working environment, *see* Harassment; Unwanted sexual attention
- Household labor
- definition, Vol II: 407
- housework, Vol II: 407
- methods of study
- other household labor measured as total household labor, Vol II: 407
- research techniques, Vol II: 408
- time-consuming major household tasks, Vol II: 407
- time diary studies/survey, Vol II: 408
- outcomes of
- emerging focus on fairness evaluations, Vol II: 413–414
- marital happiness, satisfaction and quality, Vol II: 413

- Household labor (*cont.*)
- psychological adjustment, Vol II: 414
 - work–family and family–work spillover, Vol II: 415
 - predictors, empirical findings
 - age and life course, Vol II: 410
 - attitudes toward gender roles, Vol II: 410–411
 - earnings, Vol II: 409
 - education, Vol II: 410
 - lesbian and gay couples and families, Vol II: 411–412
 - marital status and union type, Vol II: 411
 - race and ethnicity, Vol II: 412
 - women’s and men’s employment, Vol II: 408–409
- Household labor, research techniques
- direct observations, Vol II: 408
 - historical comparative methods, Vol II: 408
 - in-depth interviews, Vol II: 408
- Household labor theories
- exchange/resource theories, approaches
 - critiques of exchange and resource perspectives, Vol II: 405–406
 - relative resources and economic dependency, Vol II: 405
 - time availability/constraints, Vol II: 404–405
 - gender theories
 - gender construction, Vol II: 406–407
 - socialization and attitudes toward gender role, Vol II: 406
 - methods of studying household labor, Vol II: 407–408
- Housework, Vol II: 405, 408
- HPA, *see* Hypothalamic-pituitary-adrenal (HPA) axis
- HPD, *see* Histrionic personality disorder (HPD)
- Human immunodeficiency virus (HIV), Vol II: 533
- Human Relations Area Files*, Vol I: 167
- Hunger, Vol I: 247, 455, 458, 464, 466
- Hyperlipidemia, Vol II: 519
- Hypermasculinity, Vol II: 649
 - callused attitude toward women or sex, Vol II: 649
- Hypermesomorphy, Vol II: 172
- Hypermuscular men parallels, Vol II: 162
- Hypersexual masculine role, Vol II: 99
- Hypertension, Vol II: 222, 519, 531, 543, 545
- Hypervigilance, Vol II: 100
- Hypothalamic-pituitary-adrenal (HPA) axis, Vol I: 226, 533
- I**
- Identity and stereotyping in early/middle childhood, Vol I: 495–518
 - antecedents of gender identity and stereotyping, Vol I: 502–507
 - cognitive development, Vol I: 502–504
 - conceptual distinctions of gender categories and labeling, Vol I: 504
 - essentialism, Vol I: 506–507
 - parent and sociocultural influences, Vol I: 504–505
 - perceptual distinctions of gender categories, Vol I: 504
- Bem Sex-Role Inventory, Vol I: 499
- consequences
 - gender identity, Vol I: 508–514
 - self-socialization theories, Vol I: 508
 - stereotyping, Vol I: 514–517
- definition, Vol I: 495–496
- future directions, Vol I: 517
- gender stereotyping, Vol I: 499–502
 - definition, Vol I: 500
 - developmental trajectory, Vol I: 500–502
 - See also* Stereotyping, gender
- individual differences and variation, Vol I: 498–499
- multidimensionality, Vol I: 496–498
- See also* Identity, gender
- Identity disorder, concerns/controversies, Vol II: 111–125
 - current controversies, Vol II: 121–123
 - GID qualify as mental disorder, Vol II: 121–123
 - insurance debate, Vol II: 123–124
 - recommendations for reform, Vol II: 124–125
 - recommendations to ensure insurance coverage for SRS, Vol II: 124
 - estimated prevalence, Vol II: 113–115
- etiology, Vol II: 115
 - biological explanations, Vol II: 115–116
 - psychodynamic explanations, Vol II: 118
 - psychosocial explanations, Vol II: 116–117
- GID criterion, diagnosis of, Vol II: 112
- history and diagnostic criteria, Vol II: 111–112
- transgender health concerns, Vol II: 120–121
- treatment, Vol II: 118–120
- Identity, gender
 - consequences of, Vol I: 508–514
 - emotional involvement, Vol I: 513
 - gender category membership, Vol I: 513
 - gender labeling, Vol I: 510
 - identity and adjustment, Vol I: 511–513
 - identity and behavior and preferences, Vol I: 508–511
 - identity and intergroup relations, Vol I: 513–514
 - identity and sex segregation, Vol I: 511
 - identity, attention, and memory, Vol I: 511
 - definition, Vol I: 495
 - between 18 and 24 months, Vol I: 495
 - constancy at 6–7, Vol I: 495
 - three stages, Vol I: 495
 - multidimensionality
 - centrality or importance, implicit and explicit, Vol I: 496–497
 - centrality or importance, stable or chronic form, Vol I: 497
 - evaluation or regard, Vol I: 497
 - felt pressure, Vol I: 498

- felt typicality, Vol I: 498
 other dimensions, Vol I: 497–498
 private regard, Vol I: 497
See also Stereotyping, gender
- Identity (global) changes in adolescence, Vol I: 528–529
 development of the self, Vol I: 528
 stage theory of development (Erikson), Vol I: 528
- Ideology measures, Vol I: 136–139, 150
 AFIS, Vol I: 138
 AMIRS, Vol I: 137
 BMS, Vol I: 136
 CFNI, Vol I: 139
 CMNI, Vol I: 138
 FIS, Vol I: 139
 MRAS, Vol I: 137
 MRNI, Vol I: 137–138
 MRNS, Vol I: 136–137
- IDF, *see* Israeli Defence Forces (IDF)
- IDVS, *see* International Dating Violence Study (IDVS)
- Imagination games, Vol II: 651
- Implicit/explicit measures, distinction between, Vol II: 44–45
- Implicit inversion theory, Vol II: 449
- Implicit motives, Vol II: 42–45, 51, 58
- In a Different Voice*, Vol I: 105
- INAH3, *see* Third interstitial nucleus of the anterior hypothalamus (INAH3); Third interstitial nucleus of the anterior hypothalamus (INAH3)
- Incivility, Vol I: 11; Vol II: 11, 423–424, 426–429, 432–433, 435–437
- Incompatible leader/ gender roles, effects, Vol II: 449–451
- In-depth interviews, Vol II: 408, 654
- Indirect aggression, forms, Vol II: 312, 427
- Individual male/female leaders, effectiveness of, Vol II: 457–458
- Industrial-Organizational Psychology, Vol II: 671
- Informal contexts, Vol I: 389
- Information/decision-making approach, Vol II: 348
- Informed consent, forensic research, Vol II: 596–597
- Infrequency-Psychopathology (Fp) Scale, Vol II: 76
- Inner Journeys, Public Stands*, Vol I: 119
- Insidious trauma, Vol II: 195, 214
- Institute of Medicine Committee on Lesbian Health Research Priorities, Vol I: 186
- Institutional Review Board (IRB), Vol II: 596
- Instrumentality and expressiveness as mediators, Vol II: 23
- Intellectual rejecters, Vol II: 654
- Intelligence, Vol I: 7, 23, 84, 162, 191, 200–221, 300–302, 320, 345, 353, 413, 418, 439, 568–569
 gender similarities/differences in mean/variance, Vol I: 301–302
- Intelligence quotient (IQ), Vol I: 301–302, 349, 569
- Intelligence tests, Vol I: 23, 162, 300–302, 413, 439; Vol II: 65, 70, 81
See also Cognitive ability tests
- Intensifiers, Vol I: 380
- Interaction, family, Vol I: 385
- Internalizers, Vol I: 442
- Internalizing/externalizing depressive symptoms, Vol II: 135
- International Association for Studies of Men, Vol I: 44
- International Conference on Community Psychology in 2006, Vol II: 635
- International Dating Violence Study (IDVS), Vol I: 94
International Journal of Men's Health, Vol I: 48
- International Society for Men's Health, Vol I: 44
- International Society for Men's Health sponsors a biennial World Conference on Men's Health and Gender, Vol I: 47
- International Test Commission, Vol II: 605
- Interpersonal factors and sexual minorities' vulnerability to depression
 rejection sensitivity, Vol II: 140–141
 social support, Vol II: 140
- Interpersonal judgement, Vol I: 413; Vol II: 234
- Interpersonal mechanisms, Vol II: 145
- Interpersonal sensitivity/accuracy, Vol I: 413–415, 417–419, 438
- Interpersonal theories of depression, Vol II: 139
- Interpersonal violence, Vol II: 322, 362, 617, 632
- Interruptions, Vol I: 389–391, 393, 397, 415, 417, 419, 421, 574
 turn-taking norms, Vol I: 390, 412
- Intersectionalities framework, Vol II: 261–262, 272
- Third interstitial nucleus of the anterior hypothalamus (INAH3), Vol I: 217
- Inter-University Consortium for Political and Social Research, Vol II: 607
- In the Game: Gay Athletes and the Cult of Masculinity* (Eric Anderson), Vol II: 578
- In the Room with Men*, Vol I: 45
- Intimacy, male inhibition to, Vol II: 282
 self-disclosure and responsiveness, Vol II: 282
- Intimacy motivation, Vol II: 41, 49–52, 54, 57
- Intimate partner violence (IPV), Vol I: 94
- Intimate romantic relationships
 costs of gender-role traditionalism for relational costs, Vol II: 298–299
 sexual costs, Vol II: 299–300
- phase I: coming together
 desire for attractive mate, study, Vol II: 284
 evolutionary theory, Vol II: 285–287
 mate preferences, Vol II: 284–288
 men's preference for attractive mates, fMRI study, Vol II: 284
 in polygynous societies, Vol II: 284–285
 relationship initiation and dating, Vol II: 288–293
 socio-ecological theories, Vol II: 287–288

Intimate romantic (*cont.*)

- phase II: relational maintenance, Vol II: 293–296
- phase III: coming apart, Vol II: 296–297

Intimate terrorist, Vol II: 317

Intrinsic/interest value, Vol I: 310

IPV, *see* Intimate partner violence (IPV)

IQ, *see* Intelligence quotient (IQ)

IRB, *see* Institutional Review Board (IRB)

IRT, *see* Item response theory (IRT)

Israeli Defence Forces (IDF), Vol II: 673

Issues in psychological testing of personality and abilities

- construction of personality tests
 - empirical tests, Vol II: 78–80
 - IRT, Vol II: 81–82
 - theoretically developed tests, Vol II: 80–81
- current practice of psychological testing
 - test functions, Vol II: 71–72
 - types of tests, Vol II: 70
- gender bias and tests of personality and psychopathology
 - biased operationalization, Vol II: 74–77
 - biased theories, Vol II: 73–74
 - bias in structural issues and statistical assumptions, Vol II: 77–78
- psychological assessment and testing
 - assumptions, Vol II: 65–68
 - context and assessment experience, Vol II: 64–65
 - gender and norms, Vol II: 68–69
 - process, definition, Vol II: 63
 - psychological testing, role in assessment, Vol II: 63–64

Issues, women as leaders, Vol II: 443

Item response theory (IRT), Vol II: 67, 76, 81–82

J

Jamaicans demographic differences, Vol II: 620

Jarheads, Girly Men, and the Pleasures of Violence, Vol I: 119

Jerks, Vol II: 286

Jewish religious communities, Vol II: 364

Joint Task Force (JTF), Vol II: 674

Journal of Applied Sport Psychology, Vol II: 568

Journal of Community and Applied Social Psychology, Vol II: 617

Journal of Feminist Family Therapy, Vol II: 254, 257, 260

Journal of GLBT Family Studies, Vol II: 257

Journal of Homosexuality (Silverstein, Charles), Vol I: 70

Journal of Marriage and Family Therapy, Vol II: 255, 257, 260

Journal of Men's Studies, Vol I: 48

Journal of Sport & Exercise Psychology, Vol II: 568

The Joy Luck Club, Vol II: 261

JTF, *see* Joint Task Force (JTF)

Just Sex? The Cultural Scaffolding of Rape, Vol I: 117

K

Kamphoff's dissertation research on female coaches, Vol II: 566

Key imagery, Vol II: 41, 45

Key masculine features (Kane and Snyder), Vol II: 571

Key socializers, Vol II: 383

Klein Sexual Orientation Grid (KSOG), Vol I: 66

Known-groups comparison technique, Vol II: 78

KSOG, *see* Klein Sexual Orientation Grid (KSOG)

L

Labyrinth, Vol II: 443–462

Lakoff's model, Vol I: 380–382

- critique of, Vol I: 381–382

- androcentrism, Vol I: 382

- neutral language, Vol I: 382

- research on, Vol I: 380–381

- courtroom testimony, Vol I: 381

- hedge, Vol I: 380

- intensifiers, Vol I: 380

- tag question usage, Vol I: 380

- speaking style of women, Vol I: 380

Language, and power (she said, he said), Vol I: 379–404

- difference as deficit, Vol I: 380

- critique of Lakoff's model, Vol I: 381–382

- research on Lakoff's model, Vol I: 380–381

- women's style of speaking, Vol I: 380

- difference as dominance, Vol I: 387

- gender and inequality, Vol I: 387–388

- interruptions, Vol I: 389–391

- profanity, Vol I: 391–393

- resisting and derogating women's requests, Vol I: 391

- talking time, Vol I: 388–389

- verbal harassment as dominance, Vol I: 393

- future research, Vol I: 400

- changing conceptions of gender, Vol I: 401–402

- directions for, Vol I: 404

- gendered language in relation to social roles, Vol I: 402

- importance of context, Vol I: 401

- toward a feminist postmodern approach to gender and language, Vol I: 403–404

- toward a postmodern perspective, Vol I: 402–403

- remediating women's deficits, Vol I: 382

- assertiveness training, Vol I: 382–383

- critique of negotiations deficit, Vol I: 384–385

- negotiation, deficit in women's communication, Vol I: 383–384

- research on assertiveness training, Vol I: 383

- two cultures approach, Vol I: 385–386

- critique of miscommunication models, Vol I: 386–387

- miscommunication, Vol I: 385

- women's talk as relational, Vol I: 393

- gossip, Vol I: 395–399

- men's deficiencies, Vol I: 399–400

- minimal responses, Vol I: 394
- placing value on women's talk, Vol I: 393–394
- small talk, Vol I: 394–395
- Language of gender, Vol I: 361–374
 - APA style manual on gender/sexuality/ethnicity, Vol I: 369
 - compliance evaluation with guidelines, Vol I: 372–373
 - guidelines to reduce bias, Vol I: 371–372
 - acknowledge participation, Vol I: 372
 - level of specificity, Vol I: 371
 - sensitive to labels, Vol I: 372
 - language and sexual minorities, Vol I: 367–369
 - APA, Vol I: 367
 - LGBTQ, Vol I: 368
 - queer theory, Vol I: 368
 - transgendered/transsexual, Vol I: 368
 - transpeople, Vol I: 369
 - masculinity and femininity (M-F tests), Vol I: 365–367
 - BSRI, Vol I: 366
 - sex/gender differences, Vol I: 363–365
 - gender attribution, identity, role, Vol I: 364
 - sexual dimorphism, Vol I: 364
- Language to think, importance of, Vol I: 171–172, 195, 382
- Latent growth modeling (LGM), Vol I: 95
- LatiNegras*, dark-skinned Latinas, Vol II: 261
- Laura Spelman Rockefeller Memorial Fund, Vol I: 21
- Lavender ceiling, Vol II: 449
- Lazarus and Folkman's cognitive appraisal theory (1984), Vol II: 432, 550
- LBGT, *see* Lesbian, gay, bisexual, and transgender (LGBT)
- Leadership
 - differences in women/men
 - managerial roles produces skilled female, Vol II: 460
 - spillover/internalization, gender-specific norms, Vol II: 460
 - transformational repertoire, Vol II: 460
 - effectiveness, Vol II: 455–461
 - gender-integrated executive teams, organizational effectiveness, Vol II: 456–457
 - individual male/ female leaders, effectiveness of, Vol II: 457–458
 - leadership style/ leaders' effectiveness, Vol II: 458–460
 - style/ leaders' effectiveness, Vol II: 458–460
 - transformational /transactional leadership styles, Vol II: 459
- Learning styles, Vol I: 279, 287–288
- Legitimate power, Vol I: 416
- Lesbian and gay couples and families
 - biological and non-biological mothers, Vol II: 411
 - Carrington's study, Vol II: 411
 - household labor among, Vol II: 411
- Lesbian couples therapy, Vol I: 10; Vol II: 10, 254
- Lesbian, gay, and bisexual (LGB), Vol I: 62–63, 65, 65–72; Vol II: 121, 138, 144, 195, 257–259, 364, 367, 509, 511, 564, 622
 - families, Vol II: 257
- Lesbian, gay, bisexual, and transgender (LGBT), Vol I: 6, 59–72, 181, 187–188, 290, 368, 466, 538–539, 541, 545, 549, 565
 - health issues, Vol II: 486
- Lesbian, gay, bisexual, transgender, and questioning (LGBTQ), Vol I: 290, 368
- Lesbianism, Vol I: 117, 367; Vol II: 361, 578
- Lesbians and gay men in military
 - policy comparisons, Vol II: 690–691
- Lexapro, Vol II: 520
- Leydig cells, Vol I: 216
- LFAIS, *see* Liberal feminist attitude and ideology scale (LFAIS)
- LGB, *see* Lesbian, gay, and bisexual (LGB)
- LGBT, *see* Lesbian, gay, bisexual, and transgender (LGBT)
- LGBT issues, emergence/development of psychological study
 - APA, Vol I: 59
 - first-generation literature, pathologizing homosexuality, Vol I: 61–62
 - change-of-orientation therapy, Vol I: 62
 - homosexuality, Vol I: 62
 - LGB identity, Vol I: 62
 - oedipal conflict, Vol I: 61
 - reparative or conversion therapies, Vol I: 61
 - sexual identity therapy, Vol I: 62
 - second-generation literature, psychological adjustment research, Vol I: 62–63
 - homosexuality = psychopathology, Vol I: 63
 - terminology, Vol I: 59–60
 - androcentricism, Vol I: 60
 - gender, definition, Vol I: 59–60
 - gender identity, Vol I: 60
 - gender nonconforming, Vol I: 60
 - gender normative, Vol I: 60
 - sexual orientation, Vol I: 60
 - transgender, Vol I: 60
 - third-generation literature, identity/diversity
 - bisexuality, Vol I: 65–66
 - gender differences/gender-role socialization, Vol I: 64
 - lesbian, gay, and bisexual youths, Vol I: 67–68
 - race, ethnicity, and culture, Vol I: 64–65
 - relationships, families, and parenting, Vol I: 66–67
 - sexual prejudice and heterosexism, Vol I: 68–69
 - trends/directions, Vol I: 59–60
 - brief history, Vol I: 69–70
 - from categories to complexity, fourth generation, Vol I: 72

- LGBT issues (*cont.*)
 fourth generation, from categories to complexity, Vol I: 72
 gender/transgender issues, Vol I: 70–71
 sexual orientation, Vol I: 72
- LGBTQ, *see* Lesbian, gay, bisexual, transgender, and questioning (LGBTQ)
- LH, *see* Luteinizing hormone (LH)
- Liberal Feminist Attitude and Ideology Scale (LFAIS), Vol II: 205
- Liberation psychologists, Vol I: 35
- Life expectancy, Vol II: 11, 471–473, 479, 481–482, 487
 social and economic circumstances, Vol II: 471
- Line-angle judgment task, spatial perception, Vol I: 320, 322, 324
- Linguistic relativity, Vol I: 361
- Linguistic style, Vol I: 382, 385, 387
- Lipstick lesbians, Vol II: 371
- Long hours/ relocation, demands for, Vol II: 452–453
- Long-term mating strategy, Vol II: 285–286
- Lord of the Rings* (film), Vol I: 191
- Loudness sensitivity, Vol I: 243–244
- Lower face-to-body ratio (face-ism), Vol II: 647
- Low negative arousal, *see* Anxiety
- Low responders, Vol I: 442
- Luteal phase, Vol II: 29, 223, 241, 324, 458–459, 464–465
 dysphoric disorder, Vol II: 98
- Luteinizing hormone (LH), Vol II: 115
- M**
- Machismo and marianismo, Vol II: 627
- Macho Scale, Vol I: 52
- Magnocellular RGCs (M cells), Vol I: 236
- Major depressive disorder (MDD), Vol II: 96, 134
- Mak Nyah, Vol II: 115
- Maladaptive behaviors, Vol II: 550, 574
- Male body and football, patriarchal images (Trujillo), Vol II: 571
- Male-centered treatment methods, Vol II: 232
- Male clients knowledge, Vol II: 223–230
 cultures of masculinity, Vol II: 225–227
- Male-dominated, military workplace, Vol II: 680
- The Male Machine*, Vol I: 44
- Male managerial model, Vol II: 678
- Male Role Attitudes Scale, Vol I: 52
- Male Role Norms Inventory (MRNI), Vol I: 52, 137–138
- Male Role Norms Scale (MRNS), Vol I: 52, 136–137
- Male Roles Attitudes Scale (MRAS), Vol I: 137–138
- Male sponsors mentor, Vol II: 269
- Male-to-female (MtF) sexual reassignment, Vol I: 224
- Male-to-female transsexuality, Vol II: 113
- Malicious rumors, Vol II: 312
- Managers/management, Vol I: 65, 93, 116, 172, 194, 395, 404, 457–458, 460–462, 571
- Manhood in the Making*, Vol I: 45
- Man-to man harassment, *see* Gender policing
- Manual for Scoring Motive Imagery in Running Text*, Vol II: 42
- ‘Man who gets around’ hypothesis, Vol I: 268–269
 issue, Vol I: 268
 polygamy, Vol I: 268
 signs
 difficulty of human birth, Vol I: 268
 pair bonding, Vol I: 268
 women’s sexual receptivity, Vol I: 268
- Marital distress, persons, Vol II: 266
- Marital happiness, satisfaction and quality
 congruent/similar attitude spouses, impact, Vol II: 413
 couple’s division of labor, impact, Vol II: 413
 emotion work performance, Vol II: 413
- Marital Satisfaction Inventory-Revised (MSI-R), Vol II: 210
- Marital status and union type, Vol II: 411
- Marital structure hypothesis, Vol II: 500
- Marlowe-Crowne Social Desirability Scale, Vol II: 602
- Marriage, Vol I: 25, 61, 66–67, 69, 95, 144, 164, 345–346, 348, 436, 473, 486, 561, 564–566, 570–572; Vol II: 52, 119, 137, 222, 239–240, 254–255, 257, 260, 265, 267–270, 284, 286, 288–289, 292–293, 297–298, 301, 327, 369–370, 411, 413, 446, 498–500, 507, 511, 532, 677
- Masculine Depression Scale (Magovcevic and Addis), Vol II: 135
- Masculine Gender Role Stress Scale (MGRS), Vol I: 52–53, 145–146
- Masculine generics, Vol I: 195, 362–363, 370, 372–373
- Masculine ideal of lean muscularity, Vol II: 161
- Masculine organizational culture, Vol II: 453–454
- Masculine-sensitive psychotherapy, rationale for, Vol II: 223–225
 epidemiological studies, Vol II: 223
 multicultural counseling competency, Vol II: 223
- Masculine speech styles, Vol I: 383, 387
- Masculine sports activities, Vol II: 570
- Masculine-stereotypic domains, Vol I: 414
- Masculine-stereotypic gender, Vol I: 442
 rational, Vol II: 444
- Masculinity
 concept of, Vol II: 477
 and femininity, history, Vol II: 21–23
 unmitigated agency/communion, Vol II: 23
 femininity, personality theory, Vol II: 21–25
 expressiveness/instrumentality/mental health, Vol II: 24–25
 history, Vol II: 21–23
 instrumentality and expressiveness as mediators, Vol II: 23
 and femininity, reconceptualization of, Vol II: 23
 measurement of
 Attitudes Toward the Male Role Scale, Vol I: 52
 Brannon Masculinity Scale, Vol I: 52

- citations of instruments used in measurement of masculinity, Vol I: 52t
 Conformity to Masculine Norms Inventory, Vol I: 52
 Gender Role Conflict Scale, Vol I: 52–53
 Macho Scale, Vol I: 52
 Male Role Attitudes Scale, Vol I: 52
 Male Role Norms Inventory, Vol I: 52
 Masculine Gender Role Stress Scale, Vol I: 52–53
 Stereotypes About Male Sexuality Scale, Vol I: 52
 over femininity, promotion, Vol II: 621
 Masculinity and men, paradigms for psychological study beyond essence, identity, and strain, Vol I: 51
 essentialist, biological, and evolutionary paradigms, Vol I: 48–49
 aspects of men's psychology with biological processes, correlate, Vol I: 49
 man-to-child affiliative bond, Vol I: 49
 understanding men in several ways, Vol I: 49
 gender role identity paradigms
 Bem Sex Role Inventory, Vol I: 50
 gender role strain analysis, Vol I: 50
 limitations, Vol I: 50
 Personal Attributes Questionnaire, Vol I: 50
 gender role strain paradigms
 discrepancy/trauma/dysfunction, strain, Vol I: 50–51
 Masculinity–Femininity (Mf) Scale, Vol II: 79
 homosexuals category identification, Vol II: 79
 Masculinization, Vol I: 218
 Mathematical ability, Vol I: 302–305, 307, 310–312
 aptitude *vs.* grades, Vol I: 304–305
 gender similarities and differences
 in means, Vol I: 302–303
 in variance, Vol I: 303–304
 moving beyond girls and, Vol I: 311–312
 greater variability, Vol I: 311
 little attention, Vol I: 312
 Mating strategies
 evolutionary benefits, types, Vol II: 285–286
 See also Evolutionary theory of mate preferences
 Mayer, Salovey, and Caruso Emotional Intelligence Test (MSCEIT), Vol I: 439
 McClintock effect, *see* Menstrual synchrony
 M cells, *see* Magnocellular RGCs (M cells)
 McHugh's therapeutic goals, Vol II: 119
 MD, *see* Muscle dysmorphia (MD)
 MDD, *see* Major depressive disorder (MDD)
 Measurement issues, cross culture, Vol I: 169–170
 five-factor personality theory, Vol I: 170
 natives, Vol I: 169
 sojourners, Vol I: 169
 Measuring gender, Vol I: 133–152
 definitions of gender, masculinity, and femininity, Vol I: 150
 measures of role conflict and role stress, Vol I: 144–146
 measures of support for and adherence to cultural gender norms, Vol I: 134–144
 See also Support for and adherence to cultural gender norms, measures of
 measures related to the relative position of men and women in society, Vol I: 146–149
 See also Position of men and women in society, measures related to
 moving forward, Vol I: 151–152
 psychometric and methodological concerns, Vol I: 150–151
 scale age, Vol I: 151
 Media
 key areas of impact
 aggression, Vol II: 657–658
 self/sexual objectification, Vol II: 658–660
 stereotyping, media threats and solutions, Vol II: 660–661
 media content, quantity/quality of gender representation
 Black/White women, media representation, Vol II: 648
 British/Saudi Arabian television commercials, content analyses, Vol II: 644
 children/adults as targets, comparisons, Vol II: 645
 entertainment media, gender differences in, Vol II: 644
 entertainment media, intersection of gender and age representation, Vol II: 645
 femininity and physical beauty, association, Vol II: 648
 femininity and thinness, equating, Vol II: 648–649
 hypermasculinity and physical aggression, correlation, Vol II: 649
 masculinity and muscularity, equating, Vol II: 649
 natural athletic ability, African American men, Vol II: 647
 nonheterosexual sitcom characters study (Fouts and Inch), Vol II: 645
 paid position of labor, men/women (US), Vol II: 646
 physical appearance, gender differences, Vol II: 647
 physical, verbal, and indirect aggression, Vol II: 649
 research on US media content, Vol II: 644
 traditional acceptance of men's/women's domains, Vol II: 647
 pervasive cultural modeling of gender roles (Bussey and Bandura), Vol II: 643
 phenomenon of possible selves, Vol II: 643

- Media (*cont.*)
 social environment, influence of, Vol II: 643
 uses, *see* Media and gender, uses
- Media and gender, uses
 film genres, Vol II: 656–657
 new media
 Calvert's survey of children's computer use, Vol II: 652
 cell phone use, gender differences, Vol II: 653
 frequency of internet use, age factor interaction with gender, Vol II: 652
 internet and computer use, Vol II: 652
 male adolescents, heavy gamers, Vol II: 652
 Pew Internet and American Life project report, findings, Vol II: 652
 sexually explicit content, Vol II: 654–656
 video games
 male/female ratio (3:1) engaged, Vol II: 650–651
 natural cognitive abilities, sex differences, Vol II: 651
 research in college population (Lucas and Sherry), Vol II: 651
 sensorimotor games, genre form, Vol II: 651
 traditional/physical/imagination games, women/men perspectives, Vol II: 651
- Media, quantity/quality of gender representation
 Black/White women, media representation, Vol II: 648
 British/Saudi Arabian television commercials, content analyses, Vol II: 644
 children/adults as targets, comparisons, Vol II: 645
 crimes, men/women coverage, Vol II: 650
 men over/under-represented as criminals, Vol II: 650
 rape victims, "virgin" or "vamp" narrative, Vol II: 650
 entertainment media, gender differences in, Vol II: 644
 entertainment media, intersection of gender and age representation, Vol II: 645
 femininity and physical beauty, association, Vol II: 648
 femininity and thinness, equating, Vol II: 648–649
 hypermasculinity and physical aggression, correlation, Vol II: 649
 masculinity and muscularity, equating, Vol II: 649
 natural athletic ability, African American men, Vol II: 647
 nonheterosexual sitcom characters study (Fouts and Inch), Vol II: 645
 paid position of labor, men/women (US), Vol II: 646
 physical appearance, gender differences, Vol II: 647
 physical, verbal, and indirect aggression, Vol II: 649
 research on US media content, Vol II: 644
 traditional acceptance of men's/women's domains, Vol II: 647
- Media Reference Guide, Vol II: 124
- Medicaid system, Vol II: 272
 Medicare, Vol II: 544
 Medications, Vol II: 519–520
 Medicines and Healthcare Products Regulatory Agency (MHRA), Vol I: 47
 Meginnis-Payne's study, Vol II: 202
Menace II Society, Vol II: 658
Men and Masculinity conference, Vol I: 44–45
 Men and masculinity, emergence and development of psychology
 conferences
 Australian Men's Health Forum sponsors an annual National Men's Health Conference, Vol I: 47
 International Society for Men's Health sponsors a biennial World Conference on Men's Health and Gender, Vol I: 47
 MHRA, Vol I: 47
 National Conference on Men and Masculinity, Vol I: 46
 National Organization of Men Against Sexism (1975), Vol I: 46
 journals, Vol I: 47–48
 American Journal of Men's Health, Vol I: 48
 International Journal of Men's Health, Vol I: 48
 Journal of Men's Studies, Vol I: 48
 Psychology of Men & Masculinity, Vol I: 48
 Psychology of Women Quarterly, Vol I: 47
 Sex Roles, Vol I: 47
 organizations, Vol I: 45–46
 American College Personnel Association, Vol I: 45
 Men and Masculinity conference, Vol I: 45
 Men Treating Men Network, Vol I: 46
 National Organization of Changing Men, Vol I: 45
 NOMAS, Vol I: 45
 Society for the Psychological Study of Men and Masculinity, Vol I: 46
 Standing Committee for Men, Vol I: 45
 Task Force on Men's Roles in Psychotherapy, Vol I: 46
 paradigms for psychological study of men and masculinity
 beyond essence, identity, and strain, Vol I: 51
 essentialist, biological, and evolutionary paradigms, Vol I: 48–49
 gender role identity paradigms, Vol I: 49–50
 gender role strain paradigms, Vol I: 50–51
 publications, Vol I: 44–45
 Adaptation to Life, Vol I: 44
 Deepening Psychotherapy with Men, Vol I: 45
 The Forty-nine Percent Majority: The Male Sex Role, Vol I: 44
 Handbook of Counseling and Psychotherapy with Men, Vol I: 45

- Hazards of Being Male: Surviving the Myth of Male Privilege*, Vol I: 44
The Male Machine, Vol I: 44
Manhood in the Making, Vol I: 45
Men and Masculinity, Vol I: 44
Men: Evolutionary and Life History, Vol I: 45
The New Handbook of Psychotherapy and Counseling with Men, Vol I: 45
A New Psychotherapy for Traditional Men, Vol I: 45
In the Room with Men, Vol I: 45
The Seasons of a Man's Life, Vol I: 44
Sentimental Men, Vol I: 45
 recommendations, Vol I: 54–55
 research trends on psychology of men/masculinity
 measurement of masculinity, Vol I: 52–53
 men and mental health, Vol I: 54
 men and physical health, Vol I: 53–54
Men are from Mars, Women are from Venus (Gray, 1992), Vol II: 290
Men: Evolutionary and Life History, Vol I: 45
 Men from feminist perspective, working with, Vol II: 256–257
 Men hunt, women gather rule, Vol I: 266–268
 adaptation environment, Vol I: 267
 Agricultural Revolution (12,000–10,000 BCE), Vol I: 268
 aiming, Vol I: 266
 mental rotation, Vol I: 266
 spatial tests, Vol I: 266
 exceptions, Vol I: 268
 gathering, Vol I: 267
 edible plants, Vol I: 267
 nomadic group, Vol I: 267
 tool making, Vol I: 267
 tracking, Vol I: 266
 hunting journey, Vol I: 266
 Men in psychotherapy, skills for, Vol II: 233–238
 clients' gender-role identity, Vol II: 236
 engaging men in psychotherapy, Vol II: 234
 genuine and real, Vol II: 236
 goals match needs of male client, Vol II: 235
 male clients, educate, Vol II: 235
 masculine face, Vol II: 234–235
 men have in entering and being in psychotherapy, Vol II: 234
 patient, Vol II: 235
 Menopause, Vol I: 84, 117, 222–224, 241, 483–484, 560, 567–568; Vol II: 99, 168, 521, 524
 Men's adaptive help-seeking strategies (Addis and Mahalik)
 emotional stoicism/self-reliance, Vol II: 546
 sex differences research, Vol II: 545–546
The Men's Bibliography, Vol I: 44
 Men's deficiencies, Vol I: 399–400
 Men's Health Network, Vol I: 44
 Men's resistance to women's influence and leadership, Vol II: 342–343
 Menstrual cycle phases, Vol I: 223–224, 241, 247, 458, 466
 follicular phase, Vol I: 223
 luteal phase, Vol I: 223
 menstrual phase, Vol I: 223
 Menstrual synchrony, Vol I: 248
 Mental health
 service, Vol II: 229
 variables/expressiveness, relationships, Vol II: 24
 Mental Rotation Task (MRT), Vol I: 221, 223, 225, 238–239, 263, 280, 318; Vol II: 651
 Mental rotation test, Vol I: 318, 323, 327
 primary mental abilities test, Vol I: 318
The Mental Traits of Sex, Vol I: 22
Men the particular, not man the generic, Vol I: 48
 Men Treating Men Network, Vol I: 46
 Men/women position in society, measures related to, Vol I: 146–149
 Ambivalent Sexism Inventory, Vol I: 147–148
 AWS, Vol I: 146–147
 FIC, Vol I: 149
 FIDS, Vol I: 149
 FIS, Vol I: 148–149
 MS, Vol I: 147
 OFS, Vol I: 147
 SSE, Vol I: 148
 Meredith and Brian, description for, Vol II: 268
 Meredith's vulnerability, Vol II: 268
 Meta-analysis, Vol I: 4, 88–90, 96, 98, 193, 241, 245, 263–265, 268, 271, 298, 303, 305, 311, 321, 324, 416, 438, 476–482, 500, 546, 569; Vol II: 4, 21, 32, 44, 135, 283, 296, 313, 316, 327, 329, 341–342, 344, 347–348, 350, 360, 383, 386, 423, 431, 433, 436, 450, 457–459, 472, 501, 552, 655
 Meta-analytic reviews, Vol I: 298, 338, 414, 443, 481; Vol II: 338
 Methodological issues, forensic research, Vol II: 599–608
 measurement, Vol II: 601–608
 archival data, Vol II: 607–608
 fairness and bias in measurement, Vol II: 604–606
 reliance on self-report, Vol II: 607
 reliance on simulation research, Vol II: 606–607
 response bias, Vol II: 602–604
 sampling, Vol II: 599–601
 Metrosexual, Vol II: 163
 M–F tests, Vol I: 365–367
See also Language of gender
 MI, *see* Myocardial infarction (MI)
 Mild shock, Vol I: 242
 Military, Vol I: 12, 24, 202, 327, 574; Vol II: 12, 42, 340, 369, 430, 436, 453, 457, 522, 671–692
 Mineralocorticoids, Vol I: 215
 Minimal responses, Vol I: 394

- Minnesota Multiphasic Personality Inventory, Vol I: 351;
Vol II: 70
- Minority stress, concept of, Vol II: 509
- Miscommunication models, Vol I: 385
critique of, Vol I: 386–387
impacts, Vol I: 386
misinterpreted dominance, Vol I: 387
problems, Vol I: 385
- Misinterpreted dominance, Vol I: 387
- Misinterpreted status effects, Vol I: 391
- Mixed-gender context, Vol I: 385
- MMPI-2 Fake-Bad-Scale, Vol II: 76
- MMPI-2 Infrequency (F) Scale, Vol II: 76
- MMPI/MMPI-2
GM/GF Scale, Vol II: 79
Masculinity-Femininity (Mf) Scale, Vol II: 79
Revised Clinical (RC) Scales, Vol II: 79–80
sexual inversion, Vol II: 79
- Models of aggression, Vol II: 427
See also Buss' framework of aggression
- Moderate arousal level, *see* Anxiety
- Modern Sexism (MS), Vol I: 147
- Monday Night Football*, Vol II: 571
- Money's paradigm, Vol I: 194
- Mood Disorders, Vol II: 96–99
- Mothering, Vol I: 362
- Motivation, Vol I: 2, 5, 8–9, 11, 15, 91, 136, 152, 271,
351–352, 392, 422, 427–488, 495, 507, 568;
Vol II: 2, 5, 8–9, 11, 15, 41–58, 167, 171, 235,
241, 256, 325, 360–363, 370, 381–382, 385,
387–389, 391, 393, 406, 430, 435, 454, 479,
522, 573, 577, 598, 607, 651, 653–654, 658,
660, 678
- Motivational factors, Vol I: 439
- MRAS, *see* Male Roles Attitudes Scale (MRAS)
- MRNI, *see* Male Role Norms Inventory (MRNI)
- MRNS, *see* Male Role Norms Scale (MRNS)
- MRT, *see* Mental Rotation Task (MRT)
- MS, *see* Modern Sexism (MS)
- MSCEIT, *see* Mayer, Salovey, and Caruso Emotional
Intelligence Test (MSCEIT)
- MSI-R, *see* Marital Satisfaction Inventory-Revised
(MSI-R)
- MtF, *see* Male-to-female (MtF) sexual reassignment
Mullerian tract, Vol I: 216
anti-Mullerian hormone, Vol I: 216–217
- Multiculturalism, Vol I: 6; Vol II: 6, 254, 260, 263, 269,
271
- Multicultural psychology of women, building, Vol I:
34–35
ethnocentrism, Vol I: 34
globalization movement, Vol I: 34
multicultural psychology, feminist psychology, and
social activism, Vol I: 35
postcolonial critique, Vol I: 34
- Multicultural sensitivity of therapeutic approaches, Vol
II: 272
- Multidimensionality, Vol I: 496–498
- Multi-dimensional process model of gender, Vol II: 68
- Multi-dimensional self-concept, Vol II: 31–33
- Multiple identities, Vol I: 65, 429; Vol II: 225, 254, 261
- Multiple voicing, Vol I: 111
- Muscle dysmorphia (MD), Vol II: 99, 158, 161–162, 575
- The Muscular Ideal*, Vol I: 54; Vol II: 13, 160–161,
165–166, 169
- Muscular-ideal internalization, Vol II: 160–161
- Myocardial infarction (MI), Vol II: 500
- My Space*, Vol II: 653
- N**
- NAAF, *see* National Amateur Athletic Federation
(NAAF)
- Nagging, Vol I: 8, 391, 400
batterers, Vol I: 391, 399–400
- Naming, gendered hierarchy of, Vol II: 571–572
- NASA lost on the moon paradigm, Vol II: 344
- National Amateur Athletic Federation (NAAF), Vol II:
565
- National Archive of Criminal Justice Data, Vol II: 607
- National Center for Education Statistics (NCES), Vol
I: 277–278, 284, 288, 307, 309–310, Vol II:
337, 379
- National Center for Health Statistics, 2007, Vol II:
517–520, 524, 530, 533
- National Center for State Courts, Vol II: 601
- National Center on Elder Abuse (NCEA), Vol II: 318
- National Coalition of Anti-Violence Programs
(NCAVP), Vol II: 367–368
- National Collegiate Athletic Association (NCAA), Vol
II: 571–572, 575
- National Committee for the Mathematical Sciences, Vol
II: 380
- National Comorbidity Study, mental health survey, Vol
II: 134
- National Conference on Men and Masculinity, Vol I: 46
- National Council of Women Psychologists (NCWP), Vol
I: 24, 26
- National Council on Measurement in Education
(NCME), Vol II: 601, 604, 609
- National Defence Headquarters, Vol II: 676
- National Diabetes Education Program (NDEP), Vol II:
531
- National Elder Abuse Incidence Study (NEAIS), Vol II:
318
- National Epidemiologic Survey on Alcohol and Related
Disorders, Vol II: 134
- National Geographic Smell Survey, Vol I: 248
- National Health and Nutrition Examination Survey
(NHANES), Vol II: 520
- National Health and Social Life Survey (NHSLs), Vol I:
478, 533
- National Hospital Discharge Survey records, Vol II: 520
- National Incident Based Reporting System, Vol II: 608

- National Institute for Occupational Safety and Health (NIOSH), Vol II: 431
- National Institute of Mental Health (NIMH), Vol II: 228, 230
- National Institutes of Health (NIH), Vol I: 185, 261, 524, 534, 542, 593
- National Longitudinal Study of Adolescent Health, Vol I: 478
- National Organization for Women (NOW), Vol I: 30, 149
- National Organization of Changing Men, Vol I: 45
- National Organization of Men Against Sexism (NOMAS), Vol I: 45–46
- National Science Foundation (NSF), Vol I: 308–309; Vol II: 379–380
- National Survey of Sexual Attitudes and Lifestyles (NATSAL II), Vol I: 478
- Nat Kadaw, Vol II: 114
- NATO, *see* North Atlantic Treaty Organization (NATO)
- Natural athletic ability, African American men, Vol II: 647
- Naval Equal Opportunity and Sexual Harassment Survey (NEOSH), Vol II: 683
- NCAA, *see* National Collegiate Athletic Association (NCAA)
- NCAVP, *see* National Coalition of Anti-Violence Programs (NCAVP)
- NCEA, *see* National Center on Elder Abuse (NCEA)
- NCES, *see* National Center for Education Statistics (NCES)
- NCME, *see* National Council on Measurement in Education (NCME)
- NCMs, *see* Non-commissioned members (NCMs)
- NCO, *see* Non-commissioned officer (NCO)
- NCWP, *see* National Council of Women Psychologists (NCWP)
- NDEP, *see* National Diabetes Education Program (NDEP)
- NEAIS, *see* National Elder Abuse Incidence Study (NEAIS)
- Need for Affect scale, Vol II: 656
- Negative emotions, Vol I: 240, 243, 431, 433, 435–437, 545
- Negatively valenced emotions
 anxiety, Vol I: 242
 fear, Vol I: 242
- Negotiating the labyrinth, gender and leadership, Vol II: 443
 discrimination/ prejudice, Vol II: 446–447
 gender and leader stereotypes, Vol II: 447–449
 incompatible leader and the gender roles, effects, Vol II: 449–451
 leadership effectiveness, Vol II: 455–461
 individual male and female leaders, effectiveness of, Vol II: 457–458
 leadership style and leaders' effectiveness, Vol II: 458–460
 organizational effectiveness of gender-integrated executive teams, Vol II: 456–457
 organizational barriers to women's leadership, Vol II: 451–455
 barriers to building social capital, Vol II: 454–455
 challenges of obtaining desirable assignments, Vol II: 455
 demands for long hours and relocation, Vol II: 452–453
 masculine organizational culture, Vol II: 453–454
 representation of women in leader roles, Vol II: 443–445
 seat of parliament held by women in selected nations, Vol II: 445f
 women among managers, legislators, and senior officials, Vol II: 444
 work–family issues, Vol II: 445–446
- Negotiations, Vol I: 383–385, 430, 574
 critique of, Vol I: 384–385
 negotiation remediation training, Vol I: 385
 in women's communication, Vol I: 383–384
 observational learning, girls, Vol I: 384
- Neo-analytic theory, Vol I: 473
 casual sex or extra-marital affairs, Vol I: 473
 relational need, woman, Vol I: 473
- Neoclassical economic theory, Vol II: 405
- NEO-FFI, *see* NEO five factor inventory (NEO-FFI)
- NEO five factor inventory (NEO-FFI), Vol II: 26
- NEO personality inventory-revised (NEO-PI-R), Vol II: 26
 NEO-PI-R, *see* NEO personality inventory-revised (NEO-PI-R)
- NEOSH, *see* Naval Equal Opportunity and Sexual Harassment Survey (NEOSH)
- Neuroimaging techniques/technology, Vol I: 242
- Neuroticism, Vol II: 25–26, 29
- Neutral language, Vol I: 371, 380, 382
- The New Handbook of Psychotherapy and Counseling with Men*, Vol I: 45
- A New Psychotherapy for Traditional Men*, Vol I: 45
- New Zealand Defence Force (NZDF), Vol II: 682
- NHANES, *see* National Health and Nutrition Examination Survey (NHANES)
- NHSLs, *see* National Health and Social Life Survey (NHSLs)
- Nice guys, Vol II: 286
- Nigerian students report (college-aged), Vol II: 155
- NIH, *see* National Institutes of Health (NIH)
- NIMH, *see* National Institute of Mental Health (NIMH)
- NIOSH, *see* National Institute for Occupational Safety and Health (NIOSH)
- Non-commissioned members (NCMs), Vol II: 673, 676–677, 679, 685, 688
- Non-commissioned officer (NCO), Vol II: 691
- Non-contextual rectangle task, spatial perception, Vol I: 320
- Non-Duchenne/Duchenne smiles, Vol I: 438

- Nonreproductive hormones, *see* Glucocorticoids
- Nontraditional gender-role attitudes, Vol II: 197
- Nonverbal behavior, Vol I: 8, 28, 324, 411–422, 414, 416, 432, 437–439, 441, 444, 447
 for accurate person perception, Vol I: 412–414
 domains, Vol I: 413
 interpersonal sensitivity/accuracy, Vol I: 413
 comprises of, Vol I: 412
 definition, Vol I: 412
 disentangling gender and power, Vol I: 418–419
 and gender, Vol I: 414–415
 meta-analytic reviews, Vol I: 414
 gender and power differences, Vol I: 415t
 personality traits criterion, Vol I: 413
 and power, Vol I: 411–422
 Brunswikian lens model, Vol I: 416
 disentangling gender/power with nonverbal behavior, Vol I: 418–419
 gender and nonverbal behavior, Vol I: 414–415
 gender as moderator, Vol I: 419–420
 interpersonal accuracy, Vol I: 417–418
 nonverbal behavior, definition, Vol I: 412
 nonverbal behavior for accurate person perception, Vol I: 412–414
 nonverbal expression of power, Vol I: 416
 perception of power, Vol I: 417
 roles of
 emotions expression, Vol I: 412
 equivocal, Vol I: 412
- Nonverbal communication, Vol I: 400, 412, 419; Vol II: 323–324, 432
- Nonverbal decoding skill, Vol I: 438–439
- Nonviolent aggression, Vol II: 312, 315
- Norms
 testing strategies, strengths/limitations
 gender based, Vol II: 69
 gender irrelevant, Vol II: 69
 gender neutral, Vol II: 68
- Norm theory, Vol I: 196–198, 200
- North American native tribes, Vol II: 144
- North American society, Vol II: 362
- North Atlantic Treaty Organization (NATO), Vol II: 672–673, 676, 689
- North by Northwest* (film), Vol I: 191, 195–196
- Northside Center for Child Development in 1946, Vol I: 25
- “Not man enough” harassment, Vol II: 431
- ‘*Not socially appropriate*’ sport for women (Metheny), Vol II: 570
- NOW, *see* National Organization for Women (NOW)
- 6-n-propylthiouracil (PROP), Vol I: 246
- NSF, *see* National Science Foundation (NSF)
- NZDF, *see* New Zealand Defence Force (NZDF)
- O**
- OAE, *see* Otoacoustic emissions (OAEs)
- Objectification theory, Vol II: 170–172
- Objective tests
 MMPI-2, Vol II: 70
See also Personality tests, construction of
- Object location memory, Vol I: 221, 223, 263–265, 267, 321, 323, 327, 329–330
- Observations and gaps
 differences in doing gender research across fields, Vol II: 13–14
 measurement, Vol II: 14–15
 men and boys in gender research, Vol II: 13
 overstating the magnitude of differences, Vol II: 14
- Obtaining desirable assignments, challenges, Vol II: 455
- Occupational choice, Vol II: 379
 ability, Vol II: 386–387
 DAT, Vol II: 386
 mathematics achievement data, Vol II: 386
 barriers and supports, Vol II: 383
 explanations, Vol II: 382–383
 future research
 contextualization, Vol II: 393
 longitudinal designs, Vol II: 393–394
 world of work, changing, Vol II: 392
 gender stereotypes, Vol II: 383
 media, Vol II: 385
 parents, Vol II: 383–384
 productive technical careers, Vol II: 384
 peers, Vol II: 384–385
 perceived abilities and motivations, Vol II: 387–389
 seven women, study of, Vol II: 390
 stages of the STEM pipeline, Vol II: 381f
 STEM careers definition, Vol II: 381
 teachers, Vol II: 385
- Occupational segregation, Vol II: 672–674
- Occupational stratification, gender differences in, Vol II: 676–677
- OECD, *see* Organization for Economic Co-operation and Development (OECD)
- OFS, *see* Old-fashioned Sexism (OFS)
- Old-fashioned Sexism (OFS), Vol I: 147–148, 151
- Olfaction, Vol I: 248–249
- Olympic motto
Citius, Altius, Fortius (“swifter, higher, stronger”), Vol II: 564
- One-way causal effect, Vol II: 20
- On-line therapeutic interventions, Vol II: 229
- Operation Desert Storm, Vol II: 675
- Opposite-sex sexual harassment (OSSH), Vol II: 430–431
- Orbitofrontal cortex, Vol II: 285
- Organisation for Economic Cooperation and Development (OECD), Vol II: 380, 517
- Organizational barriers to women’s leadership, Vol II: 451–455
 barriers to building social capital, Vol II: 454–455
 challenges of obtaining desirable assignments, Vol II: 455

- demands for long hours and relocation, Vol II: 452–453
 masculine organizational culture, Vol II: 453–454
 Organizational citizenship behavior, Vol II: 452
 Organizational deviance, definition, Vol II: 424
 Organizational gossip, Vol I: 397
 Organization for Economic Co-operation and Development (OECD), Vol II: 380, 517
 Organization violence, Vol II: 322
 Originality, Vol I: 349–350, 352, 354
Orthogonal personality traits, Vol I: 192
 OSSH, *see* Opposite-sex sexual harassment (OSSH)
 Osteoarthritis, Vol II: 519
 Ostracism, social, Vol II: 312
 Otoacoustic emissions (OAEs), Vol I: 243
 Outcome and evaluation research, therapeutics, Vol II: 205–211
 adult survivors of childhood sexual abuse, Vol II: 208–209
 immigrant/international women, Vol II: 206–208
 Hmong women living in US, Vol II: 206
 women in Bosnia–Herzegovina, Vol II: 207–208
 men who abuse their partners, Vol II: 210
 Over narrative review, advantages, Vol I: 298
 Overreaction, women, Vol I: 433
- P**
 P300, Vol I: 238
 PADAM, *see* Partial androgen deficiency in the aging male (PADAM)
 Pain, Vol I: 240–243, 249, 412; Vol II: 22, 81, 97, 214, 224, 226, 229–230, 238–241, 256, 324, 484–485, 519–520, 522, 546, 549, 554
 Panic and phobic disorders, Vol II: 99
 Paper folding test, Vol I: 263, 266, 320, 328
 PAQ, *see* Personal attributes questionnaire (PAQ)
 PAR, *see* Participatory action research (PAR)
 Parallelism, Vol I: 419, 421
 Parent socialization model, Vol II: 383–384
 Parents/parenting, Vol I: 8, 11, 61, 63, 66–68, 71, 113, 139, 143–144, 146, 220, 260, 280, 282–283, 288, 300, 306–307, 309–310, 330, 352–353, 373, 445, 475, 485, 498, 504–505, 509, 534–537, 544, 547, 561, 564, 570–575; Vol II: 8, 11, 56–57, 76, 113–114, 117–118, 125, 137–138, 164–165, 196, 222, 226, 233, 241, 258, 264, 267, 285, 288, 291–293, 297, 299, 317–318, 366, 380–384, 390, 401, 406, 414, 445–446, 518–519, 566, 572–573, 596, 598–600, 617, 643, 647–648, 652, 662
 Partial androgen deficiency in the aging male (PADAM), Vol I: 568
 Participatory action research (PAR), Vol I: 118; Vol II: 272
 Partner (intimate) violence and aggression, Vol II: 316–317, 423, 431
 common couple violence, Vol II: 317
 Conflict Tactics Scale, Vol II: 316
 intimate terrorist, Vol II: 317
 man on woman, Vol II: 316
 woman on man, Vol II: 317
 Parvocellular retinal ganglion cells (P cells), Vol I: 236–237
 1972 passage of Title IX, Vol II: 565–566
 Passive aggression, Vol II: 427
 Pathognomonic symptoms, Vol II: 94
 Pathologize women's biology, Vol II: 93
 Patterns of risk, gendered, Vol II: 475–476
 Paxil, Vol II: 520
 P cells, *see* Parvocellular retinal ganglion cells (P cells)
 Peer interactions, Vol I: 281, 430, 500; Vol II: 174, 367
 Peer relations
 cross-sex friendships
 degree of sexual interest of men/women, Abbey's research, Vol II: 283
 friends with benefits relationships, study, Vol II: 283
 misperception, contributing factor to sexual harassment, Vol II: 284
 sexual activity in, impact, Vol II: 283
 sexual tension, cause of, Vol II: 283
 same-sex friendships
 Dindia and Allen's meta-analysis (1992), Vol II: 283
 gynocentric study, Vol II: 283
 intimacy findings in men/women, Vol II: 282
 men's competence with other men, Vol II: 282
 self-disclosure findings in adolescents, Vol II: 282
 social learning theories, findings (Maccoby), Vol II: 282
 women's expressive/sensitive behavior, impact, Vol II: 282
 People-things dimension, Vol I: 309
 Perceived abilities, Vol I: 11, 309; Vol II: 11, 387–390
 Perceived power, Vol I: 416, 418
 Perceptions of feminist therapy/therapists, Vol II: 196–197
 Personal Attributes Questionnaire (PAQ), Vol I: 14, 47, 50, 134–138, 143, 145–147, 151–152, 366, 460; Vol II: 15, 22
 Personal disclosure, Vol II: 10, 326–327
 blogs or web-logs, Vol II: 327
 true self/actual self, Vol II: 327
Personalismo, concept of, Vol II: 236
 "The personal is political," Vol II: 263
 Personality, Vol II: 19
 disorders, Vol I: 29; Vol II: 73, 81, 92–96, 118, 192–193, 195, 230–231
 five-factor model, Vol II: 25–30
 evaluation of FFM research/directions, study of gender issues, Vol II: 28–30
 FFM traits, difference in, Vol II: 26–28
 future research, direction, Vol II: 33–36

- Personality (*cont.*)
- sense of coherence, Vol II: 35–36
 - social/situational contexts, Vol II: 33–34
 - wellness and transcendence, studying, Vol II: 34–35
 - gender differences in personality, influences, Vol II: 20–21
 - gender theory, Vol II: 19
 - individual differences, study of, Vol II: 19
 - masculinity/femininity, personality theory, Vol II: 21–25
 - expressiveness/instrumentality/mental health, Vol II: 24–25
 - history, Vol II: 21–23
 - instrumentality and expressiveness as mediators, Vol II: 23
 - measurement, Vol II: 19
 - self-evaluations, gender differences, Vol II: 30–33
 - global self-esteem, Vol II: 30–31
 - multi-dimensional self-concept, Vol II: 31–33
- Personality and gender in adulthood
- critiques of Erikson's developmental theory, Vol I: 563–565
 - additional stages, Vol I: 563
 - cross-gender trade-off of qualities, Vol I: 565
 - distal social roles, Vol I: 563
 - ego integrity, Vol I: 565
 - generativity, Vol I: 564–565
 - intimacy and identity, Vol I: 564
 - proximal family issues, Vol I: 563
 - critiques of gender in Erikson's theory
 - Rochester Adult Longitudinal Study, Vol I: 563
 - culture, sexual orientation, and history in Erikson's theory, Vol I: 565–566
 - cohort influences on identity formation, Vol I: 566
 - CPI, Vol II: 566
 - ego integrity, Vol I: 561
 - workable social identity, Vol I: 561
 - Erikson's theory of personality development, Vol I: 560–561
 - See also* Adult development and aging
- Personality and psychopathology, objective/projective tests, Vol II: 70
- Personality and role identity structural model (PRISM), Vol II: 34
- Personality disorders
- de-contextualized diagnosis, Vol II: 95
 - HPD, diagnostic criteria for, Vol II: 94
- 16 Personality Factor (16PF), Vol II: 69, 78
- Personality influences, gender differences in, Vol II: 20–21
- Personality models
- multi-dimensional process model of gender, Vol II: 68
 - process model for personality (Mischel and Shoda), Vol II: 67
- Personality tests, construction of
- empirical tests
 - factor analysis, Vol II: 78
 - known-groups comparison method, Vol II: 78
 - MMPI and MMPI-2, Vol II: 78–80
 - 16PF, Vol II: 80
 - IRT, Vol II: 81–82
 - theoretically developed tests, Vol II: 80–81
 - Personal progress scale, Vol II: 213
 - Person-environment fit, model of, Vol II: 389
 - Person-in-context influences, Vol I: 532–542
 - cross-gender interactions, overcoming gender segregation and developing romantic relationships, Vol I: 539–541
 - group social activities, Vol I: 540
 - heterosexual dating activity, Vol I: 540
 - same-sex romantic relationships, Vol I: 541
 - culture/media, Vol I: 541–542
 - media-saturated environment, Vol I: 541
 - portrayals of gender-stereotyped behavior, Vol I: 542
 - family, Vol I: 536–537
 - parent's influence, Vol I: 536
 - peers, Vol I: 537–539
 - peer acceptance of LGBT adolescents, Vol I: 538
 - "pressure," Vol I: 538
 - puberty, Vol I: 533–536
 - DMS, Vol I: 535
 - early maturation hypothesis, Vol I: 535
 - FSH, Vol I: 533
 - hormonal changes, Vol I: 533
 - HPA, Vol I: 533
 - HPG, Vol I: 533
 - LH, Vol II: 533
 - physical changes of puberty, Vol I: 533–534
 - pubertal effects on identity and gender-typed behavior, Vol I: 534–536
 - pubertal timing models, Vol I: 535
 - Person talk, gossip, Vol I: 396, 416
 - PET, *see* Positron emission tomography (PET)
 - Phenylthiocarbamide (PTC), Vol I: 246
 - Physical activity, Vol I: 180; Vol II: 472–473, 476–477, 479–480, 550, 564–568, 570–571, 573–579
 - Physical Activity and Sport in the Lives of Girls*, Vol II: 576
 - Physical enactment games, Vol II: 651
 - Physical forms of aggression, Vol II: 427
 - Physically disabled women, barriers to participation, Vol II: 574
 - Physician–patient relationship, Vol II: 523
 - Physiological arousal, Vol I: 429, 442–443; Vol II: 49, 52, 54, 264–266
 - cardiac/cardiovascular reactivity, Vol I: 442
 - emotional stimuli, Vol I: 442
 - Picture story exercise (PSE), Vol II: 42–45, 48–51, 53–55, 57–58
 - PSE measures of achievement, Vol II: 48

- Planning programs, Vol II: 517
 Plumb-line task, *see* Spatial perception
 Pluralism, methodological/epistemological, Vol II: 588
 PMDD, *see* Premenstrual dysphoric disorder (PMDD)
 PMS, *see* Premenstrual syndrome (PMS)
 Political activism expressions, Vol II: 359
 Political psychologists, Vol I: 35
 Politics of exclusion, Vol II: 102
 Politics of nature and nurture, Vol II: 633
 Polygamy, Vol I: 268
 Polygyny, Vol II: 285
 Popular ideals of womanhood, Vol II: 403
 Population-based recruitment, Vol I: 180–182, 185–186
 Population-based survey, Vol II: 479
 Population Reference Bureau, Vol II: 471, 481
 Position of men and women in society, measures related to, Vol I: 146–149
 Ambivalent Sexism Inventory, Vol I: 147–148
 AWS, Vol I: 146–147
 FIC, Vol I: 149
 FIDS, Vol I: 149
 FIS, Vol I: 148–149
 MS, Vol I: 147
 OFS, Vol I: 147
 SSE, Vol I: 148
 Positive emotions, Vol I: 242, 433, 435, 439–440, 479;
 Vol II: 25, 27, 297, 339, 434
 Positive/negative affective tone, Vol II: 428
 Positivism's preferred method, limitations of, Vol I: 29
 Positron emission tomography (PET), Vol I: 225,
 242–244, 249–250, 443, 447
 Postmodernism, Vol I: 32, 400, 403
 discourse analysis, Vol I: 403
 Postmodern perspective, Vol I: 400, 402–403
 power, Vol I: 402
 Post-traumatic Stress Disorder (PTSD), Vol II: 74, 95,
 100, 190, 436, 548–549, 685
 symptoms, Vol II: 94
 Poverty, Vol I: 35, 290, 574; Vol II: 92, 97, 101–103,
 121, 481, 485, 510, 518, 524, 542, 614, 635
 Power
 coercive, Vol I: 416
 dynamics, Vol II: 196, 211, 268, 462, 624, 626, 635,
 644, 647
 expert, Vol I: 416
 legitimate, Vol I: 416
 motivation, Vol II: 41, 52–55
 physiological correlates of power, Vol II: 54–55
 profligacy and responsibility training, Vol II:
 53–54
 to name, Vol I: 361, 400
 nonverbal expression, Vol I: 416
 perceptions, Vol I: 417
 referent, Vol I: 416
 reward, Vol I: 416
 and status relationship, Vol I: 387
 and volume of words relationship, Vol I: 388–389
 Praxis, Vol II: 198–205
 general practices, Vol II: 198–202
 qualitative research, Vol II: 198–199
 quantitative research, Vol II: 200–202
 therapeutic relationship, issues, Vol II: 202–205
 men as feminist therapists, Vol II: 204–205
 nature of relationship, Vol II: 202–203
 self-disclosure, Vol II: 203
 termination, Vol II: 204
 Preferences, academic, Vol I: 308–309
 explanations, Vol I: 309–310
 empathizers, Vol I: 309
 expectancy-value model, Vol I: 310
 extensive model, Vol I: 310
 systemizers, Vol I: 309
 gender differences, Vol I: 312–313
 task values, Vol I: 310
 attainment value, Vol I: 310
 intrinsic/interest value, Vol I: 310
 utility value, Vol I: 310
 Prejudice
 sources of
 sex/gender/sexual orientation, Vol II: 363–365
 against transgender individuals, Vol II: 366–369
 consequences of gender prejudice, Vol II:
 368–369
 contextual origins, Vol II: 366–367
 prevalence of gender prejudice, Vol II: 367–368
 Preliminary Scholastic Aptitude Test (PSAT),
 Vol I: 302
 Premenstrual dysphoric disorder (PMDD),
 Vol II: 97–98
 Premenstrual syndrome (PMS), Vol I: 108, 458
 Prenatal hormone exposure, Vol I: 84, 280, 484
 Primary appraisal, Vol II: 432, 495
 Primary mental abilities test, *see* Mental rotation test
 PRISM, *see* Personality and role identity structural
 model (PRISM)
 Problem-focused coping, Vol I: 497–499, 503–504, 511
 Process model for personality (Mischel and Shoda), Vol
 II: 67
 CAPS, Vol II: 67
 if-then situation-behavior profiles, Vol II: 67
 Profanity, Vol I: 391–393, 402
 coarse language, Vol I: 391–392
 Profiles (gendered) of targets and perpetrators
 bullying
 same-sex bullying rates of men/women, Vol II:
 430
 incivility, Vol II: 429
 sexual harassment
 Berdahl's sex-based harassment theory, Vol II:
 430
 gender policing, Vol II: 430
 "not man enough" harassment, Vol II: 431
 OSSH, Vol II: 430
 SSSH, Vol II: 430

- Profiles (*cont.*)
 workplace aggression/violence
 homicides, cause of job-related deaths, Vol II: 431
- Progesterone, Vol I: 216, 245; Vol II: 51–52
- Progestins, Vol I: 216, 245
- Projective tests
 the Rorschach, Vol II: 70
See also Personality tests, construction of
- Proliferation of Gay/Straight Alliances, Vol II: 370
- Promundo, Vol II: 542
- Pronounced gender roles, Vol II: 266
- PROP, *see* 6-n-propylthiouracil (PROP)
- Prosocial behavior
 compassionate love, Vol II: 327–328
 intimates/strangers, Vol II: 328
 empathy, nurturance, and sensitivity to nonverbal cues, Vol II: 324–325
 degree of empathy, variation in, Vol II: 325
 interpersonal sensitivity, Vol II: 325
 thinking based on nonverbal behavior, Vol II: 324
 helping others, Vol II: 325–326
 helping profession, Vol II: 326
 heroic actions/chivalry, Vol II: 326
 prosocial personality, Vol II: 326
 personal disclosure, Vol II: 326–327
 blogs or web-logs, Vol II: 327
 true self/actual self, Vol II: 327
- Prostate cancer survivors, Vol II: 527
- Prostate-specific antigen (PSA), Vol II: 527
- Proximal factors, Vol I: 430, 440, 445
- Prozac, Vol II: 97–98, 317, 520
- Prozac on the Couch* (book), Vol II: 97
- PSA, *see* Prostate-specific antigen (PSA)
- PSAT, *see* Preliminary Scholastic Aptitude Test (PSAT)
- PSE, *see* Picture story exercise (PSE)
- Psychiatric drug treatment research, Vol II: 96
- Psychoanalytic/psychodynamic therapies, Vol II: 203
- Psychoanalytic theory, Vol I: 20, 159, 471–472, 528
 castration anxiety, Vol I: 472
 Electra conflict, Vol I: 472
 homoseductive mother, Vol I: 472
 libidinal instinct, Vol I: 472
 oedipal conflict, Vol I: 472
See also Gender differences in sexuality
- Psychoeducational workshops, Vol II: 125, 229
- Psychological adjustment, gender differences in
 distress in cancer patients, study of
 PTSD scores in men/women, Vol II: 548
 feminine/masculine identity, issues, Vol II: 548
 men and women with CVD, study of, Vol II: 548
 older adults with Parkinson's disease, Solimeo study, Vol II: 549
 patients with COPD, study of, Vol II: 548
- Psychological androgyny, Vol II: 22, 296
- Psychological approach to study of culture, Vol I: 33, 162–163
 cross-cultural psychology, Vol I: 162
 cultural psychology, Vol I: 162–163
 indigenous psychology, two groups, Vol I: 163
- Psychological assessment and testing
 assumptions
 personality: traits or processes?, Vol II: 67–68
 psychometric theory, Vol II: 66
 universal human abilities, culture issues, Vol II: 66
 context and assessment experience, Vol II: 64–65
 gender and norms, Vol II: 68–69
 identity variable, components, Vol II: 64
 process, definition, Vol II: 63
 psychological testing, role in assessment, Vol II: 63–64
 extroversion/depression/gifted, Vol II: 64
 intelligence, Vol II: 64
 personality, Vol II: 64, 65
 psychopathology, Vol II: 64
 test scores, basis/norms, Vol II: 65
 transgendered people, Vol II: 65
- Psychological Association Task Force, Vol II: 171
- Psychological measurement theory or psychometrics, Vol II: 66
- Psychological tests
 test functions
 diagnosis and intervention, Vol II: 72
 tests for selection, SAT/GRE, Vol II: 71–72
 tests of achievement, Vol II: 71
 types
 cognitive ability tests, Vol II: 70
 personality and psychopathology tests, Vol II: 70
- Psychological universals, Vol I: 161–162, 164, 166
 problem of imposed ethics, Vol I: 162
- Psychology Constructs the Female*, Vol I: 26
- Psychology Constructs the Female; or, The Fantasy Life of the Male Psychologist, Vol I: 27
- Psychology, gender study development in
 basic and experimental psychology, gender research in
 brain and behavior, Vol II: 7
 communication, Vol II: 8
 emotion and motivation, Vol II: 8
 history of psychology, Vol II: 6
 learning, education, and cognitive processes, Vol II: 7
 life span development, Vol II: 8–9
 research methods, Vol II: 6–7
 social and applied psychology, gender research in
 abnormal and clinical psychology, Vol II: 9–10
 health psychology, Vol II: 11–12
 industrial–organizational psychology, Vol II: 11
 personality psychology, Vol II: 9
 psychotherapy, Vol II: 10
 social psychology, Vol II: 10–11
 special topics, Vol II: 12
- The Psychology of Men & Masculinity*, Vol I: 48, 90, 257

Psychology of men/masculinity, research trends

- Attitudes Toward the Male Role Scale, Vol I: 52
- Brannon Masculinity Scale, Vol I: 52
- measurement of masculinity
 - attitudes Toward the Male Role scale, Vol I: 52
 - Brannon Masculinity Scale, Vol I: 52
 - citations of instruments used in the measurement of masculinity, Vol I: 52t
 - Conformity to Masculine Norms Inventory, Vol I: 52
 - Gender Role Conflict Scale, Vol I: 52–53
 - Macho Scale, Vol I: 52
 - Male Role Attitudes Scale, Vol I: 52
 - Male Role Norms Inventory, Vol I: 52
 - Masculine Gender Role Stress Scale, Vol I: 52–53
 - Stereotypes About Male Sexuality Scale, Vol I: 52
- men and mental health, Vol I: 54
- men and physical health, Vol I: 53–54
 - Drive for Muscularity Scale, Vol I: 53
 - The Muscular Ideal*, Vol I: 54
 - Swansea Muscularity Attitudes Questionnaire, Vol I: 53
- The Psychology of Sex Differences* (Maccoby and Jacklin), Vol II: 88
- Psychology of women, emergence and development
 - building a multicultural psychology of women
 - multicultural psychology, feminist psychology, and social activism, Vol I: 35
 - epistemological debates and methodological developments of the 1980s and 1990s
 - feminist empiricism, Vol I: 31
 - feminist methods, Vol I: 33–34
 - feminist postmodernism, Vol I: 32–33
 - feminist standpoint epistemologies, Vol I: 32
 - feminist revolution in psychology
 - emergence of a psychology for women, Vol I: 26–28
 - emergence of feminist practice, Vol I: 29–30
- FirstWave, Vol I: 21–23
 - applied psychology after World War I, Vol I: 21
 - attention to “woman problem,” Vol I: 23
 - community of ideas debate, Vol I: 22
 - Laura Spelman Rockefeller Memorial Fund, Vol I: 21
 - The Mental Traits of Sex*, Vol I: 22
 - studies on mental and motor abilities during menstruation, Vol I: 23
 - studies to debunk stereotypes about women, Vol I: 23
 - variability hypothesis, test, Vol I: 22
 - women in higher education, Vol I: 21
 - young women of the experimental psychology class, Vol I: 22
- persistent dilemmas and future directions
 - androcentric ideology of contemporary science, Vol I: 36

- feminist empiricism, Vol I: 35
- Genes and Gender Collective, Vol I: 36
- Sociobiology: The New Synthesis* (Wilson E. O.), Vol I: 36
- psychology and/of women at mid-century, Vol I: 23–26
 - APA, Vol I: 24
 - code of menstrual invalidism, Vol I: 26
 - elevation of the traditionally feminine values (Seward), Vol I: 26
 - ECP, Vol I: 23
 - intelligence test, development and use, Vol I: 23
 - NCWP, Vol I: 24
 - Northside Center for Child Development in 1946, Vol I: 25
 - racism and sexism, Vol I: 25
 - racism and sexism/anti-semitism and sexism, Vol I: 25
 - Society for the Psychological Study of Social Issues Committee on Roles of Men and Women in Postwar Society, Vol I: 26
 - women’s proportionate lack of prestige, reason, Vol I: 25
- Seneca Falls Convention in 1848, Vol I: 20
- Psychology of Women Quarterly (PWQ)*, Vol I: 47, 90, 197; Vol II: 2–3, 617
- Psychopathology, role of gender in development of, Vol I: 59–63, 72, 543–548
 - aggression and other externalizing behaviors, Vol I: 545–548
 - association with antisocial behavior, Vol I: 548
 - gender differences in the etiology of aggression, Vol I: 547
 - role of puberty in emergence of externalizing behaviors, Vol I: 548
 - role of puberty in the emergence of externalizing behaviors, Vol I: 548
 - unique patterns of gender differences in aggression, Vol I: 545–547
 - unique patterns of gender differences in substance use, Vol I: 547–548
 - depression and other internalizing behaviors, Vol I: 543–545
 - media sources, Vol I: 544
 - pubertal timing, Vol I: 544
 - stress in important relationships, Vol I: 544
- Psychotherapist’s attitudes, Vol II: 230–233
 - multicultural considerations paradigm to psychotherapy, Vol II: 231–232
 - negative biases against male clients, Vol II: 231
 - strength-based perspective, Vol II: 232–233
- Psychotherapy with men, Vol II: 221
 - addressing and assessing masculine socialization, Vol II: 238–239
 - evidence-based practice, Vol II: 221
 - finding strength in being vulnerable, case study, Vol II: 222–223

Psychotherapy (*cont.*)

- male clients knowledge, Vol II: 223–230
 - presenting concerns, Vol II: 229–230
 - psychological help, Vol II: 228–229
- men in psychotherapy, skills for, Vol II: 233–238
 - be genuine and real, Vol II: 236
 - be patient, Vol II: 235
 - clients' gender-role identity, Vol II: 236
 - engaging men in psychotherapy, Vol II: 234
 - goals match needs of male client, Vol II: 235
 - male clients, educate, Vol II: 235
 - masculine face, Vol II: 234–235
 - men have in entering and being in psychotherapy, Vol II: 234
- psychotherapist's attitudes, Vol II: 230–233
 - multicultural considerations paradigm to psychotherapy, Vol II: 231–232
 - negative biases against male clients, Vol II: 231
 - strength-based perspective, Vol II: 232–233
- psychotherapy thoughts, Vol II: 243
- revisiting, case, Vol II: 239–243
 - effective treatments and improving therapy outcome, Vol II: 242–243
 - helping men to seek psychological help, Vol II: 241–242
 - retaining men in psychotherapy, Vol II: 242
- Psychotropic medications for women, Vol II: 521
- PsychINFO database, Vol I: 43, 616
- PTC, *see* Phenylthiocarbamide (PTC)
- PTSD, *see* Post-traumatic stress disorder (PTSD)
- Puberty, Vol I: 84, 219–226, 241, 246, 280, 282–283, 324, 331, 456, 527, 530, 533–536, 543–445, 548; Vol II: 118, 168–169
 - DMS, Vol I: 535
 - early maturation hypothesis, Vol I: 535
 - FSH, Vol I: 533
 - hormonal changes, Vol I: 533
 - HPA, Vol I: 533
 - HPG, Vol I: 533
 - LH, Vol I: 533
- Publications and Communications Board, Vol I: 370
- Puerto Rican culture, Vol II: 627
- Purposive recruitment, Vol I: 181
- Pursuer/distancer pattern, Vol II: 265

Q

- Qingfu* (frivolous), Vol II: 293
- Qualitative inquiry in gender studies
 - contemporary forms, Vol I: 117–118
 - conversation analysis, Vol I: 118
 - discourse analysis, Vol I: 117–118
 - developing forms, Vol I: 118–121
 - action research, Vol I: 118
 - Participatory action research (PAR), Vol I: 118
 - performance-based research, Vol I: 119–121
 - divergent paths, Vol I: 122–123
 - handbooks, Vol I: 122

- ethnography, Vol I: 114–116
- future directions, Vol I: 121–122
 - challenges for qualitative methods within gender studies, Vol I: 121
 - evidence-based practices, Vol I: 121
 - gender/women/feminism/ and qualitative methods, Vol I: 121–122
- major methods, Vol I: 111–117
 - case study, Vol I: 111–112
 - ethnography, Vol I: 114–116
 - focus groups, Vol I: 113–114
 - interviews, Vol I: 112–113
 - narrative research, Vol I: 116–117
- major methods in the qualitative study of gender, Vol I: 111–117
- narrative research, Vol I: 114–116
- qualitative methods, Vol I: 104–111
- Qualitative methods, Vol I: 6, 34, 104–111, 115, 121–123
 - characteristics of qualitative inquiry in gender research that have challenged the mainstream 'First World' or 'Third World' academics, Vol I: 109
 - Foucaultian argument on representation, Vol I: 109
 - reflexivity, Vol I: 109
 - researcher/researched/reader relationship, Vol I: 106–108
 - situated knowledge, Vol I: 105
 - value-basis of research, Vol I: 105–106
- diverse approaches to qualitative methods
 - constructionist perspective, Vol I: 110–111
 - empiricist perspective, Vol I: 110
 - grounded theory approach to doing qualitative research, Vol I: 111
- Queer theory, Vol I: 368; Vol II: 215
- Questioning, Vol I: 23, 63, 120, 290, 350, 368, 380, 499, 512, 518, 536; Vol II: 91, 111, 120, 189, 205, 364, 523, 635, 685
- Quid pro quo*, *see* Sexual coercion

R

- RA, *see* Rheumatoid arthritis (RA)
- Race and ethnicity, Vol II: 412
 - differences, Vol II: 519
 - Latino/families, study, Vol II: 412
 - See also* Household labor
- Racial and Gender Report Cards*, Lapchick, Vol II: 567
- Racism/anti-semitism and sexism, Vol I: 25
- RALS, *see* Rochester Adult Longitudinal study (RALS)
- Randomized Response Techniques (RRT), Vol II: 603
- Rape, Vol II: 321–322
 - sample of married battered women, Vol II: 321
 - victims, virgin or vamp narrative, Vol II: 650
- Rapport talk, Vol I: 386
- RAT, *see* Remote Associates Test (RAT)
- rCBF, *see* Regional cerebral blood flow (rCBF)

- Real man, Vol II: 101, 649
- Recalled Childhood Gender Identity/Gender Role Questionnaire, Vol I: 141
- Recruitment, Vol I: 7, 179–188
- examples, Vol I: 184–187
 - capture–recapture method, Vol I: 187
 - CBPR, Vol I: 186
 - clinical trial/observational study, Vol I: 185
 - convenience or snowball recruitment methods, Vol I: 186
 - diversity in a large clinical trial, WHI, Vol I: 185
 - recruitment strategies for SMW insuring diversity, Vol I: 186–188
 - specific strategies for enhancing diversity in recruitment, Vol I: 185–186
 - studies of psychological phenomena, psychology department subject pool, Vol I: 184–185
 - model of
 - contact stage, Vol I: 183
 - enrollment stage, Vol I: 183–184
 - preparatory stage, Vol I: 182–183
 - types of, Vol I: 180–182
 - choosing recruitment strategy, difficulties, Vol I: 181–182
 - convenience sampling, Vol I: 181
 - eligibility criteria, Vol I: 182
 - population-based recruitment, Vol I: 180–181
 - purposive recruitment, Vol I: 181
- Referent power, Vol I: 416
- Reflections and future directions, Vol II: 629–635
- conceptualizing gender systemically, Vol II: 632–633
 - critical consciousness as essential to quality research, Vol II: 633–635
 - redefining dualisms, Vol II: 631–632
- Reflections on the Work of Feminist Theorist Jean Baker Miller*, Vol I: 105
- Regional cerebral blood flow (rCBF), Vol I: 242
- Reimbursement of medications, Vol II: 111
- Rejection sensitivity, Vol II: 140–141, 143, 145–146
- Relational aggression, Vol II: 312
- Relational costs, Vol II: 298–299
- Relational maintenance
- behavioral/cognitive, types, Vol II: 293
 - commitment, Vol II: 294
 - intimacy
 - responsiveness, Vol II: 295–296
 - self-disclosure, Vol II: 294–295
 - relationship satisfaction, Vol II: 296
 - stereotypic femininity and masculinity, Vol II: 296
- Relationship
- as context, theme, Vol II: 625
 - initiation and dating
 - social and dyadic contexts, role of peers and romantic partners, Vol II: 291
 - sociocultural contexts, dating scripts, Vol II: 289–290
 - manipulation, Vol II: 312
 - quality, key components of
 - commitment, Vol II: 294
 - intimacy, Vol II: 294
- Relationship-focused coping, Vol I: 496, 499
- Remote Associates Test (RAT), Vol I: 350
- Report talk, Vol I: 386
- Research findings
- category norms, Vol I 196–197
 - norm theory, Vol I: 196–197
 - clients' perceptions and experiences of feminist therapy, Vol II: 212–213
 - experience of diverse groups, Vol II: 213
 - current and future practice, Vol II: 214–215
 - description, Vol I: 193
 - differentiation between feminist therapists, Vol II: 211
 - men as feminist therapists, Vol II: 211
 - second and third waves, Vol II: 211
 - effects of category norms, Vol I: 197–199
 - category norms, Vol I: 198–199
 - induction, Vol I: 199
 - intersectional invisibility, Vol I: 198
 - reasons for undoing, Vol I: 197–198
 - efficacy/evaluation and outcome research, Vol II: 213
 - feminist/non-feminist practices, Vol II: 212
 - general practices, Vol II: 212
 - particular phases and processes of therapy, Vol II: 212
 - language to thinking, importance of, Vol I: 195
 - scientific metaphors and analogies, Vol I: 199–203
 - evolutionary analyses of gender-related findings, Vol I: 202
 - gender-related metaphors, Vol I: 201
 - visual metaphors, Vol I: 202
 - 'sex' or 'gender,' Vol I: 193–195
 - Money's paradigm, Vol I: 194
 - multiple meanings, Vol I: 194
 - political climate, Vol I: 194
 - theoretical considerations, Vol II: 213–214
 - third wave of theorizing, Vol I: 192
 - traits, behaviors, preferences, Vol I: 192
- Responsiveness, Vol II: 282, 295–296
- Resting metabolic rate (RMR), Vol I: 457, 466
- Restrictive Affectionate Behavior between Men (RABBM), Vol I: 145
- Restrictive Emotionality (RE), Vol I: 137, 145
- Retinal ganglion cells (RGCs), Vol I: 236
- Revisiting, case, Vol II: 239–243
- effective treatments and improving therapy outcome, Vol II: 242–243
 - helping men to seek psychological help, Vol II: 241–242
 - retaining men in psychotherapy, Vol II: 242
- Reviving Ophelia* (Pipher), Vol II: 30
- Reward power, Vol I: 416
- RGCs, *see* Retinal ganglion cells (RGCs)

- Rheumatoid arthritis (RA), Vol II: 500, 507, 542, 545–546, 550–551
- Richardson Conflict Response Questionnaire, Vol II: 313
- Risky (and healthy) behaviors, choice, Vol II: 476
- RMR, *see* Resting metabolic rate (RMR)
- Robotic surgery, Vol II: 528
- Rochester Adult Longitudinal study (RALS), Vol I: 563, 566
- Rod-and-frame test, *see* Spatial perception
- Rogerian therapies, Vol II: 188
- Rogue sexism, Vol II: 426
- Role conflict/stress, measures of, Vol I: 144–146
- Role congruity theory, Vol II: 678–679
- Rorschach Inkblot Method, Vol II: 209
- Routine maintenance behaviors, Vol II: 293, 296
- RRT, *see* Randomized Response Techniques (RRT)
- Rumination, Vol I: 95, 431–432, 545; Vol II: 141–144, 146, 154, 621
- Rumination and depression, gender differences in, Vol II: 154
- S**
- Sa-i-gu riots in Los Angeles, Vol II: 620
- Same-sex conversations, Vol I: 390, 394; Vol II: 295
- Same-sex friendships, Vol II: 281–284
- Dindia and Allen's meta-analysis (1992), Vol II: 283
- gynocentric study, Vol II: 283
- intimacy findings in men/women, Vol II: 282
- men's competence with other men, Vol II: 282
- self-disclosure findings in adolescents, Vol II: 282
- self-disclosure/responsiveness, male inhibition to, Vol II: 282
- social learning theories, findings (Maccoby), Vol II: 282
- women's expressive/sensitive behavior, impact, Vol II: 282
- Same-sex sexual harassment (SSSH), Vol II: 430–431
- homosexuality, higher rate indication, Vol II: 430
- Sampling, forensic research, Vol II: 599–601
- SANDF, *see* South African National Defence Force (SANDF)
- San Francisco assessment, Vol II: 120
- Sarafem (Eli Lilly), Vol II: 98
- SAT, *see* Scholastic Aptitude Test (SAT)
- SAT-M, *see* Scholastic Aptitude Test-Math (SAT-M)
- Schedule of Sexist Events (SSE), Vol I: 148
- Scheffler and Mücke's program, Vol II: 207
- Scholastic Aptitude Test-Math (SAT-M), Vol I: 304
- Scholastic Aptitude Test (SAT), Vol II: 71–72, 302
- Science, Engineering, and Technology (SET), Vol II: 380
- Scottish Mental Survey, Vol I: 302
- SCS, *see* Self-Compassion Scale (SCS)
- SDO, *see* Social dominance orientation (SDO)
- SDQ I, *see* Self-Description Questionnaires I (SDQ I)
- SDQ II, *see* Self-Description Questionnaires II (SDQ II)
- SDQ III, *see* Self-Description Questionnaires III (SDQ III)
- The Seasons of a Man's Life*, Vol I: 44
- Second Change Sheet, Vol I: 370
- Second-generation literature, psychological adjustment research, Vol I: 62–63
- homosexuality = psychopathology, Vol I: 63
- Second-wave feminism, Vol I: 30, 193, 287
- Secrecy and Silence in Research*, Vol I: 107
- Sedatives and tranquilizers, Vol II: 521
- SEER, *see* Surveillance, Epidemiology, and End Results (SEER)
- Segregation and progression, gender/military careers
- career progression of ethnic or visible minorities, Vol II: 677
- gender and occupational segregation, Vol II: 672–674
- gender, career progression, and leadership, Vol II: 677–679
- gender, combat, and the "warrior ethic," Vol II: 674–676
- gender differences in occupational stratification, Vol II: 676–677
- Selected serotonin reuptake inhibitors (SSRIs), Vol II: 520
- Selective incivility theory, Vol II: 426
- Self-actualization, Vol I: 352, 512
- Self-compassion, Vol II: 35–36
- Self-Compassion Scale (SCS), Vol II: 35
- Self-concept, Vol II: 9, 20, 31–33, 168, 361, 381, 576
- Self-conscious, Vol II: 157
- Self-Description Questionnaires III (SDQ III), Vol II: 31
- Self-Description Questionnaires II (SDQ II), Vol II: 31
- Self-Description Questionnaires I (SDQ I), Vol II: 31
- Self-disclosure, Vol II: 282, 294–295
- Self-esteem, Vol I: 14, 63, 67–68, 97, 165, 283, 288, 352, 422, 498, 512–513, 530, 535, 544, 563, 568; Vol II: 13, 15, 20, 24–25, 30–33, 36, 75, 97, 99, 117–118, 155, 160, 165, 190, 199–200, 207–208, 253, 348, 362, 431, 484, 506, 510, 512, 545, 573, 576, 685
- Self-evaluations, gender differences, Vol II: 30–33
- global self-esteem, Vol II: 30–31
- multi-dimensional self-concept, Vol II: 31–33
- Selfish gene hypothesis, Vol I: 260
- See also* Evolutionary psychology (EP)
- Self-objectification, Vol I: 91–92, 94, 97; Vol II: 171–172, 575, 659
- Self-perceptions in sport
- gender, expectations, and participation
- achievement behaviors, Vol II: 573
- Eccles' developmental model, Vol II: 573
- exercise and self-perceptions, study (Tiggemann and Williamson), Vol II: 573–574
- parental influence and youth sport involvement, Vol II: 573
- women with physical disabilities, barriers, Vol II: 574

- physical activity and adolescent development
 - participation rates among race/ethnic groups, Vol II: 576
 - physical/psychosocial benefits, Vol II: 576
 - sport participation, impact on self-esteem of women (Richman and Shaffer), Vol II: 576
 - Youth Risk Behavior Survey*, Vol II: 576
- physical activity, gender, and body image
 - body image and muscularity, Vol II: 575–576
 - body image and physical activity, Vol II: 575
 - body image and sport participation, Vol II: 574
 - body image, sport, and eating disorders, Vol II: 574–575
- Self-promoting manner, achievements, Vol II: 347
- Self-reliance, Vol II: 546
- Self-socialization theories, Vol I: 508, 532
- SEM, *see* Structural equation modeling (SEM)
- Seneca Falls Convention in 1848, Vol I: 20
- Sense of coherence (SOC), Vol II: 35–36
 - comprehensibility, Vol II: 35
 - manageability, Vol II: 35
 - meaningfulness, Vol II: 35
- Sensorimotor games, Vol II: 651
- Sentimental Men*, Vol I: 45
- Sentimental stereotypes, Vol II: 432
- Sentinel lymph node (SLN) biopsies, Vol II: 526
- SEQ, *see* Sexual Experiences Questionnaire (SEQ)
- Sertoli cells, Vol I: 216
- SES, *see* Socioeconomic status (SES)
- SET, *see* Science, Engineering, and Technology (SET)
- Sex and gender, sensation and perception, Vol I: 235–250
 - audition and vestibular perception, Vol I: 243–246
 - OAE, Vol I: 243
 - sound detection mechanisms, Vol I: 243
 - chemical senses, Vol I: 246–249
 - somatosensation, Vol I: 240–243
 - vision, Vol I: 235–240
 - optical coherence tomography, Vol I: 236
 - photoreceptor cells, Vol I: 235
 - types of photopigments, Vol I: 236
- Sex and Temperament in Three Primitive Societies*, Vol I: 159
- Sex and the Social Order*, Vol I: 26
- Sex differences, physiology of, Vol I: 215–227, 363–365
 - adulthood, after puberty, Vol I: 220–226
 - glucocorticoids, role of nonreproductive hormones, Vol I: 226–227
 - steroid hormones, classification and synthesis of, Vol I: 215–216
 - behavior in childhood, Vol I: 219–220
 - fetus, development of sex, Vol I: 216
- Sex differences research, Vol I: 28, 35, 193; Vol II: 546
- Sex-dimorphic behavioral patterns, Vol II: 115
- Sex-Fair Research, Vol I: 371
- Sex reassignment
 - FtM, Vol I: 224
 - MtF, Vol I: 224
- Sex reassignment surgery (SRS), Vol II: 111, 114, 119, 123, 366–367
- Sex Role Behavior Scale (SRBS), Vol I: 142–143, 150
- Sex Roles (SR)*, Vol I: 47, 90; Vol II: 2
- Sex-specific patterns, brain
 - hypothalamus, Vol I: 247
 - prefrontal cortex, Vol I: 247
 - ventral striatum, Vol I: 247
- Sex-typed behaviors, studies on, Vol I: 28
- Sexual and gender prejudice, Vol II: 359
 - Catholics, study of young, Vol II: 371
 - future research directions, Vol II: 370–371
 - gender prejudice against transgender individuals, Vol II: 366–369
 - consequences of gender prejudice, Vol II: 368–369
 - contextual origins, Vol II: 366–367
 - prevalence of gender prejudice, Vol II: 367–368
 - positive attitudes toward sexual minorities, Vol II: 369–370
 - sexual prejudice against gay and lesbian individuals, Vol II: 359–362
 - bisexual individuals, against, Vol II: 363–365
 - homophobia and its discontents, Vol II: 359–360
 - in-group domination, Vol II: 362
 - internalized biphobia, Vol II: 365
 - internalized homophobia, Vol II: 362
 - religion, Vol II: 361–362
 - sex and gender, Vol II: 360–361
 - sources of prejudice, Vol II: 363–365
- Sexual and reproductive health, Vol II: 532–535
 - future directions, Vol II: 534–535
 - HIV/AIDS, Vol II: 533–534
 - sexual health issues, Vol II: 532
- Sexual attitudes, differences in, Vol I: 471, 473, 477–481, 485–488, 542
 - attitudes toward homosexuality, Vol I: 479–480
 - gender and mate selection and retention, Vol I: 481
 - mate retention tactics, Vol I: 481
 - women's economic and social dependency on men, Vol I: 481
 - sexual desire, Vol I: 480–481
 - See also* Gender differences in sexuality
- Sexual behaviors, differences in
 - large surveys, Vol I: 478
 - meta-analytic findings, Vol I: 476–478
 - magnitude of gender differences, calculations, Vol I: 477
 - product of cultural differences, Vol I: 478
 - other sexual behaviors, Vol I: 478–479
 - exposure to sexually explicit material, Vol I: 479
 - fantasies, Vol I: 478
 - orgasm consistency, Vol I: 478
 - See also* Gender differences in sexuality
- Sexual coercion, Vol II: 424
- Sexual costs, Vol II: 299–300
- Sexual dimorphism, Vol I: 217, 224, 364

- Sexual dysfunction, Vol I: 69, 91, 223
- Sexual Experiences Questionnaire (SEQ), Vol II: 681
- Sexual harassment, Vol II: 11, 87, 91, 282–283, 288, 290–291, 361, 545, 574
- power, leading cause, Vol II: 425
 - power of “maleness,” Vol II: 425
 - sex-based social status, Vol II: 425
 - sexual expression, forms of (Berdahl), Vol II: 426
 - societal/organizational disparities, men/women, Vol II: 425
- types
- gender harassment, Vol II: 424
 - sexual coercion, Vol II: 424
 - unwanted sexual attention, Vol II: 424
- Sexual inequality, Vol I: 379, 387, 403
- Sexual inversion, Vol II: 79
- Sexuality, differences in
- biological factors, Vol I: 482–484
 - anatomical differences, Vol I: 482
 - brain differences, Vol I: 482–483
 - hormones, Vol I: 483
 - menopause, Vol I: 484
 - prenatal factors, Vol I: 483–484
 - pubertal development, Vol I: 484
 - testosterone replacement therapy, Vol I: 483
 - vasopressin, Vol I: 483
 - other factors, Vol I: 485–486
 - body esteem, Vol I: 485
 - disproportionate role in family, Vol I: 485
 - sex education, Vol I: 486
 - sexual inhibition, performance/consequences, Vol I: 485
 - structured masturbation exercises, Vol I: 486
 - self-reports, Vol I: 481–482
 - socio-cultural factors, Vol I: 484–485
 - cultural gender roles, Vol I: 484–485
- See also* Gender differences in sexuality
- Sexuality in sport and physical activity
- homophobia and professional sport, Vol II: 577–578
 - sexual harassment in sport and exercise, Vol II: 579
 - sexual prejudice in non-professional sport and physical activity, Vol II: 578–579
- Sexually explicit content, media
- exposure and recreational attitudes towards sex, Vol II: 654–655
 - sexual media targets/impact, men and women, Vol II: 655
 - stereotyped attitudes toward sex, Ward’s study, Vol II: 655
 - sports intelligence, Vol II: 661
- Sexually transmitted diseases (STDs), Vol II: 533
- Sexual minorities and heterosexuals
- developmental trends, Vol II: 136
 - mood disorders in, Vol II: 135
 - stress and vulnerability to depression
 - adaptational effort, Vol II: 138
 - discrimination, Vol II: 138–139
 - hate crimes, Vol II: 139
 - sexual minority stress, Vol II: 138
 - victimization, Vol II: 138
- Sexual minority, Vol I: 5, 186–188, 290, 368, 447, 538, 540–541, 549; Vol II: 33
- gender/sexual identity, Vol I: 368
 - positive attitudes toward, Vol II: 369–370
 - stress, Vol II: 137–138, 144
- Sexual minority women (SMW), Vol I: 186–188
- Sexual orientation and vulnerability to depression
- bisexual, Vol I: 367
 - cognitive factors
 - and sexual minorities’ vulnerability to depression, Vol II: 142–143
 - and women’s vulnerability to depression, Vol II: 141–142
 - epidemiology, men/women
 - developmental trends, Vol II: 134
 - first onsets vs. duration of depression, Vol II: 134–135
 - National Comorbidity Study, mental health survey, Vol II: 134
 - National Epidemiologic Survey on Alcohol and Related Disorders, Vol II: 134
 - symptom differences and treatment seeking, Vol II: 135
 - group differences in depression
 - stress and sexual minorities’ greater vulnerability to depression, Vol II: 137–139
 - stress and women’s greater vulnerability to depression, Vol II: 137
 - stress factor, Vol II: 136
 - heterosexual, Vol I: 367
 - homosexual, Vol I: 367
 - interpersonal factors
 - and sexual minorities’ vulnerability to depression, Vol II: 140–141
 - and women’s greater vulnerability to depression, Vol II: 139–140
 - lesbian, Vol I: 367
 - sexual minorities and heterosexuals
 - developmental trends, Vol II: 136
 - sexual orientation, definition of, Vol II: 364
 - stress-mediation model of vulnerability to depression
 - cognitive mechanisms, Vol II: 144–145
 - interpersonal mechanisms, Vol II: 145
- Sexual preference, Vol I: 367, 486, 538, 541
- Sexual prejudice, Vol II: 577
- Sexual script theory, Vol II: 289
- Sexual Socialization Scale, Vol I: 144
- Sexual strategies theory (SST), Vol II: 285
- Sexual tension, *see* Cross-sex friendships
- SFSCS, *see* Six factor self-concept scale (SFSCS)
- Shavelson’s model, Vol II: 31
- Short-term mating strategy, Vol II: 285
- Sibling violence, Vol II: 318–319
- brother-to-brother, Vol II: 319

- SIM, *see* Standard Interactionist Model (SIM)
- Simi/Mahalik study, Vol II: 203
- Single/collaborative floors, talking time, Vol I: 389
- Single-sex education, Vol I: 288, 289, 291
- Single-sex education vs. co-education, Vol I: 288–289, 291
- Single-sex group, Vol I: 385
- Single-sex school, Vol I: 288
effects, Vol I: 288
- Sissy, Vol II: 578
- Six factor self-concept scale (SFSCS), Vol II: 32
- SLE, *see* Systemic lupus erythematosus (SLE)
- SLN, *see* Sentinel lymph node (SLN) biopsies
- Small talk, Vol I: 379, 386, 393–395, 404
- Smile, Vol I: 89, 412, 414–415, 419, 430, 437, 445–446, 531
- Smoking-Related Cancers and Breast Cancer in US, Vol II: 529
- SMPY, *see* Study of Mathematically Precocious Youth (SMPY)
- SMW, *see* Sexual minority women (SMW)
- SNS, *see* Social networking sites (SNS)
- SOC, *see* Sense of coherence (SOC)
- Social age, Vol II: 645
- Social categorization/social identity theory, Vol II: 348
- Social construction, Vol I: 9, 29, 51, 116, 167, 192–193, 204, 260, 367, 401; Vol II: 9, 66, 72, 83, 122, 168–169, 174, 189, 191–192, 226, 255, 281, 615, 620, 671
- Social context, importance of, Vol II: 21, 624
- Social contextual factors/social motives, Vol II: 55–57
- Social dominance orientation (SDO), Vol II: 362
- Social ecological perspective, Vol II: 613
- Social groups, Vol I: 1, 6, 160–161, 197, 269, 347, 371, 498, 513, 539
culture, Vol I: 160
ethnicity and race, Vol I: 160
nationality, Vol I: 160–161
society, Vol I: 160
- Social-historical context, sport/exercise psychology
biological/physical and competitive/hierarchical, highlights, Vol II: 564
early women's sport and physical education, Vol II: 565
gender and physical activity/exercise participation
inactivity, risk factor for diseases, Vol II: 567
Kimm, adolescent girl's activity tracking, Vol II: 567
Olympic motto, Vol II: 564
from 1970s to today's gendered sport
female coaches, Kamphoff's dissertation research on, Vol II: 566
Leanne Norman, arguments on UK coaching system, Vol II: 567
1972 passage of Title IX, Vol II: 565–566
Whites and Blacks, leadership roles, Vol II: 567
- WNBA data in USA, example, Vol II: 566
women coaching men at Division I level, Vol II: 566
- Social influence, advantage in, Vol II: 341
- Socialization, practices, Vol II: 168
- Social learning theories, Vol II: 282
- Socially transmitted diseases/ disorders (STD), Vol II: 191
- Social motives
achievement, Vol II: 41
affiliation–intimacy, Vol II: 41
power, Vol II: 41
reemergence of interest, Vol II: 42–43
in women and men, measuring, Vol II: 43–44
- Social networking sites (SNS), Vol II: 653–654
alpha socializers and attention seekers, Vol II: 654
Facebook, Vol II: 653
Friendster, Vol II: 653
functional users, men/boys, Vol II: 654
MySpace, Vol II: 653
non-users/intellectual rejecters, no gender differences, Vol II: 654
qualitative investigation, effects, Vol II: 654
- Social perception, Vol II: 580
- Social rejection, Vol I: 431
- Social roles across lifespan, changes in, Vol I: 570–573
changing work and family roles, Vol I: 571–573
concept of marriage, change in, Vol I: 572
gender, roles, and well-being, Vol I: 570–571
empty nest syndrome, Vol I: 571
issues of parenting/grandparenting, Vol I: 572
retirement, Vol I: 572
- Social roles theory, Vol II: 20–21, 343, 427
- Social/situational contexts, Vol II: 33–34
- Social status, Vol I: 20, 31, 180, 384, 387, 443
- Social structural theory, Vol I: 168, 475, 478, 484; Vol II: 288
- Social support
gender differences in, Vol II: 504–509
direct effect and buffering models, Vol II: 505
perceived vs. received social support, Vol II: 506–507
social support networks, Vol II: 507–509
structural and functional aspects, Vol II: 505–506
and interpersonal stress, Vol II: 139–140
- Social threshold hypothesis, Vol II: 113
- Society for the Psychological Study of Men and Masculinity, Vol I: 46–48
- Society for the Psychological Study of Social Issues
Committee on Roles of Men and Women in Postwar Society, Vol I: 26
- Society for the Psychological Study of Social Issues (SPSSI), Vol I: 26, 70
- Sociobiology, Vol I: 36, 259–260
- Sociobiology: The New Synthesis* (Wilson E. O.), Vol I: 36
- Sociocultural gender-based ideologies, Vol II: 625

- Socio-ecological theories of mate preferences
 Buss's study (1989), Vol II: 288
 cultural variability in mate preferences, Vol II: 288
 girls' healthy sexuality (Tolman's view), Vol II: 287
 social structural theory (Eagly and Wood), Vol II: 288
- Socioeconomic context, Vol II: 479–480
 Socioeconomic gradient, Vol II: 479
 Socioeconomic status (SES), Vol II: 528
 Soft butches, Vol II: 371
 Somatosensation, Vol I: 240–243
 analgesic effects, Vol I: 242
 emotions, Vol I: 242
 negatively valenced, Vol I: 242
 positively valenced, Vol I: 242
 estrogen–cytokine interaction, Vol I: 241
 higher arousal level (fear), Vol I: 242
 moderate arousal level (anxiety), Vol I: 242
 neuroimaging techniques, Vol I: 242
 pain disorders, Vol I: 241
 irritable bowel syndrome, Vol I: 241
 pain perception, Vol I: 240
 pain sensation, Vol I: 240
 chronic pain, Vol I: 241
 cold-pressure pain, Vol I: 241
 heat stimuli, Vol I: 240
 PET, Vol I: 242
 sex hormone changes, Vol I: 241
 SOQ, *see* Sport Orientation Questionnaire (SOQ)
 Sound perception, *see* Audition and vestibular perception
 South African National Defence Force (SANDF), Vol II: 673
- Spatial abilities, Vol I: 317–332
 biological factors, Vol I: 323–326
 brain organization, Vol I: 324–325
 evolutionary explanations, Vol I: 325–326
 hormonal influences, Vol I: 323–324
 cognitive processes, Vol I: 322–323
 spatial memory processes, Vol I: 322–323
 spatial strategies, Vol I: 322
 experiential and sociocultural factors, Vol I: 326–331
 sociocultural differences, Vol I: 326–327
 spatial experience, Vol I: 326
 stereotype threat, Vol I: 327
 training effects, Vol I: 327–328
 wayfinding, Vol I: 328–331
 gender and spatial abilities relationship, Vol I: 317
 relationship between
 androgen and spatial ability, Vol I: 324
 testosterone and spatial abilities, Vol I: 324
 and testosterone, androgen relationship, Vol I: 324
 types of, Vol I: 318–322
 dynamic spatial ability, Vol I: 322
 mental rotation, Vol I: 318
 object location memory, Vol I: 321
 spatial perception, Vol I: 319–320
 spatial visualization, Vol I: 320–321
- types of spatial abilities, Vol I: 318–322
 dynamic spatial ability, Vol I: 322
 mental rotation, Vol I: 318
 object location memory, Vol I: 321
 spatial perception, Vol I: 319–320
 spatial visualization, Vol I: 320–321
- Spatial cognition, sex differences, Vol I: 7, 218, 262–265, 317, 331–332
 classic literature, Vol I: 263
 navigation, Vol I: 264–265
 object location memory
 reason, Vol I: 263–264
- Spatial perception, Vol I: 318–320, 322, 325, 327–328, 331
 line-angle judgment task, Vol I: 320
 non-contextual rectangle task, Vol I: 320
 plumb-line task, Vol I: 319
 rod-and-frame test, Vol I: 319
 water-level task, Vol I: 319
- Spatial visualization, Vol I: 302, 318, 320–321, 323, 326–327, 332
 block design, Vol I: 320
 embedded figures test, Vol I: 320
 paper folding, Vol I: 320
- Speaking style
 of men, Vol I: 285, 379, 387–388, 404, 414–415
 of women, Vol I: 380, 383, 386, 404
- Speaking time, Vol I: 412, 414–419, 421
- Spontaneous talk, Vol I: 401
- Sport and exercise psychology
 advancing gender research and social action, Vol II: 579–580
 framework for gender
 cultural sport studies, Vol II: 564
 gender issues, Vol II: 564
 gender psychology, Vol II: 564
 multicultural psychology, Vol II: 564
 gender and self-perceptions in sport
 gender, expectations, and participation, Vol II: 573–574
 physical activity and adolescent development, Vol II: 576–577
 physical activity, gender, and body image, Vol II: 574–576
 gender and sexuality in sport and physical activity
 homophobia and professional sport, Vol II: 577–578
 sexual harassment in sport and exercise, Vol II: 579
 sexual prejudice in non-professional sport and physical activity, Vol II: 578–579
 gender issues, Vol II: 564
 gender scholarship
 AASP conference programs, Vol II: 568
 cultural study perspectives (Fisher, Butryn, and Roper), Vol II: 568
 gender bias in media, Vol II: 571–573

- gender differences and gender roles, Vol II: 569–571
- race/ethnicity research, Duda and Allison, Vol II: 568
- social–historical context
 - biological/physical and competitive/hierarchical, highlights, Vol II: 564
 - early women’s sport and physical education, Vol II: 565
 - gender and physical activity/exercise participation, Vol II: 567–568
 - Olympic motto, Vol II: 564
 - from 1970s to today’s gendered sport, Vol II: 565–567
- Sport competence, gender differences in (Eccles), Vol II: 573
- Sport Orientation Questionnaire (SOQ), Vol II: 569
- SRBS, *see* Sex Role Behavior Scale (SRBS)
- SRS, *see* Sex reassignment surgery (SRS)
- SRY gene, Vol I: 216–217
- SSE, *see* Schedule of Sexist Events (SSE)
- SSM, *see* Standard sociobiological model (SSM)
- SSRIs, *see* Selected serotonin reuptake inhibitors (SSRIs)
- SSSH, *see* Same-sex sexual harassment (SSSH)
- SSSM, *see* Standard Social Science Model (SSSM)
- SST, *see* Sexual strategies theory (SST)
- Standard Cross-Cultural Sample*, Vol I: 167
- Standard Interactionist Model (SIM), Vol I: 261, 271–272
- Standards for Educational and Psychological Testing, Vol II: 601, 604, 609
- Standard Social Science Model (SSSM), Vol I: 259–261
 - claims, Vol II: 259–260
- Standard sociobiological model (SSM), Vol I: 260–262, 264–266, 268–271
- Standing Committee for Men, Vol I: 45–46
- Standing Ovation: Performing Social Science Research about Cancer*, Vol I: 108
- Stanford–Binet Intelligence Test, Vol I: 301–302
- Status-based stressors, Vol II: 144–147
- STDs, *see* Sexually transmitted diseases/disorders (STDs)
- STEM, Vol II: 379
 - engineering, Vol II: 379
 - mathematics, Vol II: 379
 - science, Vol II: 379
 - technology, Vol II: 379
- Stereotypes
 - disadvantage, Vol II: 343
 - and effects on group behavior, Vol II: 343–347
 - agency and double standard, Vol II: 343–345
 - communion and double bind, Vol II: 345–347
 - medical treatments advertisements, Vol II: 343
 - stereotypes, disadvantage, Vol II: 343
 - feminine gender role, Vol II: 94
 - of gender and aggression, Vol II: 312–314
 - Bem Sex Role Inventory (BSRI)
 - masculine task, Vol II: 344
 - threat, Vol II: 48
- Stereotypes/display rules, Vol I: 430–432
 - accuracy of, Vol I: 432
 - emotional regulation styles, Vol I: 432
 - gender differences expression over experience, advantage, Vol I: 432
 - self-reports or actual behavior, Vol I: 432
 - emotional stereotypes, nature of, Vol I: 430–432
 - Americans (intense/expressive/ruminated/less distracted), Vol I: 430–431
 - counterstereotypic man/woman, Vol I: 431
 - emotional expression over experience, advantage, Vol I: 431
 - emotion-specific for womens/girls and mens/boys, Vol I: 431
 - ethnic groups, comparison, Vol I: 431
 - European Americans’ beliefs over ethnic groups, advantage, Vol I: 431
 - face expressions, Vol I: 431
 - gender stereotypes, Vol I: 431
 - negative social consequences, Vol I: 432
 - social rejection, Vol I: 431
 - stereotypic expectations/actual expressions, Vol I: 431
- Stereotype threat, Vol I: 84–85, 284–285, 289, 306, 327, 353, 430, 433–434, 444, 447, 569
- Stereotyping, gender, Vol I: 499–502
 - definition
 - action-based activities, Vol I: 500
 - developmental trajectory
 - dual process model, Vol I: 501
 - possible consequences, Vol I: 514–517
 - stereotype knowledge, attention, and memory, Vol I: 515
 - stereotype knowledge, behaviors, and preferences, Vol I: 514–515
 - stereotype use and adjustment, Vol I: 515–516
 - stereotype use and intergroup relations, Vol I: 516–517
 - See also* Identity, gender
- Steroid hormones, classification and synthesis of, Vol I: 215–220, 222–224, 226–227
 - activational effects, Vol I: 215
 - adrenal glands secretion, Vol I: 215
 - androgens, Vol I: 215
 - glucocorticoids, Vol I: 215
 - mineralocorticoids, Vol I: 215
 - behavior in childhood, Vol I: 219–220
 - cognitive and motor skills, Vol I: 220
 - gonadal activity, Vol I: 219
 - play, Vol I: 219
 - fetus, development of sex, Vol I: 216
 - gonadal function, Vol I: 215

- Steroid hormones (*cont.*)
 gonads secretion
 androgens, Vol I: 215
 estrogens, Vol I: 215
 progestins, Vol I: 215
 organizational effects, Vol I: 215
- Stonewalling, Vol II: 265, 437
- Street harassment, Vol I: 393
See also Verbal harassment as dominance
- STEM (science, technology, engineering, mathematics),
 Vol I: 11; Vol II: 379–382, 386–387, 389–391,
 393–394
- Strengths-based approach, Vol II: 613, 619
- Strength-based counseling/therapy, Vol II: 232
- Stress
 appraisals, types of, Vol II: 495
 appraisal process, Vol II: 496
 primary, Vol II: 495
 secondary, Vol II: 495
 coping and gender in diverse populations, Vol II:
 509–510
 and coping, contextual model of, Vol II: 496
 and coping, gender differences, Vol II: 497–504
 chronic illness, Vol II: 500–502
 interpersonal stress, Vol II: 498–500
 work-related stress, Vol II: 502–504
 and coping in women and men, Vol II: 510–511
 social support, Vol II: 504
 and women's greater vulnerability to depression
 chronic strain of gender role, Vol II: 137
 lower social status and power, cause, Vol II: 137
 victimization
 child sexual abuse, Vol II: 137
 domestic violence, Vol II: 137
 rape victims, Vol II: 137
- Stress-mediation model of vulnerability to depression
 acute/chronic stressors, impact on women and sexual
 minorities, Vol II: 143
 cognitive mechanisms
 bereaved gay men, study of, Vol II: 144
 community-based LGB/heterosexual adolescents,
 study of, Vol II: 144–145
 gender and sexual orientation disparities, factors, Vol
 II: 143
 interpersonal mechanisms, Vol II: 145
- Stroop effect, Vol I: 237–238
- Structural equation modeling (SEM), Vol I: 86, 88, 90,
 92, 95, 97, 297
- Study of dominance, Vol I: 387
- Study of Mathematically Precocious Youth (SMPY), Vol
 I: 310
- Support for and adherence to cultural gender norms,
 measures of, Vol I: 134–144
 Child Gender Socialization scale, Vol I: 144
 gendered behavior measures, Vol I: 139–143
 CAH, Vol I: 139
 CBAQ, Vol I: 140
 CBAQ-F, Vol I: 140
 CBAQ-M, Vol I: 140–141
 Games Inventory, Vol I: 140
 gender diagnosticity, Vol I: 143
 gender dysphoria (GDI), Vol I: 141
 gender identity, Vol I: 142
 GID, Vol I: 139
 GIDYQ-AA, Vol I: 141–142
 recalled childhood gender identity/gender role
 questionnaire, Vol I: 141
 SRBS, Vol I: 142–143
 gender socialization, Vol I: 143–144
 ideology measures, Vol I: 136–139
 AFIS, Vol I: 138
 AMIRS, Vol I: 137
 BMS, Vol I: 136
 CFNI, Vol I: 139
 CMNI, Vol I: 138
 FIS, Vol I: 139
 MRAS, Vol I: 137
 MRNI, Vol I: 137–138
 MRNS, Vol I: 136–137
 Sexual Socialization Scale, Vol I: 144
 trait measures, Vol I: 134–136
 BSRI, Vol I: 134–135
 PAQ, Vol I: 134–136
- Support gap* theory, Vol II: 507
- Surveillance, Epidemiology, and End Results (SEER),
 Vol II: 526
- Swearing, Vol I: 146, 392; Vol II: 315, 427
- Swimsuit study, Vol II: 659
- Symptom differences and treatment seeking, depression,
 Vol II: 135
- Systemic lupus erythematosus (SLE), Vol II: 542
- Systemizers, Vol I: 309
- T**
- Tag question formations, Vol I: 380–381, 385, 404
- Talking time, Vol I: 388–389
 and power relationship, Vol I: 388–389
 single/collaborative floors, Vol I: 389
- Task Force on Men's Roles in Psychotherapy, Vol I: 46
- TAT, *see* Thematic apperception test (TAT)
- Teacher behaviors, Vol I: 279, 283
- Teachers' preferential treatment of boys, Vol II: 385
- Teaching styles, Vol I: 285, 287, 291
- Tearoom Trade, Vol II: 597
- Teenage mutant ninja turtles (TMNT), Vol II: 656
- Temporal experience of pleasure scale (TEPS), Vol II: 35
- Tend-and-befriend theory, Vol II: 505
- TEPS, *see* Temporal experience of pleasure scale (TEPS)
- Terminology, Vol I: 2, 8, 13, 59–60, 62, 171, 362,
 367–368, 471
 androcentricism, Vol I: 60
 gender, definition, Vol I: 59–60
 gender identity, Vol I: 60
 gender nonconforming, Vol I: 60

- gender normative, Vol I: 60
- sexual orientation, Vol I: 60
- transgender, Vol I: 60
- Testicular examinations, Vol II: 532
- Testosterone, Vol I: 49, 83, 216, 226, 239, 241, 270–271, 323–324, 330–331, 483–484, 486–487, 533–534, 568; Vol II: 286
- treatment, Vol II: 99
- Tests for selection, SAT/GRE
 - gender bias complexity, example, Vol II: 72
 - psychological tests, Vol II: 71–72
- Texas A&M University Corps of Cadets, Vol II: 678
- TFEQ, *see* Three-Factor Eating Questionnaire (TFEQ)
- The Institute for Diversity and Ethics in Sport, Vol II: 572
- The L Word*, Vol II: 645
- Thematic apperception test (TAT), Vol II: 41
- Themes of gender bias
 - First football, then men's basketball, and then everything else*, Vol II: 572
 - He was always on my mind*, Vol II: 572
 - Parents are noteworthy, especially athletic fathers*, Vol II: 572
 - Race only matters for men*, Vol II: 572
 - She must have played with the boys to get that good*, Vol II: 572
 - Straight is great, but gay is nowhere*, Vol II: 572
- Theories of gender and sexuality
 - cognitive social learning theory, Vol I: 474–475
 - evolutionary psychology, Vol I: 473–474
 - gender schema theory, Vol I: 476
 - neo-analytic theory, Vol I: 473
 - psychoanalytic theory, Vol I: 471–472
 - social structural theory, Vol I: 475
 - See also Individual*
- Theory of Mental Tests* (Gulliksen), Vol II: 66
- Theory & Psychology*, Vol I: 117
- Therapy retention rates, Vol II: 242
- Therapy with women scale (TWS), Vol II: 201
- The Rules* (Fein & Schneider, 2005), Vol II: 290
- The Sport Psychologist*, Vol II: 568
- The Tucker Center (2007), Vol II: 577
- Thin ideal, Vol I: 13, 97; Vol II: 13, 159–161, 164, 166, 169
- Third gender, Vol I: 486; Vol II: 114, 631
- Third-generation literature, identity/diversity/descriptive research
 - bisexuality, Vol I: 65–66
 - American Institute of Bisexuality, Vol I: 66
 - The Bisexual Option* (Fritz Klein), Vol I: 66
 - Journal of Bisexuality*, Vol I: 66
 - KSOG, Vol I: 66
 - gender differences
 - gender-role socialization, Vol I: 64
 - lesbian, gay, and bisexual youths, Vol I: 67–68
 - risk of HIV infection, Vol I: 68
 - victimization of LGB youths, Vol I: 68
 - race, ethnicity, and culture, Vol I: 64–65
 - effects of multiple marginalized identities, Vol I: 65
 - experiences of racial and ethnic LGBT individuals, Vol I: 65
 - studies on White individuals/White gay men, Vol I: 64
 - relationships/families and parenting, Vol I: 66–67
 - Committee on Psychosocial Aspects of Child and Family Health, Vol I: 67
 - families headed by LGB people, Vol I: 67
 - families of choice, Vol I: 67
 - family issues of LGB people, Vol I: 67
 - gay baby boom, Vol I: 67
 - LGB and heterosexual couples, major differences, Vol I: 66
 - sexual prejudice and heterosexism, Vol I: 68–69
 - depression/alcoholism and other substance-related problems, Vol I: 69
 - heterosexism, definition, Vol I: 68
 - impact of, Vol I: 68–69
- Third interstitial nucleus of the anterior hypothalamus (INAH3), Vol I: 217
- Three-Factor Eating Questionnaire (TFEQ), Vol I: 457
- Time-consuming major household tasks, Vol II: 407
- Time use, Vol II: 404, 407–408, 416, 478
- Tip-of-the-nose phenomenon, Vol I: 248
- Title IX of the Education Amendments (1972), Vol I: 281; Vol II: 187
- TMNT, *see* Teenage mutant ninja turtles (TMNT)
- Torrance tests, creative thinking, Vol I: 349–350
 - elaboration, Vol I: 349
 - flexibility, Vol I: 349
 - fluency, Vol I: 349
 - originality, Vol I: 349
- Total household labor, Vol II: 407
- Toward a New Psychology of Women*, Vol I: 105
- Toward a Redefinition of Sex and Gender in Psychology*, Vol I: 29
- Traditional cultural models, Vol II: 473
- Traditional games, Vol II: 651
- Trait measures, Vol I: 134–136, 435
 - BSRI, Vol I: 134–135
 - PAQ, Vol I: 134–136
- Transgender
 - countless self-labels, Vol II: 114
 - female to male transsexual (FtM), Vol I: 487
 - gender dysphoric disorder, Vol I: 486–487
 - gender reassignment, Vol I: 487
 - male to female transsexual (MtF), Vol I: 487
 - See also* Gender differences in sexuality
- Transgendered individuals, *see* Transgenderism
- Transgendered persons, Vol I: 9, 71, 368; Vol II: 631
- Transgenderism, Vol I: 368–369, 486
- Transitioning, Vol II: 119–120, 240, 301, 368

- Translation, issues with, Vol I: 170–173
 back-translation, Vol I: 171
 decentering, Vol I: 172
 equivalence of translation, Vol I: 171–172
 management of problems with translation, Vol I: 172–173
 response styles, Vol I: 172
- Transpeople, Vol I: 369
- Transsexualism, Vol I: 368–369
- Trauma and Recovery* (Herman), Vol II: 208
- Trauma Content Index, Vol II: 209
- Trauma strain, Vol I: 50–51
- Trauma Symptom Inventory (TSI), Vol II: 209
- Trends/directions, LGBT
 brief history, Vol I: 69–70
 from categories to complexity, fourth generation, Vol I: 72
 creation of journals, Vol I: 59–60
 gender/transgender issues, Vol I: 70–71
 sexual orientation, Vol I: 72
- Trichromatic theory, Vol I: 236
- Tripartite model of social influence, Vol II: 164–168
 media, Vol II: 166–168
 parents, Vol II: 164–165
 peers, Vol II: 165–166
- Triple jeopardy, Vol II: 259
- TS, *see* Turner's syndrome (TS)
- TSI, *see* Trauma Symptom Inventory (TSI)
- Turner's syndrome (TS), Vol I: 218–219
- Turn-taking norms, Vol I: 390, 412
- Two cultures approach, Vol I: 65, 164–166, 385, 399
 miscommunication models, Vol I: 385
 critique of, Vol I: 386–387
- Two-Spirit People, Vol II: 144
- TWS, *see* Therapy with women scale (TWS)
- U**
- UCR, *see* Uniform Crime Reporting program (UCR)
- Ultra-masculine in man-to-man harassment, *see* "Not man enough" harassment
- Umami, Vol II: 246
- UNFPA, *see* United Nations Population Fund (UNFPA)
- Uniform Crime Reporting program (UCR), Vol II: 608
- United Nations Development Programme, Vol II: 443, 445
- United Nations Population Fund (UNFPA), Vol I: 277–278
- Universal human abilities, culture issues
 American Psychological Association Ethics Code, test standards by, Vol II: 66
 classical testing theories/psychometrics, challenges IRT, Vol II: 67
 social constructionist and postmodern theorists, Vol II: 66
- Unmatched Count Technique, Vol II: 602
- Unmitigated agency, gender-role traits, Vol II: 23
- Unmitigated communion, Vol II: 23, 295
- Unwanted sexual attention, Vol II: 424, 430, 681
- US Bureau of Labor Statistics, Vol II: 337, 351, 431, 444
- US Department of Education (USDOE), Vol I: 288, 291
- US Department of Health and Human Services (DHHS), Vol II: 317
- US Department of Health and Human Services (USDHHS), Vol II: 567
- USDHHS, *see* US Department of Health and Human Services (USDHHS)
- USDOE, *see* US Department of Education (USDOE)
- US Marine Corps colonel, Vol II: 675
 organization for a common goal, Vol II: 675
 presence of or potential for danger, Vol II: 675
 willingness to sacrifice, Vol II: 675
- US National Center for Educational Statistics, Vol II: 445
- US personality research, Vol II: 27
- Utility value, Vol I: 310
- V**
- Variance ratio (VR), Vol I: 299, 304–305
- Vassar College, Vol II: 565
- Verbal ability, Vol I: 89, 222, 225, 299–302, 305–306, 308, 310, 350, 415, 496
 gender similarities and differences
 in means, Vol I: 305
 in variance, Vol I: 305
- Verbal aggression, Vol II: 312
 forms of, Vol II: 427
- Verbal behavior, Vol I: 382, 387, 413, 416, 420
- Verbal communication, Vol I: 400, 412
- Verbal harassment as dominance, Vol I: 393
- Vestibular perception, Vol I: 243–246
- Verticality, Vol I: 266, 270, 319, 416
- Video games
 male/female ratio (3:1) engaged, Vol II: 650–651
 natural cognitive abilities, sex differences, Vol II: 651
 research in college population (Lucas and Sherry), Vol II: 651
 sensorimotor games, genre form, Vol II: 651
 traditional/physical/imagination games, women/men perspectives, Vol II: 651
- Vietnam War veterans, Vol II: 100
- Violence
 and aggression toward children and elderly family members, Vol II: 317–318
 caretakers' stress and depression, Vol II: 317
 NCEA, Vol II: 318
 NEAIS, Vol II: 318
 parental stress, Vol II: 318
 physical child abuse, Vol II: 317
 US Department of Health and Human Services (DHHS), Vol II: 317
See also Aggression
 and aggression toward children/elderly family members, Vol II: 317–318

- in everyday life/personal experiences of, Vol II: 315–316
 - Virtual negotiations, Vol I: 96
 - Visceral pain disorders, Vol I: 241–242
 - Vision, sex differences in, Vol I: 235–240
 - BOLD fMRI, Vol I: 237
 - EEGs, Vol I: 238
 - M cells, Vol I: 236
 - men's and women's vision, differences in, Vol I: 236
 - MRT, Vol I: 238
 - optical coherence tomography, Vol I: 236
 - P300, Vol I: 238
 - P cells, Vol I: 236
 - PCR genetic analysis
 - four-pigment heterozygotes, Vol I: 237
 - photopigments, Vol I: 236
 - photoreceptor cells, Vol I: 235
 - cone cells, Vol I: 235
 - rod cells, Vol I: 235
 - RGCs, Vol I: 236
 - stroop effect, Vol I: 237–238
 - trichromatic theory, Vol I: 236
 - types of photopigments, Vol I: 236
 - Visual–spatial ability, Vol I: 240, 279–280, 301, 311–312
 - VNO, *see* Vomeronasal organ (VNO)
 - Vocational Educational Act (1976), Vol I: 281
 - Volume of words, *see* Talking time
 - Vomeronasal organ (VNO), Vol I: 248
 - VR, *see* Variance ratio (VR)
- W**
- WAIS, *see* Wechsler Adult Intelligence Scale (WAIS)
 - Wait and see disease, *see* Rheumatoid arthritis (RA)
 - Water-level task, *see* Spatial perception
 - Wayfinding, Vol I: 7, 317–332
 - Euclidean-based strategies, Vol I: 330
 - WCQ, *see* Women and Counselling Questionnaire (WCQ)
 - Wechsler Adult Intelligence Scale (WAIS), Vol I: 301–302, 569
 - Wechsler Intelligence Scale for Children (WISC), Vol I: 301
 - The Wedding Banquet, Vol II: 261
 - Weight concerns, women
 - motivation for smoking, Vol II: 479
 - Wellness and transcendence, studying, Vol II: 34–35
 - Western medical institutions, Vol II: 366
 - WHI, *see* Women's Health Initiative (WHI)
 - White-collar jobs, Vol II: 227
 - Whorfian hypothesis, Vol I: 361
 - WHO, *see* World Health Organization (WHO)
 - WISC, *see* Wechsler Intelligence Scale for Children (WISC)
 - WNBA, *see* Women's National Basketball Association (WNBA)
 - WNT 4 gene, Vol I: 217
 - Wolffian tract, Vol I: 216–217
 - enzyme 5- α reductase, Vol I: 216
 - Leydig cells, Vol I: 216
 - Woman-blaming approach, *see* Assertiveness training
 - Woman to woman harassment, Vol II: 431
 - Women and Counselling Questionnaire (WCQ), Vol II: 202
 - Women and Madness*, Vol I: 27; Vol II: 188
 - Women at mid-century, psychology and/of, Vol I: 23–26
 - APA, Vol I: 24
 - code of menstrual invalidism, Vol I: 26
 - elevation of the traditionally feminine values (Seward), Vol I: 26
 - ECP, Vol I: 23
 - intelligence test, development and use, Vol I: 23
 - NCWP, Vol I: 24
 - Northside Center for Child Development in 1946, Vol I: 25
 - racism and sexism/anti-semitism and sexism, Vol I: 25
 - Society for the Psychological Study of Social Issues Committee on Roles of Men and Women in Postwar Society, Vol I: 26
 - women's proportionate lack of prestige, reason, Vol I: 25
 - Women in leader roles, representation of, Vol II: 443–445
 - Women in the Community, issue on, Vol II: 627
 - Women, role of
 - decision-making authority, Vol II: 444
 - domestic responsibilities, Vol II: 445
 - as entrepreneurs, Vol II: 445
 - in managerial roles, Vol II: 443
 - as political leaders, Vol II: 444
 - Women's and men's employment
 - participation in housework, Vol II: 409
 - time availability hypothesis, Vol II: 408–409
 - See also* Household labor
 - Women's Counseling Services, Vol II: 190
 - Women's deficits remediation, Vol I: 382–385
 - assertiveness training, Vol I: 382–383
 - research on, Vol I: 383
 - negotiations deficit
 - critique of, Vol I: 384–385
 - in women's communication, Vol I: 383–384
 - Women's Educational Equity Act (1974), Vol I: 281
 - Women's gender-role socialization, Vol II: 100
 - Women's Health Book Collective, Vol II: 523
 - Women's Health Initiative (WHI), Vol I: 185
 - clinical trial (CT) and an observational study (OS), Vol I: 185
 - Women's Language, Vol I: 381–382, 387, 399, 402
 - Women's Liberation Movement, Vol I: 1, 6, 10, 20, 26, 361; Vol II: 565
 - Women's Movement, Vol II: 46, 113
 - influence of political/ cultural activities of, Vol II: 31
 - Women's National Basketball Association (WNBA), Vol II: 566

- Women's proportionate lack of prestige, reason,
Vol I: 25
- Women's talk, Vol I: 385–386, 393–400
gossip, Vol I: 395–399
men's deficiencies, Vol I: 399–400
minimal responses, Vol I: 394
placing value on, Vol I: 393–394
small talk, Vol I: 394–395
- Women's Ways of Knowing*, Vol I: 31, 105
- Work–family issues, Vol II: 445–446
in military, Vol II: 686–689
balancing work and family, Vol II: 687–688
work–family policies of various countries, Vol II:
688–689
- Work-life balance, Vol I: 11–12; Vol II: 11–12, 382,
687–688
- Workplace bullying, Vol II: 424
- Workplace mistreatment
concepts (Andersson and Pearson)
aggression, violence, and incivility, Vol II: 424
organizational deviance, definition, Vol II: 424
sexual harassment, Vol II: 424
workplace bullying, Vol II: 424
gendered frameworks of antecedents
Buss' framework of aggression, Vol II:
427–428
contextual influences on mistreatment, Vol II:
428
incivility, Vol II: 426–427
sexual harassment, Vol II: 425–426
gendered frameworks of antecedents of
Buss' framework of aggression, Vol II:
427–428
Cortina's multi-level theory, Vol II: 426
Cortina's (2008) selective incivility theory, Vol
II: 426
Cortina's (2008) theory of selective incivility, Vol
II: 426
organizational climate, impact, Vol II: 428
rogue sexism, Vol II: 426
selective incivility, Vol II: 426
gendered profiles of targets and perpetrators
bullying, Vol II: 429–430
incivility, Vol II: 429
sexual harassment, Vol II: 430–431
workplace aggression/violence, Vol II: 431
impact on men/women
psychological and physical consequences, Vol II:
436
work-related consequences, Vol II: 436–437
reactions to
appraisal processes, Vol II: 432–433
coping processes, Vol II: 433–435
escalating aggression, Vol II: 435
sexual harassment
power, leading cause, Vol II: 425
sex-based social status, Vol II: 425
sexual expression, forms of (Berdahl), Vol II: 426
societal/organizational disparities, men/women,
Vol II: 425
tolerance–sexual harassment relationship, Vol II:
428
- Workplace violence, Vol II: 322
expressed hostility/obstructionism/overt aggression,
Vol II: 322
interpersonal violence, Vol II: 322
organization violence, Vol II: 322
See also Aggression
- World Health Organization (WHO), Vol II: 133, 481
- World Professional Association for Transgender Health
(WPATH), Vol II: 125
- Worldviews of women and men, Vol I: 386
- World War II (WWII), Vol I: 6, 23, 26
- WPATH, *see* World Professional Association for
Transgender Health (WPATH)
- Wundt's laboratory (1879), Vol II: 1
- Y**
Youth Risk Behavior Survey, Vol II: 576
- Z**
Zoloff, Vol II: 520