ACCEPTANCE AND MINDFULNESS AT WORK

Applying Acceptance and Commitment Therapy and Relational Frame Theory to Organizational Behavior Management

STEVEN C. HAYES • FRANK W. BOND
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EDITORS

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Acceptance and Mindfulness at Work: Applying Acceptance and Commitment Therapy and Relational Frame Theory to Organizational Behavior Management

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Expanding the Scope of Organizational Behavior Management: Relational Frame Theory and the Experimental Analysis of Complex Human Behavior

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Dermot Barnes-Holmes

SUMMARY. Behavior analysis in general and applied behavior analysis in particular requires a well developed, empirically supported, and useful approach to human language and cognition in order to fulfill its mission of providing a relatively adequate comprehensive account of complex human behavior. This article introduces a series of articles in which the possibilities presented by Relational Frame Theory (RFT) are

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explored as they apply to issues addressed by Organizational Behavior Management (OBM). RFT provides an empirically useful operant account that has already led to a variety of applied innovations, including several of direct relevance to OBM. doi:10.1300/J075v26n01_01

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Despite over forty years of empirical and conceptual research (Dickinson, 2000), the contribution of behavior analysis to the world of business remains relatively small. Organizational Behavior Management (OBM) receives relatively little attention at the university level or within industrial/organizational psychology (I/O) as a professional discipline. A simple head-count sheds light on the problem: The Society for Industrial and Organizational Psychology (the American Psychological Association's I/O division) currently has over 6,000 members (http://www.siop.org/media/talking.htm) while the Association for Behavior Analysis' special interest group devoted to I/O work, the OBM Network, is less than 4% of that size (http://www.obmnetwork.com/membership).

A number of OBM writers have pondered this disparity in impact and influence and a variety of solutions have been offered. Organizational behavior analysts have recommended that behavior analysts soften the use of behavioral language (Brown, 2000), expand upon the variables manipulated (Olson, Laraway, & Austin, 2001), incorporate the use of more aversive control (Malott, 2002), and expand behavioral psychology to include principles drawn from psychological subfields that have gained a wider audience in the organizational world such as cognitive, personality, and social psychology (Geller, 2002).

The initiating problem in these recommendations is often simple popularity, but that in turn is usually laid at the feet of organizational behavior analysts' inability to deal comfortably and effectively with certain substantive issues. For example, Wiegand and Geller (2005) argue that those working in organizational areas need to understand workers' motivation to produce, and that direct reinforcement models are insufficient. What is recommended as a solution to this problem is a variety of well-established non-behavioral theories: achievement theory (Atkinson,

1957), self-worth theory (Covington & Beery, 1976), self-efficacy (Bandura, 1986), and others.

An alternative is to broaden the conceptual base of the field in a more behaviorally based fashion. For example, Olson et al. (2001) properly point out that OBM researchers have failed to exploit establishing operations in their analyses. By including motivational antecedent stimuli, they argue, organizational behavior analysts would increase the sophistication of their analyses and yield more potential interventions.

This is an appealing idea, but as we point out below, it inadvertently says more about the problematic situation behavior analysts' find themselves in than it does about the solutions to these problems. Indeed, Olson et al.'s (2001) call to focus on motivational stimuli was not the first time that *Journal of Organizational Behavior Management (JOBM)* has published recommendations concerning the use of EO's (e.g., Agnew, 1998). Nevertheless, despite its long history (Michael, 1982) and superficially obvious applied relevance, no empirical articles focusing on the use of the EO appear to have been published in *JOBM*.

Olson et al. (2001) pointed to a source of this anomaly: although EO manipulations have been successfully carried out in developmentally disabled populations, OBM clients have complex verbal repertoires that may make these kinds of interventions inappropriate. Workers in the organizational area are aware that verbal descriptions may influence the value of particular consequences, sometimes in ways that strengthen undesired behaviors while weakening those desired (see Haas & Hayes, this volume for an empirical example), but the technical analysis of such situations does not fit the dominant behavior analytic models of such phenomena. As a result, the recommendation to consider EOs amounts to little more than a recommendation to address motivation. We have argued that difficulties in addressing the effects of verbal processes are at the very core of the problems being faced by the field in the first place (see Hayes & Barnes-Holmes, 2004).

Direct contingency principles are highly relevant to organizational behavior management, which is why OBM has succeeded as well as it has. But the sense that the field has stalled, is too narrow, or needs new concepts from outside behavioral psychology all indicate that the field itself is finding it difficult to use direct contingency principles alone as a model of human behavior. As an applied matter this becomes obvious given the limitations on behavior analysts' ability to alter the immediate environment of organizations, but as a more basic matter it would be true in any situation dominated by complex human behavior. When we are dealing with verbal beings, verbal processes may have important ef-

fects on the efficacy of environmental manipulations. These processes seemingly involve more than a simple extension of direct contingencies, be they operant or classical. Of course, many behavior analysts would grant that point, but hope to turn to Skinner's analysis of verbal behavior (1957) or of rule-governed behavior (1966) as a solution. Unfortunately this approach also has a relatively weak record of empirical achievement in organizational settings.

The present volume offers another behavior analytic way forward: Relational Frame Theory (RFT; Hayes, Barnes-Holmes, & Roche, 2001) and its applied extensions, including Acceptance and Commitment Therapy (ACT, said as a single word, not initials; Hayes, Strosahl, & Wilson, 1999). RFT is behavior analytic in a traditional sense, in that its central claim is simply that a particular kind of operant exists. Nevertheless, it carries with it implications for a very different behavioral approach to complex human behavior.

Now over twenty years old (since its original presentation by Hayes & Brownstein, 1985), the empirical literature on RFT seems to be reaching a tipping point within behavior analysis. Nearly seventy studies have been published on RFT and fifty on ACT. At least some empirical work has been done on almost every aspect of the basic theory, with extensions into a wide variety of topics faced by organizational behavior analysts and several that are part of traditional I/O psychology but not traditional OBM. These include: motivation (Ju, 2000; Whelan, 2004; Whelan & Barnes-Holmes 2004); attitude formation to unseen products (Grey & Barnes, 1996); product preference (Barnes-Holmes, Keane, Barnes-Holmes, & Smeets, 2000; Smeets & Barnes-Holmes, 2003); worker burnout (Hayes, Bissett, Roget et al., 2004); work stress and depression (Bond & Bunce, 2000; Folke & Parling, 2004); worker disability (e.g., Dahl, Wilson, & Nilsson, 2004); the ability of workers to learn new tasks (Bond, this volume); worker flexibility and performance (Bond & Bunce, 2003; see also Bond, this volume); worker disability following injury (McCracken & Eccleston, 2003); and worker well-being (Donaldson & Bond, 2004), among several other areas. The research program is gathering steam, with scores of extensions of the theory beginning to be explored. Still, the empirical work is relatively new and several of the most relevant studies are not yet published (e.g., Barnes-Holmes, Milne, & Barnes-Holmes, 2005; Bond, Flaxman, & Bunce, 2005; Flaxman & Bond, 2005).

The purpose of the present collection is to try to show that a comprehensive and experimental behavioral analysis of human language and cognition is here, now, ready for use. It is not a mere conceptual analysis

and theoretical extension; it is not a promise or hope. Applied extensions are here now as well, and are already having a significant applied impact, including in organizational settings. Rather than expanding the conceptual foundations of the field to include concepts traditionally hostile to behavioral psychology (e.g., Wiegand & Geller, 2004), this volume presents another alternative: use these ongoing developments in behavior analysis itself as an avenue to broaden the exploration of the psychological issues relevant to organizational issues in OBM.

Organizational behavior analysts who wish to move in this direction face significant challenges, most notably the subtleties of RFT itself. While in one sense based in traditional behavior analysis, RFT and ACT are not initially easy to grasp and they involve new concepts and new techniques that must be mastered. Emerging from clinical behavior analysis, ACT involves clinical sensitivities that not all applied behavior analysts possess even when ACT is used within the scope of practice of OBM. ACT and RFT are self-consciously contextualistic (Hayes, 1993), which can be a challenge for behavior analysts without philosophy of science training, or who have been trained in behavior analysis as a mechanistic approach. Finally, because of its broad implications for the analysis of complex human behavior, RFT leads to a new form of behavior analysis, and it takes time to learn how to include cognitive processes of any kind without resorting to reductionism and mentalism on the one hand (Hayes & Brownstein, 1986) or to minimization and hand waving on the other.

For all of these reasons, even well-trained behavior analysts cannot instantly become experts at ACT and RFT: a significant intellectual investment is required. The present volume cannot and will not be fully adequate in that regard. Rather, our goal is to make the approach understandable enough that readers can determine for themselves their degree of interest in making such an investment.

This collection contains conceptual, review, and empirical articles on RFT and ACT as they bear on various organizational issues. The present article is by way of an introduction to RFT and ACT. Our goal is to suggest in broad terms why a different approach within behavior analysis is necessary, possible, and fruitful.

RELATIONAL FRAME THEORY

RFT begins with the empirical fact that human beings readily derive stimulus relations that are not based on the formal properties of related

events. Stimulus equivalence is perhaps the simplest example, but because equivalence relations can so easily be thought of using existing stimulus class-based concepts from traditional behavior analysis, it can be helpful in promoting understanding to focus on a more complex relation when describing the basic tenets of RFT.

Non-verbal animals can readily be trained to select the smallest or largest object from a stimulus array based on the formal properties of the objects in question. Young children likewise have no difficulty learning such relations. In the pre-school years, however, children begin to apply this comparative relation to events based not on formal properties but based on arbitrary cues to do so. For example, in United States coinage a nickel is formally larger than a dime, but around three or four years of age children generally learn that a dime is larger than a nickel. As this relation is learned, preferences change as well. A young child, having directly experienced that coins can be used to buy things such as candy, will prefer a nickel over a dime because it is larger. A slightly older child will prefer a dime over a nickel. This would be easy to explain if the relative size and relative value was directly learned, but we know that it need not be (Barnes-Holmes, Barnes-Holmes, Smeets, Strand, & Friman, 2004; Berens & Hayes, 2005). Children learn a class of comparative relations that can be applied to any set of relata.

RFT takes the view that what children are learning is an arbitrarily applicable relational operant. Most relational operants are likely established initially with non-arbitrary sets, and then extended to arbitrary ones. In effect, children abstract the relational features of the task itself as it comes under the control of arbitrary relational cues (e.g., terms such as "larger than"). Once formed, relational operants (in this case, comparatives) can be applied to any set of relata, based on social whim or convention. In playing a verbal game with a child, for instance, a nickel can be said to be bigger, smaller, or the same as a dime, or bigger, smaller, or the same as a penny–the comparative relation is based on social provision of the proper cues (e.g., "this is bigger than that"), not relative physical size. A properly trained child will derive all of the coherent relations within a comparative network. For example, if a nickel is "bigger than" a penny and "smaller than" a dime, then the child will derive that a dime is bigger than a penny, and a penny is smaller than a dime, even though physically the reverse is true. Significantly, this relation can then alter other behavioral processes. If the child is motivated by a nickel due to direct experience in using nickels to buy candy, he or she will be more motivated by a dime and less by a penny–without necessarily having used dimes and pennies to purchase items.

In order to think of this kind of performance as a relational operant (i.e., a class of relational responding under antecedent and consequential control), we need a few technical terms to describe the precise performance being learned. By now these terms are fairly well known in the behavioral literature and book length treatments are available (Hayes et al., 2001), but for purposes of this work it is necessary to briefly define the key terms here.

Arbitrarily applicable relational responding (AARR) has three important properties: mutual entailment, combinatorial entailment, and the transformation of stimulus functions. The relational properties are regulated by relational contextual cues ("C_{rel}"); the functional properties are regulated by functional contextual cues ("C_{func}"). These five terms comprise the basic vocabulary of RFT.

Mutual Entailment and Combinatorial Entailment

Given a relationship between two novel stimuli A and B, human beings will typically derive a relationship between B and A. For example, if we teach a human being to pick B from a set of stimuli when A is presented, the human being will now also likely pick A from a set of stimuli if B is presented. This bi-directional quality of relational responding is termed "mutual entailment." Even 16 month old human infants exhibit this response feature (Lipkens, Hayes, & Hayes, 1993). Combinatorial entailment means that if A is related to B, and B is related to C, then A and C are mutually related. RFT researchers have shown that the processes of mutual and combinatorial entailment apply to virtually any specifiable relation, such as "better than," "comes after," "opposite to" and so on (Hayes et al., 2001). For example, a verbally competent person told that A comes before B would derive that B comes after A. Because bi-directionality is not a necessary quality of all sequences of action, it is critical that AARR come under contextual control. In the absence of contextual control, any chain would be inverted for example, leading frequently to disastrous consequences (put on a parachute *before* jumping could be inverted to jumping *before* putting on a parachute). In non-arbitrary relations that contextual control is exerted by the form of the relata themselves (e.g., a child quickly learns that an apple is *heavier than* a sheet of paper). In AARR it is exerted by C_{rel} cues that indicate that a particular form of AARR is likely to be reinforced in a given context. A child who is told that neighbor A's dog is *much more* likely to bite than neighbor B's dog may approach the latter animal more readily than the former.

The Transformation of Stimulus Functions

When stimuli are framed relationally through processes of learned mutual and combinatorial entailment, a change in the function of one stimulus in a network may result in changes in the function of other stimuli modified via the derived relation between them. RFT calls this process "the transformation of stimulus functions." The word "transformation" is necessary because these changes in function are relational, not merely associative. For example, suppose a person has learned the comparative relational network corresponding to the coinage example used earlier: A < B < C. Imagine that B is given a CS function through classical conditioning, such that B is paired with shock and as a result now elicits autonomic arousal as measured by skin conductance. In a proper context that selects this arousal function (C_{func}) we would expect that A will now elicit small amounts of arousal and C will elicit large amounts–perhaps even more than the stimulus directly paired with shock. Indeed, this exact finding has already been demonstrated (Dougher, Hamilton, Fink, & Harrington, 2005). It is also important to understand that transformations of stimulus functions are under contextual control–otherwise when two stimuli were related as the same, the two stimuli would become one. This is not what occurs. We might salivate when we see or hear the word "lemon" but we would not try to eat the word (note, however, that the appropriate contextual control may be absent initially for a young child who may attempts to lick a picture of ice-cream, for example).

Relational Frames

From an RFT point of view, verbal events are events that have their functions because they participate in relational frames. Relational frames are specific classes of AARR that show the contextually controlled properties of mutual and combinatorial entailment and the transformation of stimulus functions, not due solely to formal properties or to direct training with the stimuli involved, but due to a history of such relational responding and the presence of contextual cues that evokes this pattern of responding.

WHY RELATIONAL FRAMES LEAD TO A NEW BEHAVIORAL PRINCIPLE

Relational operants are argued to emerge due to operant contingencies. No new principles are thought to be needed to account for the de-

velopment of relational frames per se. They are said to be "generalized" or "overarching" only in the non-technical sense that these purely functional response classes cannot be defined by the formal or topographical properties of a given instance (thus the metaphor of a "frame"). A number of empirically examined features suggest their operant nature (e.g., development, antecedent control, consequential control, shapability: see Hayes et al., 2001 and Barnes-Holmes et al., this volume), but perhaps the best evidence is the recent demonstration that they can be established through contingencies of reinforcement when they are absent. For example, young children who do not have frames of opposition (Barnes-Holmes et al., 2004) or comparison (e.g., Barnes-Holmes et al., 2004; Berens & Hayes, 2005) can be taught these frames through multiple exemplar training that reinforces specific instances.

What makes relational framing so important for behavior analysis is that it implies a fundamentally new behavioral principle. Consider the experiment mentioned earlier regarding the arbitrary relational network A < B < C. If B acquired an eliciting function directly C may now elicit a greater conditioned response than B by derivation; if B acquired a discriminative function for, say, responding of a given rate, A would lead to lower rate responding and C to higher rate responding (Dougher et al., 2005; for similar studies see Dymond & Barnes, 1995, 1996; Roche & Barnes, 1997; Roche, Barnes-Holmes, Smeets, Barnes-Holmes, & McGeady, 2000 among several others). This means that many of the antecedent, consequential, and motivational functions of such importance to applied behavior analysis, including organizational behavior management, may not be direct as they appear, but instead are the results of an interaction between direct and derived functions.

RFT argues that the process of relational framing is learned. If that is correct, these situations involve a learned behavior (relational operants) fundamentally altering other behavioral processes. No existing behavioral term describes such an effect. For example, while a discriminative stimulus must be learned, the process of discrimination learning is not. If relational frames can establish, augment, or diminish reinforcers, punishers, discriminative stimuli, conditioned stimuli, establishing stimuli, and so on, a new behavioral process has been identified, and it harms the precision of behavior analysis to stretch existing terms to describe it.

This new process does not explain relational framing–it is an empirical implication of it. The new principle is indicated in RFT by the qualifier "relational" or "verbal." For example, the stronger skin conductance response to C than B in an A < B < C network with B being di-

rectly paired with shock is not a CS function. C does not have the history for a classically conditioned function, and stimulus generalization cannot explain why subjects treat it as a stronger CS than the CS directly trained. Instead, C is a "relational CS" or a "verbal CS." (Two terms are used here because both have been used in RFT writings; each has benefits and weaknesses, and the field itself has not yet shown a preference for one over the other. In the rest of this paper, however, we will use the term "relational.")

The empirical evidence for relational operants is by now extensive, covering almost every kind of behavioral function. The literature has demonstrated relational discriminative stimuli, relational reinforcers, relational conditioned stimuli, and relational establishing stimuli, among others (e.g., Dougher, Auguston, Markham, Greenway, & Wulfert, 1994; Dymond & Barnes, 1994, 1995, 1996; Hayes, Brownstein, Devany, Kohlenberg, & Shelby, 1987; Hayes, Kohlenberg, & Hayes, 1991; Roche et al., 2000). Given the ubiquity of human language itself, these findings cause RFT to take behavior analysis into a new, post-Skinnerian era. It is post-Skinnerian in several senses, but what we are referring to here is the way that behavioral thinking must be reworked to include relational operants side by side with the discussion of direct contingencies whenever complex human behavior is considered.

Skinner (1945/1972) claimed that while one could do a scientifically valid analysis of thoughts and feelings, one did not need to do so to understand behavior because the same contingencies that evoked overt behavioral events were responsible for private events. In the case of non-verbal organisms this analysis seems correct, but RFT suggests that it is not correct for verbal organisms. Human language and cognition is not merely another form of contingency-shaped behavior, even though it is itself shaped by contingencies, because human language and cognition operates on other behavioral processes. If such recursive operants exist, due to their spread of application it will be impossible to fully understand human behavior without understanding the derived relations and functional transformations that apply to any given event. For example, suppose a person is being paid for doing a job. It may not be enough to understand the directly conditioned reinforcing effects of the pay received in order to understand performance. We may also need to know what that pay is related to. Does the worker consider it "fair," is it "more than" what others are getting or "more than" what was "expected," does it suggest that the worker is "being bossed around" or is a "management stooge" and so on. The scare quotes put around various terms in the previous sentence are there to indicate some of the many verbal relations

that might alter how pay functions. The Haas and Hayes study (this volume) shows that exact process, in which formal feedback showing that performance is successful makes it less likely for the workers to persist in successful performance. There is little in direct contingency thinking alone that could explain such a process, but it is expected and understandable once relational operants are included in the analysis.

Although relational framing operates on other behavioral processes, this does not mean that relational operants are causes. In behavior analysis all causes must ultimately be outside the behavioral system being analyzed (Hayes & Brownstein, 1986). The reason for this is philosophical. Behavior analysis seeks the prediction-and-influence of psychological events, and it is not possible to influence or change psychological events except by changing the context of action. Thus, unlike traditional mechanistic cognitive psychology, RFT never leads to the conclusion that cognitive processes cause overt behavior. From an RFT perspective, cognitive processes are behavior. Within RFT it is only history and context that creates sequences of actions that alter psychological functions. But, unlike Skinner (1945), RFT suggests that we must account for human behavior by exploring the interaction between two contingency streams: one direct and one arbitrary and relational. Understanding language and cognition thus becomes essential to understanding human behavior generally. If that point is admitted, then behavior analysis itself has fundamentally changed.

While there are clear signs that a tipping point is being reached (indeed this collection is one such sign) it is understandable that RFT has been slow to penetrate behavior analysis. An implication of RFT is that every behavioral finding must be reexamined and potentially reworked as it applies to verbal humans. That is a daunting insight, because it suggests that behavior analysis is much farther away than would be wished from its ultimate goal of providing a relatively adequate account of complex human behavior. It is also exciting, however, since RFT suggests many non-obvious ways to train tasks effectively, to generalize learning, to create more flexible repertoires, and to motivate performance. As these insights have been explored, many of them are producing significant applied gains. Because this extension process is so far relatively narrowly focused, it could be that significant behavioral gains can be achieved in many areas of importance to applied behavior analysis as the implications of RFT are worked out.

ACCEPTANCE AND COMMITMENT THERAPY

Acceptance and Commitment Therapy is the first applied approach based firmly on RFT. It is not our purpose to describe ACT in detail here since several book length treatments are now available (Eifert & Forsythe, 2005; Hayes & Strosahl, 2004; Hayes et al., 1999). Rather, it is being raised here because it shows how RFT can lead into fundamentally new avenues that have proven to be empirically useful, including work in organizational settings or on organizational topics (e.g., Bond, 2005; Bond & Bunce, 2000; Bond & Hayes, 2002; Hayes, Bissett et al., 2004).

Experiential Avoidance and the Spread of Pain

Relational frames allow human beings to have aversive experiences even when there is nothing directly aversive present in the environment. For instance, thoughts about being fired from a past job may be cued by the daily commute, feelings of anxiety, the want ads in the newspaper, briefcases in a store window, a phrase overheard in conversation, or any of thousands of such events that might evoke a relational frame that includes the past job loss. The relational responses, in turn, may occasion various response functions, such as arousal, emotional responses, or sequences of thought. This means that, unlike non-verbal organisms, humans cannot fully control pain by avoiding situations in which some kind of aversive stimulation occurred. Derived stimulus functions can transfer aversive functions to almost any situation.

In self-defense human beings often attempt to regulate negative events by targeting the psychological results because targeting environmental situations is not reliable. In ACT this is termed "experiential avoidance"–the tendency to control the form, frequency, or situational sensitivity of private events even when attempts to do so cause behavioral harm. This coping strategy is one of the most pathological processes known (Hayes et al., 1996) because it means that the person's own history is now a kind of enemy. For example, suppose remembering a past firing is aversive but almost any event evokes the memory. The person might attempt to suppress the thought of the past firing, or to eliminate the sense of pain that comes from that memory. Unfortunately, deliberate attempts to control private events tend, over time, to give them greater functional importance and thus to establish them as more evocative. The relational nature of the verbal rule "don't think about x" is likely ultimately to cue the very thoughts that are being

avoided, since "x" is in a relational frame with the avoided event. Various avoidance methods (e.g., distraction) will reduce the aversive thoughts and feelings, but only for a short time. When the impact of the rule is checked ("is it gone now?") the avoided event is likely to reoccur, meaning that avoidance rules are serving as a C_{func} for x–perversely amplifying the very functions this avoidance rule seeks to reduce. As a result of a kind of behavioral trap, experiential avoidance may ultimately strengthen the relations and functions involving the avoided events in question. Workers may become virtually obsessed with past failures and the rightness or wrongness of their treatment. Stress, burnout, apathy, depression, and poor productivity may be the result.

A large and growing literature shows that experiential avoidance leads to narrow, rigid, and ineffective repertoires (Hayes, Strosahl et al. 2004). This has been shown in a wide variety of contexts, from educational performance to psychological health, but it has also been shown in organizations. Bond and Bunce (2003) measured the keystroke errors made by call center employees and found measures of acceptance, defusion and valued action to be more predictive of accuracy, over one year, than measures of job control, negative affectivity, and locus of control alone. Psychological flexibility was also demonstrated to predict mental health and job performance (as measured by errors as well as self-report) one year later. In the present volume, Bond shows that these processes can even help explain how much workers learn. If it is unacceptable to feel, think, and remember aversive events, then even learning is difficult because attempting to learn new things is awkward, uncomfortable, and subjects one to evaluation. RFT suggests that experiential avoidance is a natural result of human language and cognition that is then exacerbated by the culture. Fortunately it also suggests steps to take to solve this problem, as we will discuss shortly.

"Living in Your Head": The Domination of Derived Functions

Even the simplest verbal problem solving task relies on relational frames. The problem solving sentence "if I do this then I'll get that which is an improvement" contains relational frames of coordination (e.g., "this" is in a frame of coordination with the events it refers to), time or contingency (e.g., "if . . . then"), and comparison (e.g., "improvement"). This idea is similar to Skinner's view of the use of verbal rules ("contingency specifying stimuli") to solve problems (Skinner, 1966). What RFT adds are (a) the processes needed to specify what it means to "specify," (b) the history needed to produce these processes,

and (c) in its emphasis on entailment and the transformation of stimulus function, the precise behavioral implications of such a repertoire.

This repertoire is enormously useful to human beings, but the same verbal abilities that allow human beings to imagine futures that have not been experienced in order to make beneficial choices in the present may also allow pathological events to occur. Humans can respond to imagined fears of the future, or to comparisons between the present and what might have been, or to purely verbal expectations and standards. The transformation of stimulus function properties of language means that evaluations may cause the present to be experienced as negative. One can easily picture reporting satisfaction with one's job until one discovers that the person in the next cubicle makes twice as much for the same work. No properties in the physical environment have changed, but the evaluative frames verbal relations enable quickly allow one to experience one's job as unrewarding, and behavior may change accordingly.

The problem is that language is so generally useful that verbal relations such as these may come to control more and more behavior, even when other sources of behavioral regulation (e.g., direct contingency control) would lead to more flexible and successful behavior in a given context. In ACT this is termed "cognitive fusion"–the domination of verbal regulatory processes over other behavioral processes based on contact with the stimulus functions produced by derived relational responding rather than contact with what is directly experienced. In addition to the kinds of direct contingencies usually studied by behavior analysts, in the area of language and cognition an additional event always directly available to be contacted is the ongoing processes of relating itself. For example, if "X is better than Y" there is a tendency simply to respond to Y as less preferred than X, to the exclusion of direct experiences with either X or Y, and to the exclusion of noticing that what actually happened in the moment was a relational action (to put it into words for the sake of clarification, "now I am having the thought that X is better than Y"). Said more colloquially, RFT supports that idea that humans often begin to "live in their head" and diminish functional contact with the present moment, including contact with ongoing behavioral processes.

RFT suggests that experiential avoidance and cognitive fusion are likely to be pervasive but also detrimental because the repertoire that results is narrow, rigid, and relatively unsuccessful. This presents a conundrum because even if it were possible to eliminate these language processes, it would not be desirable because it is these very same processes that enable human abilities like problem solving.

Solving the Problem of Language

Acceptance and Commitment Therapy incorporates techniques designed to solve the problems that runaway language functions present. By recontextualizing language and cognition, ACT can alter the functions of human private events, promoting more psychological flexibility.

Cognitive defusion. Because of the way language functions, derived relations structure the stimulus functions of the environment, but often without people noting the process through which this transformation occurs. ACT techniques target the way human beings relate to language, so that the process of language becomes more evident and the content of language becomes somewhat less important. This is called "cognitive defusion." In technical terms, cognitive defusion is a C_{func} technique, not a C_{rel} technique, which is designed to alter the functional importance of language and cognition in given contexts, even when the relational network remains intact.

One such technique is the *Milk, Milk, Milk* exercise, taken from Titchener (1916, p. 425). In this exercise, participants discuss all the perceptual properties that are brought up by saying the word such as its color and texture, taste, etc. Participants then say the word out loud, rapidly and repeatedly for about 45 seconds. In this short time the meaning of the word disintegrates and participants are mostly noticing a sound. This exercise is usually repeated with a word more relevant to areas of concern; in the workplace something like "dumb" or "deadline" might be appropriate. The exercise is designed to reduce the transformations of stimulus functions that occur routinely in human language without having to change the form or eliminate the presence of specific verbal events. The data suggest that this is exactly what happens as a result of the procedure (Masuda et al., 2004)

Scores of defusion procedures have been developed. Unlike cognitive therapy, which seeks to change the form of difficult thoughts but often seems only to make them more impactful, ACT undermines the domination of human thought when thought is not helpful, so that direct contingencies can begin to exert more control over behavior.

Acceptance. RFT suggests that verbally able beings will experience some private events as aversive, even in the absence of anything aversive in the environment. Furthermore, it suggests that the nature of language is such that it is possible for many things to cue these aversive private events, and attempts to suppress them are likely to be unsuccessful.

ACT teaches clients to accept difficult feelings instead. This undermines their behavior regulatory effects, and diminishes the self-amplifying avoidance rules that prevent exposure, and paradoxically increase the importance of painful emotions. A wide variety of acceptance methods are trained: people are taught to notice specific bodily sensations and to feel them deliberately; they learn to note related events that "come to mind," and they learn to seek out rather than to avoid exposure opportunities.

To ask people to accept thoughts like "I'm going to have a heart attack if I keep working here" without defusion would not be helpful because in effect, that would be asking someone to accept the reality that his or her job will cause a heart attack. In a context where the literal functions of language have been loosened, however, accepting difficult private experiences may be possible and useful. ACT asks participants to accept events as they are, not as they say they are, meaning that it facilitates the experience of difficult thoughts as difficult thoughts, not as reality.

Values. Although much of ACT addresses the detrimental elements of language and cognition, ACT also supports the development of verbally constructed contingencies that are likely to have significant positive impact on behavior. RFT suggests that human beings are able to construct verbal futures that can alter the function of a myriad of other events they are related to, and ACT can utilize this property of language to change the functions of tasks. It does so by emphasizing the human ability to link current behavior to desired global qualities of ongoing actions (e.g., being an honest or loving person). In a word, ACT teaches people how to use values.

Language and cognition allow human beings to work for verbally constructed futures that have never occurred, and thus they can be utilized to create behavior even when consequences are very distant or have never been experienced. Someone who volunteers for a non-profit organization that works to promote world peace or environmental improvement, is not doing it to get paid and the work *per se* may not be reinforcing. What is important is that the work is about something–that is, it fits into an unfolding pattern of progress toward a verbally specified future.

ACT distinguishes between concrete goals, which are achievable and obtainable, and values, which can only be instantiated as a quality of an ongoing action. This discrimination is useful in that values can guide behavior for an infinite length of time–they are never achieved, they only apply to actions in the moment. For instance, a person may choose

to value positive and supportive relationships with co-workers, but this is never achieved in a final way. One would have to make choices with regard to this value every day at work. People may create verbal goals that can be worked for and achieved as part of a valued direction, but values continue to define new goals.

Distinguishing values and goals and defining values may also change the context in which individuals evaluate their work. Although it seems likely that values play a role in the jobs people select initially, individuals may lose contact with what they value in their work over time as they evaluate actual events against the specific verbal futures (goals) they construct within those values. For instance, one might become a lawyer because one valued fair treatment for other human beings. One might then take a job one believed would serve these ends, but might soon see that justice often does not prevail. If the job is all about goals this could be very discouraging, but if it is about values the achievement of justice in an individual case is not the only issue: Reinforcement may be achieved by behaving in accord with one's value (i.e., working hard to achieve justice as a value even if one sometimes fails in particular cases), rather than always having to achieve a specific goal (i.e., justice in every case).

When cognitive defusion work has recontextualized some of the verbal barriers to valued action, ACT exercises allow the construction of new valued futures. In the example mentioned above, defusion work would be important at the level of verbal barriers that took the form of thoughts like "I can't enjoy my work because the justice system doesn't work." Workers may often experience their organizations as valuing different things than they value, and defusion from verbal constructions around this perceived conflict creates a context where new relationships to work can be formed. Verbal relations that can be more powerful in motivating behavior can be constructed at the level of the individual and in the relationship of the individual to the organization. In almost any organization and position, people have many opportunities to serve something they might choose to value; for example, concepts like contribution or relationships with co-workers would be possible values in most jobs. In addition to clarifying individual values with regard to work, ACT interventions can involve participants in constructing what they value together as an organization. Aligning individual and organizational values in this manner can situate individual values in the context of organizational values such that they are experienced as supporting and augmenting each other, rather than competing. This construction of organizational values will unite individuals within an

organization around helping their organization function in accord with valued ends. It may also facilitate their perception of individual and organizational values alignment.

Example of the Application of ACT: Job Stress and Disability

One of the most common complaints people may voice about jobs is that they are stressful. A survey by Yale University reported that 29% of workers reported feeling "quite a bit or extremely" stressed at work (Barsade, Wiesenfeld, & the Marlin Company, 1997). Stressors such as a lack of job control, poor social support, role conflicts, and work overload are reliable predictors of a variety of undesirable psychological and behavioral results, including anxiety, decreased productivity, and absenteeism (e.g., Cox, Griffiths, Barlowe, Randall, Thomson, & Rial-Gonzalez, 2000). Furthermore, the reported experience of stress may predict a number of other health and work related problems.

Individuals generally consider situations stressful when they evaluate them as threatening their well being because they overwhelm their available resources (Folkman & Lazarus, 1988). This conceptualization offers two possible targets for stress, the stressor and the evaluation of the stressor. The nature of language is such that the second target is often overlooked when interventions for stress are sought. By addressing cognitive fusion, however, ACT may allow for reductions in reported stress even when changes to the organizational environment are impossible. ACT argues that thoughts like "I can't cope with this job anymore" don't need to change to reduce stress, rather only the context in which these thoughts are held needs to change, and cognitive defusion techniques aim to do this.

This conception was tested in a group-based ACT intervention implemented in a media organization. The intervention was delivered in the form of three 3-hour sessions, two on consecutive weeks, which introduced the techniques, and one 3-months later which was intended to address any difficulties participants had experienced after implementing the new strategies. As compared to a wait list control and to training in taking behavioral steps to control sources of stress in the workplace, ACT was shown to better improve general mental health and reduce stress and depression. Interestingly, it increased actual workplace innovation as much as the previously validated behavioral intervention with that target (Bond & Bunce 2000; Flaxman & Bond, 2005). Increased acceptance, defusion and valued action were demonstrated to be the processes resulting in these positive changes. They were also shown to

account significantly for medium-term changes in a cognitive therapy worksite intervention (Flaxman & Bond, 2005), which suggests one important reason why cognitive change interventions may actually work.

Similarly, a one day, 6-hour ACT intervention with drug and alcohol counselors resulted in lower job burnout among counselors three months later, as well as higher reported levels of "sense of personal accomplishment" in their jobs (Hayes, Bissett et al., 2004). The ACT intervention also significantly decreased the counselors' negative stigmatizing beliefs about clients, and process analysis demonstrated that defusion from negative thoughts about difficult clients was the process by which positive changes occurred.

In another related study, a 4-hour ACT intervention with workers at risk for permanent disability due to pain and burnout resulted in only a few missed days in the ACT group over six months, versus almost nearly 20 times that in the treatment as usual group (Dahl, Wilson, & Nilsson, 2004). Comparable results have been found for workers on sick leave related to depression (Folke & Parling, 2004). Thus, ACT is already known to be relevant to organization issues such as burnout, stress, disability, and sense of accomplishment.

LOOKING TO THE FUTURE

While RFT interventions are already having a significant impact, the present volume shows that the surface has just begun to be scratched. In this work we will consider such issues as goal setting, feedback, task descriptions, and workers' ability to learn as examples of some of the organizational phenomena that can be addressed using RFT. In fact, RFT potentially has implications for any complex form of human behavior that may involve verbal processes.

RFT provides a technical analysis that makes sense of many of the empirically supported ideas in I/O psychology and general psychology, but without requiring the abandonment of the core principles of behavior analysis. Because of this feature, adopting an RFT account facilitates the utilization of behavior analytic research outside of behavior analysis and more communication between behavior analysis and other areas of psychology. This is already evident with ACT, in that cognitive theorists and therapists have found a great deal to discuss in ACT (e.g., Ellis, 2005). Independent of other areas of psychology, RFT is also a generative source for enhancing current interventions and creating new ones. Involving an RFT analysis of verbal behavior connects OBM to a

clinical behavior analytic tradition with diverse implications for intervention in a setting comprised of verbally able humans. For all of these reasons, RFT seems likely to enhance OBM. As this collection will help show, it is already the case, even though these implications have just begun to be explored.

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Psychological Flexibility, ACT, and Organizational Behavior

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SUMMARY. This paper offers organizational behavior management (OBM) a behavior analytically consistent way to expand its analysis of, and methods for changing, organizational behavior. It shows how Relational Frame Theory (RFT) suggests that common, problematic, psychological processes emerge from language itself, and they produce psychological inflexibility. Research suggests that an applied extension of RFT, Acceptance and Commitment Therapy, has led to new interventions that increase psychological flexibility and, thereby enhance, organizational behavior and health. doi:10.1300/J075v26n01_02

KEYWORDS. Relational Frame Theory, organizational behavior, organizational development, psychological inflexibility, Acceptance and Commitment Therapy, individual differences

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INTRODUCTION

Organizational behavior (OB) is the study of human behavior within an organizational setting. Organizational behavior can be thought of as a function of three domains: organizational characteristics and contingencies (e.g., structure, processes, strategy, and culture), job characteristics and contingencies (e.g., job autonomy, skill variety, team working), and the larger set of individual characteristics and history brought to bear on the work situation (e.g., "personality," mental health, social repertoire). The aim of OB is to obtain and/or apply knowledge of these different types of characteristics, in order to make an organization more effective (Robbins, 2005).

The focus of this paper is on the individual repertoire and history that impacts on work performance, as seen from a modern behavior analytic account of human language and cognition. Such an emphasis is fairly novel for organizational behavior management (OBM), as OBM has historically avoided private events as a useful target for intervention (e.g., Daniels, 2000). Other psychological perspectives have had a different view, however, and they have developed widely used strategies that attempt to manipulate such events, in order to make people, groups, and hence organizations, more effective (see DeBoard, 1978). In discussing individual characteristics derived from behavior analysis, we hope to suggest a way in which OBM can expand its reach into the cognitive and emotional world of humans but in a way that fits with behavior analysis as an applied and research tradition.

The wider discipline of organizational behavior has always emphasized the importance of individual characteristics to organizational effectiveness, but they have often approached these events mentalistically. Beginning in the 1940s, Wilfred Bion and colleagues used psychodynamic theories of unconscious processes (particularly repression and projective identification) to suggest structural and procedural characteristics that might bear on organizational effectiveness (see De Board, 1978). As a result of their early start and popularity, psychodynamic theories became central in shaping OB theory and, hence, the design of organizational development (OD) interventions that are still widely used today. Consistent with a psychodynamic perspective, a primary purpose of these interventions was to make people's unconscious behaviors, feelings, and observations conscious (De Board, 1978). For example, training groups (or T-groups, encounter groups, sensitivity training) were one of the original OD interventions rooted in psychodynamic theory. Their aim is to make participants more skillful

in identifying and carrying out the behaviors needed to do their job, by increasing participants' awareness of how they react to others and how their reactions affect other people.

Many of the well-known OD interventions even today (e.g., T-groups, survey feedback, process consultation, team building) are based on the idea of helping workers to bring their internal processes into consciousness: be they perceptions, attitudes, the interpersonal effects of behavior, or the impact of workplace events. The psychodynamic principles that generated these interventions may no longer be mentioned in most OB textbooks, but the techniques that they inspired still remain firmly entrenched (e.g., Moorhead & Griffin, 2001; Robbins, 2005).

Not surprisingly, the applied behavior analysis (ABA) and OBM literatures do not commonly deal with OD interventions of this kind and do not advocate their use (e.g., Daniels, 2000). These intervention techniques are difficult to interpret from the point of view of direct contingency management, which is the bedrock of OBM (e.g., Daniels, 2000; Rummler & Brache, 1995). However, as is noted in Hayes et al. and Stewart et al. (this volume), Relational Frame Theory (RFT; Hayes, Barnes-Holmes, & Roche, 2001) makes ABA and OBM better able to address such techniques and furthermore specifies manipulable events that can be used to alter the functions of these verbal processes. In doing so, RFT is not suggesting that cognition, emotion, or other private actions are causal (Hayes & Brownstein, 1986), rather, it is maintaining that the historical and current contextual events that regulate verbal behavior need to be considered, in order to understand and influence overt human action. Such a view leads to unexpected and empirically testable predictions, which in turn open pathways for OBM to expand its influence in OB and OD. The early research, based upon RFT, suggests that by effectively manipulating these historical and contextual processes, people may be more amenable to the contingency management applications that OBM has identified, which could serve to enhance the successes of those strategies.

THE NATURE OF PSYCHOLOGICAL FLEXIBILITY

In the previous article, in this collection, we argued that RFT suggests that common, problematic, psychological processes are built into language itself. In this article, we will describe in more detail the elements of this unhelpful, contextually controlled pattern of behavior, and we will illustrate more useful behavioral patterns that are promoted

through Acceptance and Commitment Therapy (ACT; Hayes, Strosahl, & Wilson, 1999). ACT is one of the primary interventions that is designed to undermine those problematic processes and to establish healthier and more effective ones.

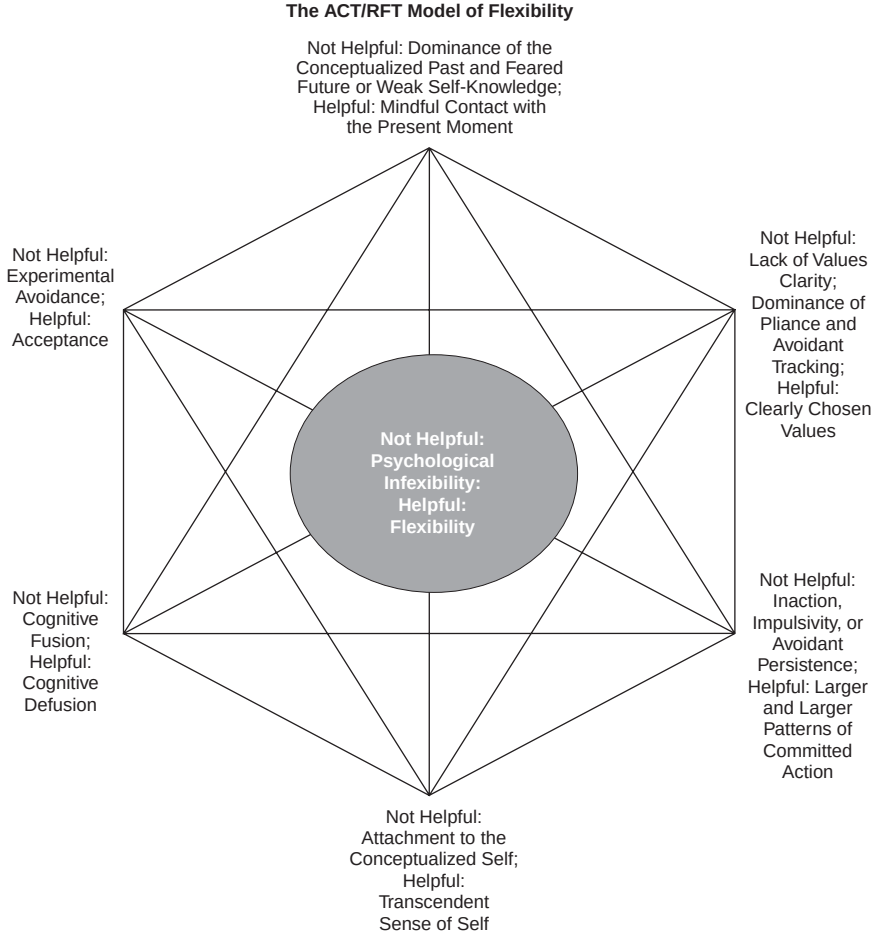
A model of human effectiveness and ineffectiveness is shown graphically in Figure 1. The nexus of this model is *psychological flexibility*, which is defined as contacting the present moment as a conscious human being, and, based on what that situation affords, acting in accordance with one's chosen values (Hayes, Strosahl, Bunting, Twohig, & Wilson, 2004). We will unpack this definition behaviorally in the sections that follow. As we will discuss, flexibility guides people in persisting with *or* changing their actions, in accordance with the values-based contingencies that they contact, when they are willing to experience the present moment. To examine this concept, we now discuss the six key processes that are involved in psychological flexibility or inflexibility.

Cognitive Defusion

As was described in the introductory article for this collection (Hayes et al.), the general utility, relational nature, and arbitrary applicability of human language tends to strengthen and broaden the behavior regulatory role of language and cognition in too many contexts. The social verbal community arranges contexts of literal meaning by treating relata as if they "stand for" related events. This has complex effects. For example, we can refer to events on the one hand, but on the other, fearful thoughts can elicit fear. These literal contexts are further strengthened by demands for verbal reasons, by the language of emotional and internal control, by the ubiquity of contingencies that support say-do correspondence, by the importance of coherence and "being right" as a generalized reinforcer for verbal and cognitive actions, and by the general utility of relational framing, especially temporal (e.g., if . . . then relationships) and evaluative (e.g., "that is bad") frames in problem solving, among other factors. Cognitive fusion is the result. *Cognitive fusion* refers to the domination of verbal stimuli in the regulation of behavior, to the detriment of other needed sources of behavioral regulation, based on the failure to notice the on-going, contextually controlled relational processes that give rise to these dominant verbal stimuli.

The inverse of cognitive fusion is cognitive defusion. In RFT terms, this involves altering the functional context (C_{func}) of verbal events so that an ongoing relational process (e.g., the relational actions that estab-

FIGURE 1. The ACT/RFT Model of Psychological Flexibility and Inflexibility



lish the verbal meaning of events) is noted in the moment and C_{func} control is altered or diminished. For example, in the context of defusion, people may notice their thoughts or feelings and evaluate them as negative (a relational process), but these thoughts and feelings no longer evoke life restricting avoidance (i.e., the function of that relational network has changed). Cognitive defusion is a key component of a behavioral interpretation of what is usually termed "mindfulness" (Fletcher &

Hayes, in press). In essence, defusion involves techniques that increase one's observation of relational operants (e.g., temporal or evaluative relations), as they occur in the moment, as a method of diminishing the behavior regulatory impact of stimulus events as structured by that relational action.

In part, as a result of cognitive fusion, private experiences become entangled in temporal and evaluative relational networks and are needlessly targeted for change. Because various thoughts, feelings, bodily sensations, memories and so on can be predicted and evaluated, these behavioral bystanders to effective action themselves become the central targets for change. The resulting pattern of experiential avoidance (Hayes et al., 1996) means that needless time and energy is put towards trying to think, feel, remember, and sense the "right" or "good" things as opposed to the "wrong" or "bad" things. Unfortunately, this very effort is rule-governed (e.g., "if I do this, then I will not think that") which means that the process regulating change efforts in this area contains stimuli (e.g., verbal descriptions of feared consequences, descriptions of difficult feelings) that tend to relationally evoke the very events that the rule is meant to eliminate or reduce.

Thus, for most people, the internal events that most profoundly constrain our psychological flexibility are ones that we do not want to experience: unhappy memories, unpleasant thoughts, scary feelings. These often rapidly, comprehensively, and automatically divert our responding away from the present moment and towards getting rid of, changing, or minimizing these unwanted internal events. Such inflexible responding to these types of experiences is unlikely to promote values based action in a situation, as it cannot come under sufficient control of the current situation. To act more flexibly with regards to these unwanted psychological events (i.e., to "let them go" *or* delve into them, depending upon what best serves one's values in the situation), people can respond to them with acceptance, which interacts with defusion to help undermine the domination of verbal stimuli in determining behavior.

Acceptance

Another of the six processes of flexibility, acceptance involves contacting the automatic stimulus functions of psychological events, without acting to alter (e.g., change, minimize, avoid) those functions (Hayes, 1994). In promoting acceptance, ACT argues that no matter how toxic one's private experiences might be (e.g., "I can't cope with this," "I'm useless at my job," panic attacks), it will not directly lead to

mental illness and poor performance. Rather, it is only when people hold this unhelpful content in a specific context that it will have harmful emotional, physiological, behavioral, and cognitive effects. This harmful context is one in which people (1) are *cognitively fused* with, or (as just discussed) completely buy into, the literal meaning of their cognitive content (e.g., "if I have the thought, 'I am a fool,' then I am really a fool"); that is, they cannot see this content as an essentially automatic, idiosyncratic reaction to certain types of events; and (2) they *avoid the experiences* that are occasioned by their relational actions (e.g., anxiety) (Bond & Hayes, 2002).

A key aim of ACT is to break down this context of cognitive fusion and experiential avoidance so that people's actions are not primarily regulated by inflexible derived relational responding, but more by contact with ongoing, direct contingencies of reinforcement linked to human values (Hayes et al., 1999). To this end, ACT shows people how to contact their psychological content in a context of defusion and acceptance: wherein, people merely notice (i.e., do not engage in an attempt to control) their thoughts and feelings as a continuous flow of psychological material; and they are willing to observe even their painful material without needless escape or avoidance. In this context of defusion and acceptance, people treat their thoughts, feelings, memories, and physiological sensations as automatic chatter, or more technically, as the ongoing classically and operantly conditioned responses that they are.

The two processes of psychological flexibility discussed so far involve undermining the behavior regulatory domination of human language and cognition. The next two processes involve changes in how events are known.

Contact with the Present Moment

Cognitive fusion does not merely lead to inflexibility and avoidance. It also entangles people in temporal and evaluative relational frames. This makes sense, as relating conceptual events in these ways are central to all forms of human verbal problem solving; but, on the downside, it means that humans increasingly lose contact with the present moment: both in terms of flexible contact with the immediate physical and social environment, as well as contact with one's own psychological reactions. Defusion and acceptance help to foster such contact, and they are aided to this end by procedures that expand the range, sensitivity, depth, and purposive regulation of stimulus control processes so that

people can better "attend" to broad or narrow ranges of stimulus events, as the current context demands. This increase in contact with the present moment is the third key feature of psychological flexibility.

Self-as-Context

The fourth aspect involves contact with a transcendent sense of self. ACT and RFT are both based on the idea of expanding the meaning of self-awareness from a behavior analytic perspective (Hayes, 1984). Skinner defined self-awareness in terms of a kind of behavioral reflexivity:

> There is a . . . difference between behaving and reporting that one is behaving or reporting the causes of one's behavior. In arranging conditions under which a person describes the public or private world in which he lives, a community generates that very special form of behavior called knowing . . . Self-knowledge is of social origin. (1974, p. 30)

In Hayes (1984), it was argued that reports of behavior (e.g., stating what one sees, hears, does) must be from a consistent viewpoint (e.g., one's own perspective or another person's perspective) in order to be useful to the social/verbal community. Several sets of contingencies were described to account for the emergence of this consistent perspective:

> First, words such as "here" and "there" are acquired which do not refer to a specific thing but to a relation to the child's point of view. . . . Second, children are taught to distinguish their perspective from that of others. . . . and finally . . . a sense of locus emerges by a process of elimination or by metaphorical extension. Suppose a child can give correct answers to the question "what did you x?" where "x" is a wide variety of events such as eat, feel, watch, and so on. The events constantly change. In our terms, the seeing and the seeing seeing change. Only the locus does not. Thus, the one consistency between the word "you" in such questions and behavior is not seeing or seeing seeing but the behavior of seeing that you see from a particular locus or perspective. Thus, in some real sense, "you" *are* the perspective. (pp. 102-103)

This analysis clearly anticipated the development of the concept of deictic frames (those based on demonstration from the point of view of a speaker such as I/You or Here/There) in RFT research. Deictic relational frames lead to "I/HERE/NOW" as an important sense of self. Conceptual and empirical work on deictic frames and sense of self has expanded both in RFT and ACT laboratories (Barnes-Holmes, Hayes, & Dymond, 2001; Barnes-Holmes, Hayes, & Gregg, 2001; McHugh, Barnes-Holmes, & Barnes-Holmes, 2004). In the definition of psychological flexibility given earlier, "consciously contacting" the present moment refers to contact made in the context of "I/HERE/NOW."

This sense of self is important for acceptance and defusion, because it is a perspective that is stable, and such stability and security can help people willingly to experience difficult cognitive content (e.g., fear). This stable sense of self can be experienced as "transcendent" or "spiritual," because the limits of this deictic repertoire can not be consciously contacted by the individual engaging in it (Barnes-Holmes, Hayes, & Dymond, 2001; Barnes-Holmes, Hayes, & Gregg, 2001; Hayes, 1984; Hayes, Wilson, & Gifford, 1999). Thus, this sense of self makes moments of psychological flexibility (e.g., persisting even when doing so creates discomfort) less aversive and threatening, and thus more likely.

Conversely, inflexibility is fostered by attachment to a conceptualized self: the rigid network of verbal relations that are *about* an individual, particularly those events that are evaluative, dispositional, or predictive. A conceptualized self is something to be right about and so the verbal network must change before flexibility is possible. Unfortunately, many of the events in a network of self conceptualization are not changeable. For example, the thought, "I was victimized by my mother and I'll be damned if I will let my boss do it again," suggests that a resolution requires either a new boss or a new childhood, neither of which is likely.

The purpose of psychological flexibility is to allow individuals to contact, take in, and evaluate their current circumstance, so as to act *effectively* in that situation. We must define "effective" from an ACT perspective and in doing so, we specify the two remaining key processes that constitute psychological flexibility.

Values

In ACT/RFT, values are defined (Hayes, Strosahl, Bunting et al., 2004) as chosen qualities of action patterns (e.g., being a good manager and partner) that people can work toward, but that they cannot arrive at

once-and-for-all (i.e., people have to work constantly at being a good worker and partner or they cease to be one). As such, values involve verbally constructed contingencies that function as formative and motivative augmentals (Hayes et al., 1999). To the extent that people act according to *their* chosen values, they are living an effective life, *for them*. Thus, in accord with the functional contextual philosophy of science that underlies both ACT and RFT (Hayes, 1993), judgments regarding personal workability and effectiveness need to be made against *a priori* statements of values.

As suggested by the inter-relations among the six processes (as shown in Figure 1 and discussed below), defusion, acceptance, and so on are not ends in themselves. Rather, they appear to help people to see situations more clearly and to be more flexible in acting in accordance with their values. Thus, living a valued life provides the raison d'etre for defusing, accepting and contacting the present moment as a conscious person. All of these processes are mutually facilitative: they are aspects of a larger behavioral pattern, namely, psychological flexibility.

In the absence of values, purposive action tends to be dominated by pliance and counter pliance (e.g., being right or looking good in the eyes of others), or by avoidant tracking and seeking primary reinforcers, even if doing so is not in one's long term interests. Such contingencies contribute to psychological rigidity and inflexibility, and they are more likely to guide people's actions, when their values are vague and poorly articulated (Bond, 2004). An important goal of ACT, therefore, is not only to promote acceptance and defusion and, hence, contact with the present moment as a conscious person; but, it is also to have individuals, and indeed organizations, clarify and specify their values. When people do not behave according to their values, they risk denying themselves contact with positive reinforcers that foster good mental health, and effective action in a given context, such as work (Bond, this volume). Reinforcement deprivation often results when people avoid difficult psychological experiences and the values-consistent actions that occasion them (Wilson & Blackledge, 1999), and thus once again all aspects of this model interrelate.

Committed Action

Finally, ACT encourages the development of larger and larger patterns of values-driven action, since it is only as larger units are developed that self-control emerges (Rachlin, 2002). Generally this is done through processes that are familiar to those in OBM: the development of

concrete goals in specific areas and behavior linked to those goals that are more involved, broader, and longer term. The goal is to construct behavioral patterns that begin to work for individuals, not against them.

Each of these six processes relates to, and interacts with, all of the other processes, as is represented by the lines connecting all points in Figure 1. Some of these relations involve shared functional properties: the three vertical lines are all of that kind. Acceptance and defusion both undermine destructive language processes; self as context and contact with the present moment both involve increasing effective contact with the here and now; values and committed action both involve building out the positive aspects of language into patterns of behavior change. These six processes can also be chunked into two larger groups: acceptance and mindfulness processes involve the four processes to the left of Figure 1, while commitment and behavior change processes involve the four to the right.

PSYCHOLOGICAL FLEXIBILITY AND ACT AT WORK

Psychological flexibility, and its promotion through ACT, has primarily been discussed in terms of mental health (see Hayes & Strosahl, 2004); however, the implication that flexibility may help people be sensitive to, and contact, contingencies of reinforcement that bear on chosen values makes its usefulness to the work setting clear. If people value doing well at work (even if it is just to get paid), then greater psychological flexibility increases their sensitivity to performance-related contingencies of reinforcement in their work context, since they have more responses available for contacting these contingencies. Put more succinctly, in the context of work, flexibility allows people to learn how to do their job more effectively and to have better mental health (in particular, through greater contact with values-centered contingencies of positive reinforcement) (Bond, this volume). As we now discuss, research is beginning to examine, and its findings support, the hypothesis that this individual characteristic can inform organizational behavior.

In the introductory article of the present work, we summarized the positive results from a worksite-based randomized study on the impact of ACT on stress, mental health, and worker innovation (Bond & Bunce, 2000), as compared both to a wait-list control group and a behavioral training program that taught workers how to reduce stressors at work. Consistent with the ACT model, process analyses demonstrated that ACT produced its improvements by increasing psychological flexi-

bility, not by changing the content of people's thoughts (i.e., from "I'm worthless" to "I am a capable person"). Indeed, there was no significant pre-test/post-test change for the ACT group in terms of cognitive content. We also reported similar results for a randomized controlled trial that targeted burnout in drug and alcohol counselors (Hayes, Strosahl et al., 2004), and for other studies in occupational health (Dahl et al., 2004; Folke & Parling, 2004).

We have conducted a number of additional ACT-related trials that are relevant to OBM interests. None is yet published, and some are not even presented, but given the purposes of the present volume it seems worth summarizing what has been found.

In one study, 60 drug and alcohol counselors were randomly assigned either to a six-hour ACT workshop or to six hours of training on current policies in employee assistance programs (Varra, Hayes et al., 2005). The next day, both groups were put into a six hour workshop on evidence-based treatment practices in drug addiction, focusing particularly on advances in pharmacotherapy. At the end of the second day, those in the ACT group admitted to significantly *more* barriers to implementing these treatments (e.g., co-workers would not approve), but they literally believed these barriers to a significantly lesser degree, and they were significantly more willing to try the new procedures. At a three month follow-up, those in the ACT condition reported a large increase in referrals of their clients for treatment by empirically-supported pharmacotherapy while the control subjects did not. In other words, ACT made these workers more willing to learn and in fact later to use what they had learned.

In a second study (Pierson, Hayes, & Gifford, 2004), the same approach was taken for training drug and alcohol counselors in Motivational Interviewing (MI). In this study, all participants received a day long MI workshop, but it was preceded by one of three courses: a half day ACT workshop, a workshop designed to increase therapists' motivation, or by a control course focused on recent developments in the treatment of substance abuse. In this study, actual behavioral measures were taken of the learners' ability to competently conduct an MI interview, pre, post, and at a three month follow-up. Relative to the control condition, those in the ACT group conducted such an interview more competently at post and follow up, and further, they did not do so by allowing ACT concepts to slip into their MI intervention (Pierson et al., 2005).

A study by Bond (this volume), discussed briefly below, also showed that workers higher in psychological flexibility were subsequently

better able to learn; in this case, a new computer program that was important in carrying out their job. In addition, those people higher in flexibility had better mental health and more often met or exceeded their work performance targets.

In another study, drug and alcohol counselors were given a continuing education workshop on an empirically supported group therapy approach and then were randomly assigned to an acceptance-focused supervision condition to help participants overcome emotional barriers to using the newly learned method, or to a no treatment control group (Luoma et al., 2005). Those in the acceptance-focused supervision condition showed significantly higher levels of adoption of the new treatment method at a three month follow-up than did those in the control condition.

To investigate further how ACT may produce benefits such as these, Bond and Flaxman (2005) compared the effectiveness of two worksite interventions against a waitlist control group. One of the interventions was an ACT program and the other was a cognitive-behavior therapy (CBT) program that attempted to change the form and frequency of people's unwanted or negative cognitive content. Three month follow-up results indicated that both ACT and CBT significantly improved people's mental health, but, consistent with these distinct approaches, they did so principally through different mechanisms: by improving psychological flexibility and reducing negative cognitive content, respectively. This study, along with one by Flaxman and Bond (2005), found evidence that, from post-test to a three month follow-up, ACT also reduced the frequency of negative cognitions. However, this reduction in frequency did not function as a meaningful mechanism of change (which would be predicted by ACT and RFT).

Taken together, all of these studies suggest that worksite ACT interventions make employees not only more healthy but more willing and able to learn and perform effectively. It does not seem to matter whether or not what is learned is, itself, similar to ACT. Motivational Interviewing seems somewhat similar, but group therapy, learning a new computer program, and referring for pharmacotherapy are not. Furthermore, ACT appears to produce its beneficial effects, as a result of increasing psychological flexibility and not by reducing negative cognitive content (even though this does decrease, as a byproduct).

There is also evidence from panel studies for the importance of acceptance and values-based action in the workplace. Using the Acceptance and Action Questionnaire (AAQ; Hayes, Strosahl et al., 2004) as a measure of psychological flexibility, Bond and Bunce (2003) showed

that higher levels of this individual characteristic predict, one year later, better mental health (using self-report) and improved job performance (using objective, behavioral measures) among telephone call-center operators in a UK financial organization. This effect was seen even after controlling for three other variables that are traditionally linked to work-related mental health and performance: locus of control, negative affectivity (Jex, 1998), and job control (Terry & Jimmieson, 1999).

Theories of occupational health and performance (e.g., Emery & Trist, 1960; Frese & Zapf, 1994; Hackman & Lawler, 1971; Karasek, 1979), and the research that investigates them (see Terry & Jimmieson, 1999, for a review), identify the importance of job control in encouraging effective performance and health. Job control is defined, herein, as a perceived ability to exert some influence over one's work environment in order to make it more rewarding and less threatening (Ganster, 1989). Findings from this study (i.e., Bond & Bunce, 2003) suggested that greater levels of psychological flexibility at Time 1 increase the association between higher levels of job control at Time 1 and better mental health and performance one year later at Time 2.

This strengthening effect for flexibility is consistent with our hypothesis that this behavioral pattern increases performance, learning, and mental health (Bond, this volume). Workers with more flexibility may be better able to notice the degree to which they have control in a given situation (i.e., be more sensitive to such contingencies of reinforcement); this greater defusion and acceptance also mean that they have more responses available for contacting these contingencies, because they are not very avoidant; thus, psychological flexibility helps people to use the job control that they have to enhance their performance, mental health, and ability to learn at work.

A longitudinal study by Bond (this volume), mentioned above, tests more directly the hypothesis that psychological flexibility enhances both performance and learning. In particular, job control and flexibility (measured using the AAQ) were assessed immediately preceding a one week training program (Time 1) that taught call centre employees how to use an entirely new software system that they would, thereafter, need to use to accomplish their work: processing customer applications, requests, and accounts. How well they mastered this software was assessed one month after the training program (Time 2) when they had to use it, in a formal testing environment, to solve a complicated, mock customer account problem. Results at Time 2 showed that employees with greater levels of psychological flexibility and job control at Time 1: learnt to use the software more successfully (as assessed by the test);

more often met or exceeded their performance targets over the previous month; and, had better levels of mental health. In addition to these main effects, these two variables significantly interacted; such that, higher levels of flexibility enhanced the learning, performance, and mental health benefits that greater levels of job control produced.

Findings from the studies just discussed suggest that psychological flexibility is linked to important aspects of organizational behavior (e.g., job performance, mental health, learning). Given this, it is encouraging to know that we can enhance this behavioral pattern in a work environment, and it will have beneficial impacts on organizational behavior (Bond & Bunce, 2000; Bond & Flaxman, 2005; Flaxman & Bond, 2005; Hayes, Bissett et al., 2004). How we can do this is discussed below. First, however, we want to distinguish flexibility from other individual difference variables that are often mentioned in the OB canon.

PSYCHOLOGICAL FLEXIBILITY AND OTHER OB RELEVANT INDIVIDUAL CHARACTERISTICS

There are a number of individual characteristics that are far more established in the OB literature than is psychological flexibility. Even the relatively recent concept of emotional intelligence can already be found in key OB text books (e.g., Robbins; 2005). There are two reasons, though, why we believe that flexibility informs OB, over and above these more recognized variables.

First, there is a growing amount of research that shows its ability to predict outcomes after controlling other individual characteristics that are relevant to the health and success of organizations. Second (and perhaps most importantly), its roots in functional contextualism and behavior analysis, which emphasize the prediction *and* influence of behavior, make it particularly useful for developing OB interventions. We discuss both reasons, in turn.

Incremental Validity of Psychological Flexibility

A plethora of individual characteristics are thought to impact people's ability to work effectively. Some of the most ubiquitous ones are type-A behavior pattern, locus of control, negative affectivity, emotional intelligence and the proposed five factors of personality, amongst others (see Chamorro-Premuzic & Furnham, 2005). If psychological

flexibility is an important determinant of health and productivity at work, it must be shown to have incremental validity over these stalwarts of OB.

Although research has only just begun to examine this issue, the initial research is promising. For example, Bond and Bunce (2003) showed, in the two-wave full panel study mentioned above, that the AAQ longitudinally predicted mental health and an objective measure of job performance, over and above, and more effectively than, negative affectivity (Watson & Pennebaker, 1989) and locus of control (Rotter, 1966; Spector, 1988).

Donaldson and Bond (2004) compared the relative ability of psychological flexibility and emotional intelligence to predict mental health, physical ill-health symptoms, and job satisfaction. Mayer and Salovey (1997; Mayer et al., 2000, p. 401) define EI as 'the ability to perceive and express emotion, assimilate emotion in thought, understand and reason with emotion, and regulate emotion in self and others.' As can be seen, EI is similar to psychological flexibility in that it emphasizes people's sensitivity to, and contact with, their internal events. The similarities end there, though, as EI maintains that experiential awareness is a means for more effectively controlling one's emotions, and those of other people (Donaldson & Bond, 2004); for psychological flexibility, experiential awareness is, of course, a means for acting in a more values-directed manner and for that to happen most effectively, internal events need to be accepted and not controlled.

Given this important distinction between flexibility and EI, it is interesting to note that Donaldson and Bond (2004) found that both constructs showed significant bivariate correlations with mental and physical health symptoms; however, when one was controlled when the other served as a predictor (in a path analysis), only psychological flexibility (as assessed with the AAQ) significantly predicted these two outcomes; EI [assessed by the Trait Meta-Mood Scale (TMMS); Salovey et al., 1995] no longer did. These findings indicate that flexibility accounts for the relationship that EI has with these health outcomes (presumably as a result of being psychologically present and able to notice one's internal events); but, whether or not people accepted these internal events (as advocated by flexibility) appears to be more closely related to these health outcomes than does understanding, regulating, and reasoning with them (as EI advocates).

The five factor model of personality, or the Big Five (Goldberg, 1990), attempts to identify the most important aspects of personality (Judge, Heller, & Mount, 2002), and these are hypothesized to be: open-

ness to experience, conscientiousness, extraversion, and neuroticism (known by the acronym, OCEAN). Research indicates that the Big Five are significantly related to both job performance (see Barrick & Mount, 1991) and job satisfaction (see Judge et al., 2002). We are aware of only one study that has examined whether or not psychological flexibility predicts OB outcomes, over and above the Big Five. This was a cross-sectional study conducted by Bond (2005), and it showed that flexibility predicts mental health, job satisfaction, turnover intention, and absenteeism (over the past year), after controlling each of the five factors of personality specified by Goldberg (1990). Although a causal relationship cannot be inferred from these data, they do show, most importantly for our argument here, that psychological flexibility accounts for significant variance in important OB outcomes, and this variance is distinct from what is captured by the Big Five. These data increase in importance when the intervention research is considered, because unlike the Big Five, psychological flexibility is readily modifiable.

Though in its relative infancy, research is showing that psychological flexibility, with its emphasis on both acceptance and values-driven actions, is a unique and important individual difference construct that significantly predicts outcomes that are relevant to OB: job performance, absenteeism, mental health, and physical health symptoms.

Psychological Flexibility as Operant Behavior

The second reason we believe that flexibility is applicable to OB is that it is a concept that stems from functional contextualism and behavior analysis, which emphasize the prediction and *influence* of behavior (Hayes & Brownstein, 1986). From a behavior analytic perspective, a useful individual difference variable is not just one that predicts overt and covert behavior, it must also be one that (a) can be controlled by manipulable contextual variables, and (b) that maintains a reliable relationship to other dependent variables when that is done. We believe that all of the elements that constitute psychological flexibility are actions that can be controlled by contextual antecedents and consequences, while maintaining a positive relationship to applied outcomes.

Typically, individual differences discussed in the OB literature are not entirely viewed as contextually regulated actions. Instead they are viewed as traits, mental states, dispositions, personality variables, and the like. They are often identified purely by correlational evidence and the contextual features that regulate these events are unspecified. As a result, it is not clear how to modify, say, locus of control, negative

affectivity, or type A behavior patterns; nor is it clear that were you to do so the pre-existing correlations with other events would continue. Generally, OB views these variables as mere predictors of ability and person-job or person-organization fit. Used as such, these variables have been relatively successful in advancing the areas of selection and assessment; however, we are none the wiser as to how to *improve* those variables in an attempt to enhance organizational effectiveness.

In contrast, psychological flexibility constitutes an individual characteristic that OB professionals can actually influence, and the model specifies how to do so. As the brief, group-based, worksite training programs described above show, you can enhance flexibility by increasing defusion, acceptance, mindful contact with the present moment and values-directed action. Furthermore, when that occurs you see improvements in mental health, likelihood of innovation, burnout or other outcomes that were correlated with psychological flexibility during baseline. As a result, process analyses indicate that these programs produce these beneficial effects in a fashion that fits the ACT/RFT model. These mediation results are also consistent with evidence from the clinical literature, which shows that interventions aimed at increasing psychological flexibility, improve mental health and behavioral effectiveness, because they improve acceptance and values-based action [see Hayes, Luoma, Bond, Masuda, & Lillis (2006) for a review].

We acknowledge that there are only a limited number of published studies that demonstrate that, by manipulating flexibility, one can improve behaviors that enhance organizational effectiveness. Nevertheless, limited although the studies may be, we are not aware of research that shows rigorously that *any* other specific individual characteristic intervention can be reliably and successfully targeted by specific interventions and as a result improve OB outcomes. As a result, even in this early stage of the research programs there are empirical reasons to contend that it may be useful for organizations to enhance psychological flexibility, in order to improve effectiveness at the individual, group, and organizational level. We now briefly discuss the way that they can accomplish this.

ENHANCING PSYCHOLOGICAL FLEXIBILITY THROUGH ACT

At the individual level, flexibility has been successfully promoted through Acceptance and Commitment Training in the Workplace (ACT

at Work; Bond & Hayes, 2002), which is a slightly modified version of ACT as used in the psychotherapeutic context (Hayes et al., 1999). Consistent with its use in clinical settings, the aim of ACT in the workplace is to teach people the following psychologically flexible strategies: cognitive defusion (i.e., observing the arbitrary, automatic and programmed nature of thinking); the acceptance of, rather than the avoidance of, challenging events and the private experiences (e.g., anxiety) they stimulate; mindfulness and conscious contact with the present moment; and, the ability to define values and engage in actions that are consistent with those values. These skills are taught (and have been evaluated) in a group setting, in the workplace. In our usual implementation of the technology, trainees receive three, three-hour sessions: two on consecutive weeks, and a third three months later. This format allows people to practice ACT techniques in their work environments and troubleshoot problems in the final session.

ACT at Work uses a variety of methods to improve psychological flexibility, and these involve the use of metaphors, acceptance (or mindfulness) exercises, problem solving, and promoting 'values driven action.' [Protocols detailing these techniques, the order they are used, and their rationales can be found in Bond (2004), Bond and Hayes (2002), and Flaxman and Bond (2006).] Here, we will briefly describe three such techniques, and in doing so, we further clarify what is meant by terms such as 'cognitive defusion,' and we show the action-oriented nature of psychological flexibility.

Promoting Cognitive Defusion and Acceptance Through Metaphor

The following is a defusion/acceptance exercise that is adapted from Bond (2004).

> How would you finish the phrase, 'blondes have more . . . '? (Most trainees will invariably say '. . . fun.') That's right! Most all of us will have heard this statement many times before. So much so, in fact, that it is practically impossible not to finish the statement, once I, for example, have begun it. It comes to mind automatically, without effort. Now, raise your hands if you really believe this statement to be true. Okay, let's try another one. How would you finish the phrase, 'Jack and the . . . '? (Again, most participants would say '. . . beanstalk'). Absolutely, again, we've heard this statement so many times before, we could hardly not complete it,

once someone has begun it. So, raise your hands if you believe that there was a chap called Jack who really planted a bean, which became a giant beanstalk that he climbed up? Okay none of you believed both of these statements, but you could all finish them.

This phenomenon provides two important insights into our thoughts. The first is that, given our own unique histories, we can't help but to think certain thoughts in particular situations; for example, 'blondes have more . . . *fun*'! You can't help it: the word just appears from out of nowhere, as if by magic. The second insight is that just because thoughts pop into our heads, it doesn't then mean we have to *believe* them; indeed, we don't even have to *not believe* them, in fact, we don't even have to give them much consideration. The reason is that thoughts pop into our head due to our past training and experiences, and not necessarily due to important particulars of the current situation, and it is these particulars that we should really attend to and let guide our actions: not the same broken record that our mind plays on certain occasions.

Our parents, siblings, films, TV, books, and the rest of society can teach us that blondes have more fun, and jack had a giant beanstalk, and we will never forget these ridiculous statements: they will instantly enter our minds in certain situations; likewise, because of our own unique histories, more personally relevant statements will enter our head in certain situations. For example, you might always think: 'I can't cope with this!' when faced with certain types of problems; but, as with 'blondes have more fun' and 'Jack and the beanstalk,' we don't have to believe them to be true; and, because we don't have to believe them (or not believe them), we don't have to try to change them, or get rid of them, either.

Enhancing Defusion and Acceptance Through Mindfulness

Metaphors, such as the one just described, constitute important arrows in ACT's therapeutic quiver. There are other, powerful ways in which defusion and acceptance are promoted, and perhaps one of the most central (and difficult) ones is an experiential exercise called "leaves on the stream." In this core exercise, participants are asked to sit comfortably, close their eyes, and spend a few minutes merely noticing (without trying to change) their breathing, as they inhale and exhale; they are then invited to become aware of any bodily sensations that they have and to observe these without trying to change them. If they notice

their minds wandering away, they are asked to return their attention gently to just observing their breathing (or their bodily sensations). Trainees are then asked to imagine themselves sitting next to a gentle stream in a beautiful valley, with a line of leaves floating continuously down the stream. They are instructed to notice when thoughts or images come into their awareness and to imagine placing each one on a leaf and watching it float down the stream.

After this exercise, we ask trainees what their experiences of it were, and they inevitably report that they repeatedly noticed that their mind had wandered off. In response, we emphasize that bringing oneself back to the present moment (i.e., by noticing and letting go of one's thoughts and images) is an important aspect of this mindfulness exercise. In addition, we note that, with practice, it should allow them to develop a tool that they can use to prevent "unhelpful" thoughts from interfering with behaving effectively. As discussed above, how an individual defines effectiveness depends upon their values, and the following technique allows people to identify those values, and their associated goals.

Values Clarification

Towards the end of the second training session, the trainer distributes the *Values Assessment Ratings Form* (see Figure 2) and reads the instructions at the top of it. After discussing it, participants are given approximately 15 minutes to begin completing this form. We find that this is often a powerful exercise for people, as more than a few have not sat down and explicated the values that they have, and many have not considered the relative importance of each value, never mind their rank order. On a number of occasions, we have found that this exercise, perhaps more than any other in our protocol, has had the greatest impact on changing the way that people prioritize their lives.

ENHANCING PSYCHOLOGICAL FLEXIBILITY IN ORDER TO IMPROVE ORGANIZATIONAL DEVELOPMENT

Organizational development is a term that is used to describe a collection of planned-change interventions, based upon behavioral science principles, for improving organizational effectiveness (French & Bell, 1999). We believe that one such principle, psychological flexibility, can meaningfully inform this process. Whether the OD intervention is aimed at the team, inter-group, or organizational level, successful

FIGURE 2. The Values Assessment Rating Form

Values Assessment Rating Form

A value is a direction in life that you would like to move towards (e.g., the direction of West), but that you cannot arrive at, once-and-for-all (i.e., you can always keep moving West). In contrast, goals are attainable destinations in your valued direction (e.g., going to America from Europe). Thus, being a loving partner or a helpful colleague are both values, because you have to keep living like one, or you will cease to be one. Values are important because working towards them brings meaning and satisfaction to our lives.

The following are two domains of life in which people have values. Not everyone has the same values, and this worksheet is not a test to see whether or not you have the "correct" values. Please list the most important values that you have in your work and personal (or non-work) life. In choosing your values, only write down those that you really want to work towards. In other words, before writing one down, ask yourself: "Would I write this value down, if nobody could know that I was working towards it?" If the answer to this question is no, then this is not a true value for you, and you should not write it down. For each value, rate how important it is on a scale of 1 (high importance) to 10 (low importance). Rate how successfully you have lived this value during the past week on a scale of 1 (very successfully) to 10 (not at all successfully). Finally rank these values in order of the importance you place on working on them right now, with 1 as the highest rank, and 8 as the lowest rank.

Domain	Valued direction	Importance	Success	Rank
Work				
1.				
2.				
3.				
Personal				
1.				
2.				
3.				

change involves *identifying valued directions* towards which to move (e.g., trust and openness amongst team members), and being *willing to experience the psychological events* that could function as barriers along the way (e.g., fear of failure, dislike of other team members).

It may be fairly readily apparent how ACT techniques, described above, could be used in team building and sensitivity training, in order to change attitudes, stereotypes, trust, and openness. This is, in part, what the Hayes, Bissett et al. (2004) experiment, noted above, accomplished. They showed that an ACT group intervention reduces the stigma and prejudice of drug abuse counselors towards their patients; this improvement occurred because the training decreased the impact

that thoughts and feelings had on their believability and behavior regulatory functions. Likewise, it may be easy to see how training psychological flexibility can improve leadership and management skills that then improve team productivity. What may be more difficult to comprehend is how enhancing psychological flexibility can improve 'harder,' or less employee focused, OD interventions that attempt structural, strategic, and process changes. As a result, we briefly describe how it may enhance these types of interventions, and we do so in the context of a financial organization that was assessing its distinctive competencies, in order to define its core business and, thereby, increase its overall success.

Even though this OD intervention targets an organization's strategy, it is verbal human beings who are taking the strategic decisions and then implementing the necessary changes. As a result, the processes of values identification and defusion that define psychological flexibility are crucial to this OD program, and so it would be helpful to train them for use in that context. To this end, we integrated elements of ACT into the early stages of this intervention. Specifically, during a three day retreat, the organization's management team heard their analysts' reports on various aspects of their business and of the UK banking industry. These managers were then invited to discuss and identify the shared ethical, business, and human resources values that they wanted their organization to stand for, using a specially tailored version of the values assessment rating form shown in Figure 2. One of the shared values that they identified was the expansion of their retail banking portfolio so that it focused not just on their traditional product of mortgages but grew to include a wider share of the UK's current (or bank) accounts that are aimed at individual customers. In addition to this value, they also specified "valuing people." Operationally, this meant that they would respect their employees, which would be demonstrated through providing better work organization (e.g., more job control and workplace support), and by recognizing employee achievements more comprehensively (e.g., not only financially but also through training and development opportunities).

It is not terribly unusual for organizations to identify their values. What may be more unique is that ACT-based OD encourages top managers to rank their values in order of importance. This, in itself, is something we find that managers do not usually do; instead, they are often driven by the unarticulated assumption that all values are of equal importance. Such a view, though, presents them with a situation that is unrealistic and unworkable and, which can result in the organization

successfully living few, if any of its values. Also fairly distinctive to an ACT change program is that managers are asked to specify goals that move the organization towards its values (e.g., training managers how to provide job control to their subordinates).

Most uniquely, however, an ACT OD intervention teaches managers to distinguish between external barriers to accomplishing their values-based goals (e.g., developing banking products that attract people) and internal barriers. OBM has developed very effective strategies for overcoming the former barriers (e.g., see Rummler & Brache, 1995). It has not focused, however, on addressing the latter, verbal barriers to change. This is where ACT can assist; to this end, managers are taught various acceptance and defusion exercises and are shown how they can use these to move through internal events that may get in the way of pursuing their organization's values and goals. In essence there are always two sets of contingencies running in parallel: one direct and one verbally sustained. ACT and RFT allows OBM to expand to address both.

We normally spend three hours training managers how to overcome these internal barriers to organizational change. To begin with, we invite them to recognize from their own experience how engaging with or mulling over their worries and fears prevents them from problem solving and performing as successfully as they can. Importantly, we teach ACT techniques to help them to identify their worries and fears so that they can distinguish engaging with those thoughts from problem solving. In particular, we have found that the mindfulness exercise, *soldiers in the parade* or its variant *leaves on the stream* (see Hayes et al., 1999, pp. 158-162 for details), is helpful for training managers how to defuse from their thoughts, feelings, images, and memories and thus not struggle, control, or analyze them. In this way, their problem solving behaviors can come under more effective control of the situation that requires analysis. We have also found that the *blondes have more . . .* exercise, described above, is useful for promoting defusion.

In order to show clearly how defusion skills promote values-based action, we have found that the *passengers on the bus* metaphor (Hayes et al., 1999, pp. 157-158) is particularly helpful. In this one, managers are asked to imagine that they are the driver of a bus that is full of passengers (some of whom are scary looking). They represent the driver's thoughts, emotions, memories, urges, etc. The idea is that the scary looking passengers will often try to commandeer the bus and demand that the driver takes the bus in directions that may not serve the driver's valued directions. Our attempts to struggle with, or placate, these pas-

sengers tend to be counterproductive, in that to do so, we must either hand over control of the bus to the passengers or stop the bus to struggle with them. Participants are encouraged to view the direction of the bus as representing their (and their organization's) chosen values, and the "unhelpful" passengers as the psychological barriers that are inevitably encountered along the way.

Whereas data are beginning to show that it may be beneficial to enhance psychological flexibility through individual-directed interventions, we do not yet have data as to the degree to which this individual characteristic can improve the effectiveness of OD programs (e.g., in the way just described). We suggest, though, that this variable, which stems from modern behavior analysis, may offer a theoretical approach that is consistent with the values of OBM and which it can use to develop an empirically-based account of, and interventions targeting, these internal events. In this way, OBM may become even more effective than it is already, by ensuring that complex verbal repertoires do not adversely moderate (and indeed help to enhance) the effects of its traditional intervention strategies.

ACT, RFT, AND BEHAVIOR ANALYSIS

RFT is one of the most researched basic theories in behavior analysis over the past decade (Hayes et al., 2001). ACT is one of the most influential and successful (Hayes, Masuda et al., 2004) forms of clinical behavior analysis. Despite that fact, the breadth of the data in support of these developments, and the many years this research program has been underway, it has to be admitted that the mainstream of behavior analysis has been extremely tentative in its embrace of these new developments. As one reviewer of the RFT book noted, this is "not your father's behavior analysis."

It isn't. This is one way that behavior analysis looks when (a) functional contextual assumptions are taken to be the philosophical bed rock of behavior analysis, as indeed was arguably the case with B. F. Skinner himself (Biglan & Hayes, 1996; Hayes & Brownstein, 1986; Hayes, Hayes, & Reese, 1988; Hayes, Hayes, Reese, & Sarbin, 1993), and (b) the implications of a modern behavior analytic approach to language and cognition are allowed to work down to the ground floor of psychological interventions.

It seems ironic that the wheel is still in spin as to whether OBM would rather expand by embracing traditional mentalistic concepts that are al-

ready thoroughly ingrained in organizational psychology (Wiegand & Geller, 2005) or to do so by turning to modern behavior analysis itself. In some ways, there is already more scientific evidence in support of the latter than the former approach. Superficially, it should be an easy decision. Only time will tell whether the sense of strangeness that is felt when ACT and RFT are encountered by traditional behavior analysts prevents OBM from embracing what behavior analysis itself has produced.

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Relational Frame Theory and Industrial/Organizational Psychology

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SUMMARY. The current paper argues that a Relational Frame Theory account of complex human behavior including an analysis of relational frames, relational networks, rules and the concept of self can provide a potentially powerful new perspective on phenomena in the applied science of industrial/organizational (I/O) psychology. In this article, we first provide a brief description of I/O psychology itself. We then ex-

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pand on the core features of RFT described earlier in this collection, including how it addresses rule-governance. Finally we illustrate, using relevant examples, the ways in which these concepts can be used to understand behavior in the I/O arena. doi:10.1300/J075v26n01_03

KEYWORDS. Relational Frame Theory, industrial organizational psychology, rules, self

> Paid employment . . . warrants study by psychologists for its enormous social and personal importance, and also for the contribution that increased understanding of work processes can make to the development of psychology itself. Warr (2002, p. ix)

Industrial-Organisational (I/O) psychology is the branch of psychology that deals with human beings at work. It seeks both to improve the quality of the environment for employees as well as to increase the effectiveness and efficiency of employee behavior in that environment. Traditional I/O psychological concerns have included, for example, the identification and development of human potential through psychometric testing; the motivation of employees through the design of payment and reward systems; the ergonomic design of the working environment; the measurement of employee job satisfaction and attitudes towards work and the assessment of human performance both on and off the job via appraisal systems. I/O psychologists have also begun to address broader or higher level issues such as the design of effective management systems, the nature of 'transformational' leadership, processes of change and resistance to change within organizations and the evolution of organizational culture.

Organizational behavior management (OBM) has not had a large impact on traditional I/O psychology. This has led some leaders in the field (e.g., Wiegand & Geller, 2005) to suggest that mentalistic theories be embraced to bring OBM into the mainstream. The alternative that is being explored in this volume is to turn instead to modern behavior analysis itself (Hayes, 2005).

KEY AREAS WITHIN TRADITIONAL I/O PSYCHOLOGY

In order to examine the ways that OBM can deal more effectively with traditional I/O issues it seems worthwhile to note the range of phenomena that must be addressed.

Job Satisfaction, Attitudes, and Behavior

The three domains of job satisfaction, attitudes, and work behavior and their inter-relationship have been a major focus of traditional I/O psychological research. Job satisfaction may be examined at a very general level (i.e., the extent to which a person is satisfied with his or her job as a whole) or in terms of more specific aspects of the job, such as satisfaction with one's pay, colleagues, supervisors, working conditions, job security, promotion prospects, etc. Research has concentrated on finding correlates of both general as well as specific measures of job satisfaction (e.g., Agho, Mueller & Price, 1993). Related to job satisfaction are attitudes towards employment. Warr (2002) defines attitudes as "evaluative tendencies (favorable or unfavorable) towards a person, group, thing, event or process" (p. 17). Attitudes measured may be specific (e.g., towards one's boss) or general (e.g., towards environmental pollution) with the latter variety often referred to as 'values.' Research has found important correlational relationships between job satisfaction and attitudes and also amongst each of these phenomena and theoretically important employee behaviors including job performance, absenteeism, and turnover (e.g., Hardy, Woods, & Wall, 2003; Ostroff, 1992).

Teamwork

The term '*Team*' is used to refer to a group of individuals organized around an interdependent set of tasks and who share responsibility for achieving particular results (Guzzo & Dickson, 1996). Teams are seen as an important component in the operation of various organizations (e.g., O'Reilly & Pfeffer, 2000). Psychologists have identified several potential benefits of team work including (i) a greater range of knowledge and expertise, (ii) encouragement of greater flexibility, (iii) encouragement of working for the greater good, (iv) improved task motivation by providing, for example, employees a stake in decision making, and (v) provision of social support.

McGrath (1984) proposed an Input-Process-Output model of the variables that are relevant in examining team effectiveness. 'Input' variables include job design, interdependence of team members, composition of the group (e.g., demographic diversity) and team context; 'Process' variables include such factors as cohesiveness (e.g., norms play an important role), communication, conflict, decision making and problem solving; and 'Output' variables include performance levels, team member attitudes and team member behavior.

Organizational Culture and Organizational Development

Organizational culture is a concept that has become increasingly important within I/O psychology. Research has found that positive work cultures that value trust and openness create pride and a desire to belong to the organization. Furthermore, cultures that support employees with regard to both health and personal development (Wiley & Brooks, 2000) are associated with greater job satisfaction among employees (Parker, Young, Baltes, Altmann, Huff, & LaCost, 1997) as well as better business performance (Brown & Leigh, 1996). The leadership of a company may deliberately attempt to develop and optimize organizational culture. With regard to the kind of organizational development that this necessitates, I/O psychologists make a useful distinction between episodic (infrequent, discontinuous) and continuous (ongoing, cumulative) change (e.g., Weick & Quinn, 1999). There is increasing research interest in how to achieve continuous change, including through quality management and organizational learning. Several influences are important with regard to change including context, leadership, management of change processes, and outcomes of change. Research has found that the impact of these four varies, although the relative impact of these variables differs in relation to whether the strategic choice is to engage in change that is episodic or continuous. One theoretical framework that has been developed to analyze processes of continuous change is the organizational learning framework of Argyris and Schon (1996). This framework suggests that the capacity to examine basic assumptions is the hallmark of adaptive learning, which is necessary for continuous and emergent change, in which outcomes cannot be predicted.

Leadership

Leadership has been defined traditionally as a goal-directed process, which occurs within a group context and which involves influencing

others. The concept of leadership is distinguished from that of management by defining it as open-ended and pro-active as opposed to the close-ended and reactive character of the latter. Research into leadership initially focused on personal traits, before moving on to study behaviors and then to examine ways in which leadership behavior can be affected by situational factors. In more recent approaches, a distinction has been drawn between 'transformational leadership' that corresponds to leadership as such, and 'transactional leadership' which corresponds to management (e.g., Bass, 1985, 1998). Models of transformational leadership emphasize the role of the leader as someone who 'manages meaning' and defines organizational reality by articulating an organization's mission and the values that will support it.

CONCEPTUAL APPROACHES

The Two Dominant Approaches: Psychometric and Social-Cognitive

The two traditionally dominant meta-theoretical perspectives within the area of I/O psychology have been the psychometric and the cognitive perspectives. With regard to the former, the selection and assessment of employees, for example, has involved the measurement of such constructs as Intelligence Quotient (I.Q.; e.g., Eysenck, 1979) and general personality (e.g., the 16PF [Cattell, 1965] and the NEO [Costa & McCrae, 1992]). Psychometric tests are practically useful measures, the results of which allow for correlation with indices of job performance, job satisfaction, absenteeism, turnover, etc. However, a disadvantage of these assessment tools is that they reveal little if anything about the psychological processes that mediate the correlational relationships. For this purpose, I/O psychologists have turned to the cognitive psychological paradigm.

From the cognitive perspective, processes of cognition and affect are hypothesized to underlie states such as attitudes, self-esteem, and job-satisfaction, for example, which in turn are conceptualized as causing employee behavior in the workplace. Unfortunately, this links one dependent variable (e.g., cognition) to another (e.g., job satisfaction) to yet another (e.g., employee behavior). It is precisely this feature that creates difficulty in constructing an adequate science of organizational behavior.

There has been a plethora of cognitive and social-cognitive models of employee cognitions and emotions and their causal relationships with behavior. Generally these models work to some degree as summaries or post-hoc predictive models, as they should since past behavior (including private behavior) predicts future behavior. Nevertheless, they have limited direct use in terms of intervention to change employee behavior because the variables hypothesized to cause behavior are not directly manipulable.

Imagine, for example, that a particular cognitive schema is hypothesized to underlie absenteeism. The only obvious way in which to change the absenteeism based on such an analysis would be to change the schema. Cognitive theories do not specify, however, what specific environmental manipulations need to be performed to change the putatively causal variable, nor do they specify the conditions that maintain the dependent variable-dependent variable relationship. The only way in which to change, say, a cognitive schema is to manipulate contextual variables external to the schema itself. For example, the management might introduce an employee workshop (i.e., an external environmental manipulation) that is designed to change the way in which employees perceive the company. Because these are not specified in the cognitive theory, practitioners are left to a combination of commonsense and cognitive targets to guide intervention development. Furthermore, since the conditions that maintain the dependent variable-dependent variable relationship are not specified, even when the putative cognitive cause is changed successfully, and when positive outcomes then occur, often the cognitive variable does not mediate outcomes (e.g., Morganstern & Longabaugh, 2000). It is for these reasons that behavior analysis avoids mediating mental constructs in its analyses (Hayes & Brownstein, 1986).

Traditional Behavior Analysis

Behavioral approaches have also been employed in the I/O arena, but to a relatively limited extent when the full range of issues faced by I/O is considered. OBM has been defined as the application of behavior analysis to organizational settings (Bucklin, Alvero, Dickinson, Austin, & Jackson, 2000). In common with other practitioners of applied behavior analysis, OBM experts apply their knowledge and understanding of empirically based principles of behavior (e.g., reinforcement, punishment, stimulus control, discrimination, generalization) to their particular domain. The main focus of OBM is on the behavior of individuals and

groups in organizations. Interventions based on OBM include performance measurement and reporting, feedback, performance management training, incentive pay, and other performance improvement techniques. Analyses of work behavior in terms of the principles of behavior analysis are provided in many sources (e.g., Brown, 1982; Daniels, 1989; Mawhinney, 1984; O'Brien & Dickinson, 1982) and there is a substantial body of scientific evidence that demonstrates that systematic operant psychology-based interventions such as these can improve human learning and performance in the organizational setting.

Unfortunately, the targets of OBM interventions are quite limited. Direct contingency principles do not seem to provide an adequate set of principles with which to deal with the issues being addressed by I/O psychology more generally. When faced with these challenges, even a former editor of the *Journal of Applied Behavior Analysis* fell back on ancient concepts familiar to I/O psychology, such as achievement motivation (Wiegand & Geller, 2005), in order to address them.

It is particularly telling that in a set of several articles in this journal challenging Wiegand and Geller's approach, not a single one appealed to Skinner's *Verbal Behavior* (1957) as a source of inspiration for a more effective account of human language and cognition. Indeed, for almost two decades after the emergence of OBM in the 1970s, there was little change in the basic science of behavior analysis in a manner that effectively addressed Chomsky's criticisms of the Skinnerian approach (Barnes-Holmes, Barnes-Holmes, Roche, Healy, Lyddy, Cullinan, & Hayes, 2001). That has changed. Following the openings provided by the study of rule-governed behavior (see Hayes, 1989 for a review) and equivalence relations (see Sidman, 1994 for a review), RFT (Hayes, Barnes-Holmes & Roche, 2001) has become a relatively comprehensive and empirically productive behavior analytic approach to cognition more generally. As a result, an essential and fundamental change in the basic science of behavior analysis is underway with clear applied implications.

RELATIONAL FRAME THEORY

The most common criticism of behavior analysis is that the basic principles identified primarily with nonhuman organisms, cannot alone account for the generativity or complexity of human language and cognition (Barnes-Holmes et al., 2001). Relational frame theorists appear to be largely in agreement with this view, although unlike in the case of

external critics the grounds for this claim are themselves behavior analytic (Barnes-Holmes, Dymond, Roche & Grey, 1999). In the following sections, we briefly outline the empirical roots of this agenda, consider some of the key concepts that have emerged and thereafter consider the applicability of these concepts to a behavioral interpretation of some of the core areas of research in I/O psychology.

Derived Relational Responding

Empirical behavioral research over the last thirty years or so has provided substantial evidence for derived relational responding (DRR). The early demonstrations involved a matching-to-sample (MTS) format in which a set of reinforced relations between sample and comparison stimuli led to a number of untrained relations among the stimuli. For example, if a subject was taught to choose an arbitrary stimulus B, when shown a second arbitrary stimulus A, and was also trained to choose a third stimulus, C, when shown B, he or she proceeded during unreinforced sessions to choose A given B and B given C (i.e., mutual entailment) and to choose C given A and A given C (i.e., combinatorial entailment).

The phenomenon of derived relational responding has been replicated and studied extensively. The stimuli A, B, and C, involved in the relational training can be presented in any perceptual modality, either previously experienced or completely novel, including, for example, pictures, pictograms, symbols, words, nonsense words, arbitrary sounds, smells, tastes, etc. In the above example, for instance, A might be a spoken nonsense word, 'CUG,' B might be the written word 'CUG' and C might be a cartoon alien. If even a young child (aged approximately 2 years) is taught to pick the written word 'CUG' after hearing the sound 'CUG' and to pick the cartoon when shown the written word then he or she may well derive further relations between these stimuli such that the sound and the written word 'CUG' are mutually related to each other and both are mutually related to the cartoon. The seminal experiments on DRR (Sidman, 1971) showed derived relations between written words, spoken words and pictures, thus providing evidence that derived relational responding might be used to model symbolic relations in natural language (see Sidman, 1994).

Research since then has strengthened the conclusion that DRR and language are closely linked. Although derived relational responding has been demonstrated in human infants, and in human subjects with severe learning disabilities having basic receptive language skills,

these abilities have not yet been unequivocally demonstrated in non-human populations nor in humans without at least some receptive language abilities (e.g., Barnes, McCullagh, & Keenan, 1990; Carr, Wilkinson, Blackman, & McIlvane, 2000; Devany, Hayes, & Nelson, 1986; Dugdale & Lowe, 1990; Hayes, 1989; Sidman, Rauzin, Lazar, Cunningham, Tailby, & Carrigan, 1982).

Once the young child has learned to respond in accordance with very simple derived relations between words, objects and pictures, the size and complexity of such relations may expand exponentially. For example, a child who already relates the spoken word 'dog' both to a picture of a dog and to the written word DOG might then be taught that the spoken and written word 'hound' is another name for a dog. The child might subsequently derive several further relations between the spoken and written words 'hound,' the picture of the dog and the written word 'dog.' In this way, although the child has been taught just one new word his relational network has expanded and he is able to respond in accordance with a multitude of new relations without being explicitly taught to do so.

From an RFT perspective, there are many other types or patterns of DRR than simple "same as" relations (referred to as a *frame of coordination*). Other forms of DRR include patterns of opposition, difference, comparison, hierarchy. Thus, as a child learns new words and new relations he or she is essentially learning to respond in accordance with increasingly complex networks of derived stimulus relations. Conceptualizing human language and cognition in terms of derived stimulus relations and networks appears to provide the basis for addressing the power, richness, and generativity of language that Chomsky and others have argued is beyond the conceptual or analytic tools of behavior analysis.

Explaining Derived Relational Responding

DRR is a result, not a process. In order to explain DRR, RFT appeals to an initial history of reinforced training with relevant exemplars (Hayes & Hayes, 1989). It is a well-established fact that organisms respond readily to the formal relations among stimuli. For example, even insects have demonstrated the discrimination of the "dimmest" of an array of illuminated stimuli (Reese, 1968). This type of relational responding appears to be controlled primarily by formal or non-arbitrary stimulus relations (i.e., one of the stimuli is actually the dimmest). In addition, however, humans readily demonstrate patterns of relational re-

sponding that are not controlled only by the formal properties of the related events, but by specific contextual cues.

Consider the following example of contextual control by the simple word "is." During early natural language interactions, children are often presented with objects (e.g., a teddy) and are asked to repeat the object's name ("teddy"). This interaction may be described as 'see object X, hear name Y, repeat name Y.' At the same time, children are also taught the reverse sequence of events in which they are asked to identify objects upon hearing the name. This interaction may be described as 'hear name Y, pick object X.' During early naming interactions, many specific examples of object-word and word-object relations are explicitly trained. According to RFT, when a child has been exposed to sufficient exemplars of responding to both types of relations, a repertoire of derived object-name and name-object relational responding is established (Barnes-Holmes, Barnes-Holmes, Roche, & Smeets, 2001a; 2001b).

If a child with this type of naming history is instructed: "This is grandma," contextual cues (such as the word "is," and the general social context) predict that if this person is "grandma" (object X-name Y), then "grandma" is this person (name Y-object X). Consequently, the child may now identify the appropriate person when asked "Where is grandma?" in the absence of explicit reinforcement. According to RFT, this type of relational response is derived in a given instance (because there is no history of explicit reinforcement for pointing to grandma), but it is not genuinely novel. Rather it is viewed as a type of operant behavior that has been brought under the control of contextual cues (e.g., the word "is") through a process of differential reinforcement. In effect, operant contingencies select a particular pattern of relational responding in the presence of a specific contextual cue, as these contingencies are applied across numerous exemplars. As a result, the relational responding may generalize to other novel exemplars in the presence of the appropriate contextual cue, and thus, according to RFT, this performance constitutes an example of a generalized operant class (Barnes-Holmes & Barnes-Holmes, 2000).

If frames of coordination can be learned in this fashion, there seems to be nothing to prevent the same process from applying to more-than and less-than; different from; and opposite to; and any other type of relation. Consider a young child who is taught to select the larger of two cups of juice in response to the question "Which cup has more?" and the smaller of two boxes in response to "Which has less?" In this case, the appropriate response is determined in part by the non-arbitrary relationship of physical size between the related objects. However, with appro-

priate exemplar training this relational response may be brought under the control of contextual cues that are purely conventional rather than formal or non-arbitrary, including terms such as "more" and "less." If a child is taught, for example, that "if A is more than B, then B is less than A" and "if C is more than D, then D is less than C" and so on across other exemplars, simply telling the child that "X is more than Y" may generate the derived relational response "Y is less than X." In this case, the relational response comes under the control of the words "more" or "less," rather than a formal stimulus dimension (Barnes & Roche, 1996; Barnes-Holmes & Barnes-Holmes, 2000). When this occurs, the relational response can now be arbitrarily applied to a range of other stimuli, even when their non-arbitrary properties (e.g., actual size) do not occasion the relational response.

The evidence for relational operants of this kind is growing. Up until recently the evidence was indirect, namely, demonstrations that DRR develops (Lipkens, Hayes, & Hayes, 1993), comes under antecedent contextual control (Dymond & Barnes, 1995; Steele & Hayes, 1991; Wulfert & Hayes, 1988) and comes under consequential control (Healy, Barnes-Holmes, & Smeets, 1998; 2000; Wilson & Hayes, 1996). Recently, however, this central claim of RFT has been tested directly in studies that have shown that reinforced multiple exemplar training can give rise to frames of opposition (Barnes-Holmes, Barnes-Holmes, & Smeets, 2004), comparison (Barnes-Holmes, Barnes-Holmes, Smeets, et al., 2004; Berens & Hayes, 2005), and even coordination (Luciano et al., 2005) in children who did not previously show the performances.

Relational Frames

The concept of a relational frame, like that of any operant, is both an outcome and process concept. A relational frame is a specific form of DRR that is not based solely on the form of the relata, and is due to a history of reinforcement for DRR in the presence of the contextual cues involved. Examples of specific relational operants are frames of coordination (including equivalence and similarity); comparison (including more-than and less-than); distinction; opposition; hierarchy; and deictic frames (Hayes et al., 2001). While the specific histories may involve subunits, it is only when DRR shares the three defining properties of mutual entailment, combinatorial entailment, and the transformation of stimulus function (reviewed in the previous articles in this volume; Hayes et al.) that a full instance of relational framing has been emitted. Deriving arbitrarily applicable relations among events is thought to be

controlled by a relational contextual cue (called C_{rel} for short; see Steele & Hayes, 1991, for an example) and the transformation of stimulus functions is thought to be controlled by a functional contextual cue (called C_{func}; see Barnes, Browne, Smeets, & Roche, 1995; Wulfert & Hayes, 1988, for examples).

The reason relational framing is argued to involve a new behavioral principle is that as an empirical matter, relational frames alter other behavioral processes. For example, suppose a person learns that "A is more than B and B is more than C" and a reinforcing function is then attached to B (e.g., by pairing it with access to reinforcers). It is likely thereafter that A will acquire an even greater reinforcing function and C a less reinforcing function in the absence of explicit training, because of its participation in more-than/less-than relations with B (Dymond & Barnes, 1995; Roche & Barnes, 1997; Roche, Barnes-Holmes, Smeets, Barnes-Holmes, & McGeady, 2000). This transformation of the stimulus functions of A and C cannot be explained by processes of stimulus generalization because it is not based on formal properties of the related events. It cannot be explained by conditioned reinforcement because both A and C are paired with B, but the effects differ. Furthermore, if this effect depends on relational operants, it is based on a learned process, unlike stimulus generalization and conditioned reinforcement in which only the instances, not the process itself, is learned.

This "new principle" does not explain relational framing–it is argued to be an empirical implication of this phenomenon. Although the jury is still out on this issue within the behavioral community, there is a rapidly growing body of empirical evidence on this point, and so far as we know there is no well-developed and coherent alternative that has been used to explain RFT data of this kind. Furthermore, as should be the case with any pragmatically useful behavioral theory, RFT researchers and applied practitioners have been able to manipulate the contextual variables argued to control such processes in order to achieve applied goals. Thus, while the basic researchers continue to struggle about the weight of the empirical evidence, applied behavior analysts are using these ideas now to make an applied difference in the analysis of complex forms of human behavior. It is to such topics that we now turn.

Rule-Governed Behavior

Consider the following example of a rule provided by others. A manager instructs a group of employees as follows: "If you manage to sell 100 or more units of the product this month you will receive a bonus of

$1000 in your next pay check." In this case, the stated rule would appear to be simple because all of the important aspects of the contingency are stated, including: a temporal antecedent; the topography of the target response; the type of consequence; and when it will be delivered. Furthermore, the rule may well alter the function of selling 100 units (i.e., at least some employees will work harder that month to achieve the specified target). Nonetheless, although relatively simple, it is difficult to explain how the type of contingency specified here could generate the desired behavior through direct training alone, because delayed consequences such as these are relatively ineffective without verbal rules. Furthermore, the rule may be effective for an employee who hears the rule for the first time (i.e., without a direct history of reinforcement for following the rule).

It is these issues that led Skinner (1966) to suggest the concept of rule-governed behavior, but he was unable to provide a technical account of what it meant to "specify" a contingency (Hayes & Hayes, 1989). For RFT, an analysis of the rule in the previous example requires: (1) an identification of the relational frames involved and the contextual cues that occasioned the relations, and (2) an analysis of the functions of the events that are transformed through these relations and the cues that occasioned the transformations. In this example, the specific relational frames involved include: coordination relations between words and actual objects (e.g., "product" and actual products) and events (e.g., "selling" and the act of selling); and if-then relations that specify the contingent relations (i.e., *if* sell 100 + units *then* $1000). In terms of the transformations of function, the phrase "sell 100 or more" alters the behavioral functions of selling the product, and thereby provides the necessary motivative functions specified in the consequence. According to RFT, therefore, rules may be defined as examples of relational networks and transformations of function that are more or less complex (Barnes-Holmes, O'Hora, Roche, Hayes, Bissett, & Lyddy, 2001). As is shown by Haas and Hayes (this volume), the functional transformations that result can be quite counterintuitive, which is why an analysis of the underlying relational performances is not just possible but often necessary.

For the listener who follows a rule, the co-ordination between the original relational network that constituted the rule and the relations sustained among the events specified, provides an on-going source of behavioral regulation. In the example provided here, for instance, a salesperson might compare her selling behavior with that specified by the rule and decide that she is satisfactorily following the rule. In techni-

cal terms, she derives a relation between two derived relational networks–the network in which elements of her behavior (e.g., gaining between 25 and 30 sales per week) partake and the network in which elements of the behavior specified by the rule partake (e.g., that at least 100 sales are required to meet the monthly target). If these networks are co-ordinate then the relation 'I am following the rule' is derived. While the number of units that she has sold is under the figure of 100, a *less than* relation will be derived between her performance and the ultimate goal specified by the rule, which may maintain a high level of selling behavior throughout the month. When she eventually derives a relation of co-ordination between units of product sold and the sales figure specified by the rule then the further relation 'I have successfully completed the task' will likely be derived.

Although rule following may involve repeating the rule, from an RFT perspective this is not essential for the rule to be followed and indeed it is even possible (if perhaps not common) that the *exact rule as stated* may be "forgotten" except in the form of the changed stimulus functions left behind by the rule. Because the elements specified in a rule may be actualized by the non-arbitrary environment (e.g., the phone and/or the computer that are used by the salesperson to sell products), these events themselves may participate in a relational network that corresponds to the original relational network that constituted the rule. It is through these relations of coordination between relational networks that a listener is able to determine whether or not the rule is being followed. According to RFT, therefore, the term rule-governed behavior describes instances in which a frame of coordination between two relational networks serves as a source of control over behavior (Barnes-Holmes, Hayes, & Dymond, 2001).

Types of Rules

The behavioral literature on rule-following describes three functionally distinct forms of rule following: pliance, tracking, and augmenting (Hayes, Zettle, & Rosenfarb, 1989; Zettle & Hayes, 1982). Pliance is rule-governed behavior under the control of reinforcement delivered by others based on a frame of coordination between the rule and behavior. Suppose, for example, an employer tells an employee that she must wear safety equipment. If the employee now wears the equipment because of a history of socially-mediated consequences for rule-following per se (e.g., authority figures such as the employer have previously maintained rule-following by reinforcing adherence to rules and regula-

tions and punishing failures to adhere) such rule-following may be categorized as an instance of pliance.

Tracking is rule-governed behavior under the control of a history of coordination between the rule and the way the environment is arranged independently of the delivery of the rule. To continue the same example, if an employee wears safety equipment in order to avoid being injured, the behavior is tracking. Both tracks and plys describe contingencies, but in the case of pliance the contingencies are contacted because coordination between the rule and behavior alters the behavior of the verbal community. In the case of tracking the contingencies are contacted because of the non-arbitrary consequences of the behavior–the form, frequency, or situational sensitivity of the relevant behavior produces the consequences specified or implied in the rule (i.e., when the employee wears the safety equipment, he or she actually avoids being injured).

Augmenting is rule-governed behavior due to relational networks that alter the degree to which events function as consequences. There are two types of augmentals. Motivative augmenting is behavior due to relational networks that temporarily alter the degree to which previously established consequences function as reinforcers or punishers; formative augmenting is behavior due to relational networks that establish given consequences as reinforcers or punishers. A simple example of a motivative augmental is 'the future of the company rests on getting this order out on time.' If this rule increases the reinforcing value of meeting the specified deadline, it is a motivative augmental. An example of a formative augmental might be 'these vouchers can be exchanged for food items in the cafeteria.' If the vouchers now function as reinforcers, the statement was a formative augmental.

Why Rules Are Followed

Relational Frame Theory also provides a number of reasons why rules that are stated and understood may still not be followed (Barnes-Holmes et al., 2001). First, the absence of rule following may result from insufficient control by nonverbal contingencies. For example, the target behavior may not be in the behavioral repertoire of the listener, such as when a salesperson does not possess the appropriate interpersonal skills required to maintain a high level of sales.

Second, the level of rule following may depend in part on the credibility of the speaker. For example, a manager that employees trust may be more likely to produce effective rule following in his or her subordinates than one who does not inspire such trust. According to RFT, this

type of credibility may be acquired verbally as well as directly by experience. For example, a manager who is regarded by an employee as 'genuinely concerned for people's safety' may be likely to produce appropriate rule-following with regard to health and safety related rules because 'genuine concern' participates in a frame of coordination with the provision of accurate and worthwhile rules.

Third, the level of rule-following may also depend on the speaker's authority and ability to mediate reinforcement. For example, an employee is more likely to follow the rules of a manager who engages employees in participative discussion and provides feedback or reinforcement for rule-following. In contrast, a manager who frequently provides rules without subsequently checking whether or not they have been followed may be less likely to establish appropriate rule-following in employees.

Fourth, rule-following may also be determined by the plausibility of the rule itself (see Hovland, Lumsdaine, & Sheffield, 1949). The plausibility of a particular rule may be either undermined or enhanced by the derivation of relations of distinction or opposition between the relational network constituted in the rule and other relational networks bearing on the same relata. For example, an employee may be instructed to use a particular sales technique that researchers have shown to be more productive in the longer term. However, working according to such a rule may produce disruption and lower levels of efficiency in the short term. In other words, the employee may derive a frame of distinction between the new rule and his or her practical experience which may weaken rule-following. Naturally enough, this is particularly the case where the new rule does not in fact produce better work practices than had been in operation previously. In this case, the credibility of the management is more seriously undermined.

These various factors combine with different functional types of rule-following. For example, while tracks depend heavily on the credibility of the speaker and the plausibility of the rule, plys may depend more on the ability of the speaker to mediate reinforcement that will compete with other sources of reinforcement. These issues are discussed in more detail and are applied to a classic area of OBM research in O'Hora and Maglieri in the present volume.

Problem Solving

In traditional behavior analytic terms, "problem solving may be defined as any behavior which, through the manipulation of variables, makes the appearance of a solution more probable" (Skinner, 1953,

p. 247). RFT provides a behavioral approach to verbal problem solving defined as framing events relationally in order to produce effective rules for action under the antecedent and consequential control of an apparent absence of effective actions. Strategic verbal problem solving, from an RFT perspective, involves verbally transforming the functions of objects and events so that effective responses are made more likely. The process of non-arbitrary features of the world entering into relational frames for such purposes is termed pragmatic verbal analysis. For example, imagine an employee trying to work out how to stack differently sized objects in a room in order to accomplish the most efficient use of space. He might know from experience or might have been told that the biggest items should be stacked first and then progressively smaller items stacked on top of them. The employee will thus start off with a rule such as 'The biggest items come first' and will then begin to compare different items. When comparing and sorting items, those which are non-arbitrarily bigger than most other items will come to control early selection responses and will be stacked first; items bigger than some but not as big as other items will be chosen next; and then the smallest items will be chosen last. Thus, the employee is operating under the control of a rule which itself regulates which non-arbitrary dimension (in this case, size) will provide further regulation of his behavior. Thus, while the relational operants involved are arbitrarily applicable in other contexts, they are controlled by non-arbitrary features of the situation (i.e., physical properties and relations).

Self-Rules

Problem solving rules are probably most often self-rules–rules which we devise and give ourselves in order to regulate our behavior. Although the RFT interpretation of rules provided by oneself involves the same basic processes as rules provided by others, ultimately analyzing the latter also requires an understanding of the RFT concept of self. According to RFT, self-awareness involves an individual "not simply behaving with regard to his behavior, but also behaving verbally with regard to his behavior" (Hayes & Wilson, 1993, p. 297; see also Dymond & Barnes, 1994, 1995, 1996, 1997). For example, a pigeon can be taught, using a direct history of differential reinforcement, to select a specific key contingent upon that pigeon's immediately preceding schedule performance, but the absence of DRR renders the self-discrimination non-verbal. Put simply, verbally discriminating one's own

behavior involves relational framing, whereas simply behaving with regard to one's own behavior does not.

Relational Frame Theory argues that derived relational responding makes verbal self-knowledge important and useful (Hayes & Gifford, 1997; Hayes & Wilson, 1993). For example, humans can verbally construct a future and plan for it in great detail, thereby increasing the chances of survival. However, RFT also argues that derived relational responding makes verbal self-knowledge emotional and difficult (Hayes & Gifford, 1997; Hayes & Wilson, 1993). Consider, for example, an individual who is unexpectedly passed over for promotion. Because of the coordination relations between work and promotion, many of the functions of his daily work routine may be transformed by this failure. In this way, his promotion failure is not just experienced aversively at the time it occurs, but can be carried for days, weeks, or even months into the future. Verbally, therefore, such an individual may fail psychologically at work everyday for months after failing to be promoted. According to RFT, this effect would not occur without verbal relations or the transformations of function. This interpretation also provides an example of how language processes might have particularly negative effects on an employee's experience of his or her job.

The negative effects of failure to win promotion might be measured by traditional I/O psychology researchers as low levels of self-efficacy or self-esteem. From an RFT perspective self-efficacy involves a frame of coordination between the required performance and the participant's verbally constructed ability to reach that performance. Suppose a listener is presented with the rule 'If you put in a better performance than other people in the office you will earn a promotion.' The listener may well understand the rule, view the speaker as credible and value the specified consequences but nevertheless not follow the rule if it occurs in the presence of a verbal network specifying that it is not possible to outperform these co-workers.

Self-esteem involves the presence of positive descriptors in coordination with self-related terms (e.g., 'I' or 'me'). If one experiences a series of career or life failures, or is simply told to expect them, such as the individual who consistently fails to gain promotion or is told by parents that he or she is a failure, it is likely that the self-relational network will cohere with such events.

These kinds of behavioral interpretations differ only at the level of process from traditional accounts. What is exciting about an RFT perspective, however, is that it suggests a far broader range of interventions. Within a traditional account the goal involves an increase of

self-efficacy or self-esteem. That is, it is the form of the relational network that is targeted through the presentation of C_{rel} cues. From an RFT perspective there is another alternative: target the transformation of stimulus functions itself. For example, it may be possible to change how self-efficacy and self-esteem self-rules function. This possibility and the data in support of it will be considered in later articles in the present issue (Bond, this volume; Hayes et al., this volume).

The Verbal Construction of Self

According to RFT, verbally-sophisticated individuals produce a myriad of simple and complex self-directed rules on an on-going basis. These may range from a very simple rule such as "I must make sure to get up early tomorrow to be on time for the company meeting" to complex rules about major life decisions or issues. The 'getting up early' rule is a strategic one in which the outcome is clearly and simply specified and the role of the self is somewhat limited. For example, almost anyone could instruct the listener about what to do in order to get up early tomorrow.

More extensive issues of self, however, may be involved in the overarching patterns of behavior in which the strategic rule participates. For example, the individual in question may have noticed a recent pattern of tardiness for work, for which she has no immediate explanation. Nevertheless, getting up late for work may conflict with the individual's ambitions to excel in her chosen profession. Complex issues such as these involve the self in a number of ways. First, they are all part of the on-going process of self-knowledge that includes becoming verbally aware of the time she arrives at work, feelings of guilt about being late, or ambitions about succeeding. Second, getting up on time for work may also involve a type of self-knowledge that RFT calls the conceptualized self, which in this case may involve a class of self-directed rules, including "I should always behave like a professional."

In contrast to strategic self-directed rules, valuative rules also play an important role in the emotional lives of human beings. Consider a woman who is questioning the future of her career working for a particular company. She may dwell upon how unsatisfying her job has become and think about quitting her job if things do not improve. The relational network in this rule contains various terms that do not possess precisely controlled behavioral functions. For example, what exactly does it mean for 'things to improve'? Furthermore, the outcomes of the

rule-following itself cannot be known. For example, what exactly will be the outcomes of either staying in or leaving the company?

One generic strategy available to an individual in the context of self-directed rules that are primarily valuative is to engage in additional relational activities that bring him or her into contact psychologically and emotionally with a range of possible outcomes. For instance, a close friend might ask the woman to try to imagine what it might be like to quit her current job, to attend perhaps multiple interviews, to experience rejection, and perhaps even end up earning less than her current salary.

According to RFT, self-directed rules that involve valuative problem solving require a highly complex sense of self that can be understood in terms of what RFT calls the three selves. Relational Frame Theory defines these selves as: the conceptualized self (i.e., the self as the content or object of verbal relations); the knowing self (i.e., the self as the ongoing process of verbal relations); and the transcendent self (i.e., the self as the deictic context of verbal relations, see Barnes-Holmes et al., 2001; Hayes, 1984, 1995).

The conceptualized self and the knowing self are relational networks that are relevant with respect to one's score on measures of personality (e.g., warmth, tough-mindedness) and self-ratings scales (e.g., self-esteem, self-efficacy). If our disillusioned woman chooses to stay with the company largely on the basis of self-as-content, little or no contact may be made verbally with important consequences of her actions. For example, she may decide to stay with the company based on the self-directed rule that she is the type of woman who is absolutely loyal to her employer. In this case, the verbal construction of self (as content) as "loyal" dominates her problem solving, rather than the verbally constructed future of an increasingly unsatisfactory working life.

A decision to act based solely on self-as-process may also be problematic. For example, the woman may decide to leave the company prematurely because she has accurately recognized that she has been unhappy for some time. However, such a decision, based as it is entirely on self-as-process, does not involve constructing relational networks in which self-as-content plays a role. Thus, the woman may leave the company for purely "emotional" reasons without asking herself if she wants to be the type of person who leaves a job, for example, 'when the going gets tough'?

Alternatively, the woman may act on the basis of self-as-context, thereby providing a stable perspective from which a more balanced decision can be made. Self as context simply involves observing events from the perspective of "I/Here/Now." This sense of self is argued in

RFT to be the side effect of deictic frames in human language such as I-You, Here-There, and Now-Then (for evidence on this point see McHugh et al., 2004). Perspective taking of this kind draws a frame of distinction between the process of observing from a perspective and the content of what is observed. Thoughts, feelings, and reactions are now looked at instead of looked from–they are "there and then" being observed from "here and now." This pattern of deictic responding creates considerably greater response flexibility. For example, the woman may notice the rich interplay of her history, thoughts of loyalty, sense of unhappiness, values and so on without having to resolve "contradictions" or ignore competing elements. This means that the dynamic between her other two selves (i.e., two generic relational networks pertaining to self) can be discriminated, and thus perhaps form a useful basis for future action. It may permit more contingency shaping to occur because it tends to undermine excessive rule control. As in mediation, that repertoire can be brought to bear on any event, verbal or non-verbal, which given the known tendency for rule-governed behavior to engender inflexibility (Hayes, 1989), can support greater psychological flexibility (see Bond, this volume; Bond et al. this volume).

RELATIONAL FRAME THEORY AND INDUSTRIAL/ORGANIZATIONAL PSYCHOLOGY

Relational Frame Theory provides a conceptual framework and body of empirical evidence that can be used to tackle basic and applied analyses of human language and cognition. Much of this work has opened up domains and issues in psychology that have received scant attention within the behavioral tradition. As a result, it becomes possible to address the areas within I/O psychology that were outlined at the beginning of the current article.

In the following sections we will return to each of these areas and present a brief RFT interpretation. The purpose here is not to provide a series of definitive RFT statements on I/O psychology, but simply to demonstrate how the theory can be used to understand and possibly guide future I/O research from a modern behavioral perspective. In each case we will also attempt to describe methods and interventions that are currently *not* being utilized in I/O psychology, so as to show how RFT can be used not just as an interpretive tool but also as a method for the detection of manipulable variables of organizational importance.

Job Satisfaction, Attitudes, and Behavior

Satisfaction and attitudes. Satisfaction is a rating of one's feelings of well-being in relation to one's job, whereas attitudes are evaluative tendencies towards a person, group, thing, event, or process that might include one's job, job-related events, one's boss, the company, and so on. Job satisfaction and attitudes are related and thus statistically correlated but they have been analyzed as separate phenomena in the traditional I/O psychological literature.

From an RFT perspective, there may be no functional distinction. RFT defines an attitude as a network of derived and explicitly reinforced stimulus relations, according to which the functions of events are transformed, that contains comparative frames. For example, a negative attitude towards one's job might be seen as responding in accordance with a frame of coordination between the job and descriptive terms that participate in comparative relations such as 'boring' or 'stressful' (see Grey & Barnes, 1996; Moxon, Keenan, & Hine, 1993; Schauss, Chase, & Hawkins, 1997; Watt, Keenan, Barnes, & Cairns, 1991). If the relational network also contains causal or if-then relations, such as "I am dissatisfied with my job because I am so bored," it is easy to see how job satisfaction and job-related attitudes are often highly correlated.

It is not surprising from a traditional psychological perspective that people's explicit verbal behavior (e.g., attitudes or ratings) about their job or other phenomena correlate to some extent with their behavior (e.g., negative attitudes towards a job may correlate positively with absenteeism and staff turnover). Unlike other perspectives, however, RFT specifies conditions under which attitudes or other cognitions may be more or less impactful on behavior (Bond et al., this volume). It is quite possible to reduce the functional behavioral impact even of very negative attitudes and beliefs.

In Bach and Hayes (2002), for example, which presents a relatively dramatic illustration of this, psychotic patients were taught to change the behavioral functions of cognitive symptoms (e.g., hallucinations) by responding differently to those symptoms. More specifically, the patients were taught to simply observe the symptoms instead of attempting to suppress or avoid them. Patients receiving this form of intervention showed significantly higher symptom reporting, significantly lower symptom believability and half the re-hospitalization rate of patients not receiving the intervention. This intervention thus successfully changed the behavioral functions of these patients' cognitions

by manipulating the functional context (C_{func}). In a similar way, negative beliefs or attitudes concerning, for example, an often tedious though otherwise valued and important job, need not transform the functions of the job and make it more likely that one will perform poorly or leave the job, if the functions of negative thoughts are themselves changed through an RFT-based manipulation of C_{func}.

From an RFT perspective, the correlation between verbal events and behavior which seems ubiquitous in the behavior of verbal human beings is explained, in part, by the socio-verbal contingencies that maintain the literal meaning of verbal events, that explain behavior in terms of putative causes, and that reinforce the say-do correspondence between vocalized relational networks and overt behavior. By manipulating C_{func} aspects of the environment, the statistical correlation between attitudes and behavior can be considerably reduced (see Hayes, Luoma, Bond, Masuda & Lillis, 2006, for a review of this literature). Thus it is quite possible to improve behavior, even if attitudes remain formally "negative."

Teamwork

When an individual claims to be part of a social group, three relational phenomena are likely involved. These are the conceptualized self, the conceptualized other, and the conceptualized group. In each case, these are relational networks that develop over time as a person frames relationally in response to particular experiences. A verbally sophisticated individual will typically demonstrate a well-developed conceptualized self. In the same way, we also develop a verbal construction of the stable content of others' views, history, actions, preferences and so on. Analogous to these verbal conceptualizations of self and other, but occurring later in verbal development, humans also develop and begin to respond in accordance with conceptualized groups. Behavioral regularities, such as nationality, religious practices, and so on, help to define conceptualized groups. A team may be thought of as a specific conceptualized group that is defined on the basis of, for example, declared aims, and agreed rules according to which said aims may be achieved.

A number of important psychological phenomena relevant to groups have been studied within the traditional I/O literature. Norms are one such phenomenon. Norms may be viewed as implicit rules for action. Most often these rules are inferred across multiple exemplars of behavioral correction? Occasionally, however, an explicit verbalization of the

normative rule is presented by fellow group members (e.g., 'In this team everyone works hard').

A second psychologically important phenomenon is that a group provides feedback to individuals regarding the 'correctness' of their opinions, beliefs, and actions (Festinger, 1954). From this perspective, 'being right' is one of the more highly valued consequences for most people because being right in a verbal sense results in social approval and status from an early age (Harre, 1993). According to RFT, 'being right' can be viewed as a verbally contacted consequence for verbal behavior itself. It is the verbal discrimination by a speaker or listener that what has been said is congruent with some other aspect of what has been said (e.g., 'I am a good worker because I am punctual for work') and with a broader verbal network (e.g., 'In general, good workers are punctual'). Making such a discrimination requires advanced verbal skills because it involves relating verbal relations to other verbal relations and entire relational networks to other relational networks. If the derived relations and stimulus functions of two networks are similar from the individual's perspective then the two networks can be said to mean the same thing, and as such, verbal coherence has been achieved.

A third psychologically relevant feature of groups (and perhaps of teams in particular) is group cohesion. Several factors have been identified that appear to determine strong intra-group bonds, such as attraction (e.g., Hogg & Hains, 1996), similarity (Goethals & Darley, 1977), shared perceived threats (Lanzetta, 1955; Turner, Pratkanis, Probasco & Leve, 1992), or shared values and norms (Cota et al., 1995; Zacarro & McCoy, 1988). It is not clear, however, why such factors would increase cohesion. Behavioral researchers have conceptualized the cohesiveness of groups in terms of the reinforcing effects of membership and the punishing effects of group desertion (see Cota, Evans, Dion, Kilik, & Longman, 1995), but these ideas do not appear to consider the clearly verbal nature of the reinforcing effects of group membership.

From an RFT perspective, factors such as status, a sense of belonging, and self-esteem are inherently verbal, and it is here that the importance of the conceptualized self, other, and group interact. Consider, for example, the impact of group membership on an individual's self-as-concept if the group is coordinated with concepts such as "power" and "prestige." In this case, some of the positively evaluated functions of the group may transfer to the self-as-concept due to the hierarchical relations between an individual and the group in which they participate, and the individual will literally feel more powerful for being a member, and perhaps others outside the group will be seen as possibly weaker in

some way. Individuals may experience this relatively early in life, when gaining entry to a school gang or a university fraternity, and this may facilitate subsequent ambition to seek prestige through group membership. For example, such an individual may work obsessively for years, sacrificing family and friends, for example, in order to gain entry to a highly prestigious company or institution. Such ambition is verbal in the sense that it produces possibly many social punishers, such as divorce and estranged children, and the putative reinforcer may be years in the future and indeed may never be obtained. Similarly, the punishing effects of abandoning a group are never contacted by those who remain within the group. In short, it appears that both positive and negative consequences of being part of a team are often verbally constructed (e.g., "If I was a Harvard Professor I could be so much better than I am right now") and it is these verbal constructions that play a major role in determining group cohesion.

Another variable that seems to be important for group cohesion is the discrimination of any shared features (e.g., values or beliefs) across group members that lead to a strengthening of the conceptualized group as a verbally constructed entity. In technical terms, such abstracted similarities can increase cohesion because they serve as contextual cues for frames of coordination and/or hierarchical class membership being applied to group members. This may be an important relational or verbal phenomenon that helps to explain why traditional I/O research has consistently found that diversity in teams frequently has negative effects on team effectiveness. In fact, of various demographic variables studied, including age, gender, ethnicity and job tenure, only functional diversity (i.e., differences between group members in terms of knowledge, skills and abilities) has been found to be positively related on a consistent basis with both performance and satisfaction (Williams & O'Reilly, 1998).

The barriers to group cohesion from an RFT perspective are functionally important frames of distinction between the group and the individual with regard to group norms, values, and purposes. Several RFT consistent actions should reduce the dominance and relevance of these relations. For example, self-as-context emphasizes frames of coordination between an individual and others. Seeing the world "from behind your eyes" I/here/now necessarily involves deictic frames that permit seeing the world from the "I/here/now" perspective of another. A defused and pragmatic use of language reduces the dominance of "being right" as the primary measure of verbal success–rather language is a shared tool that can get things done. Values clarification from an RFT

point of view allows individuals to "own" their values rather than viewing them as imposed by others (which reduces counterpliance against group values). Thus, RFT based interventions should allow the construction of more effective teams–a possibility that is only now being examined (e.g., Hayes, Bissett et al., 2004).

In Hayes et al. (2004), a package of methods including defusion and values clarification was shown to be successful in reducing stigma and prejudice towards recipients of behavioral healthcare. Similar methods might be harnessed to construct and shape more effective teams, when the job is not to reduce stigma and prejudice but to create empathy with other team members and strengthen loyalty to the team. As discussed above, defusion, or C_{func} manipulation, is important in that it allows one to see the world from the perspective of another, referred to as empathetic responding. Values clarification is important in that it helps one to verbalize one's own values and decide how they fit in with those of the team. The effectiveness of both these interventions is predicted by an RFT approach to human behavior.

Organizational Culture and Organizational Development

Organizational culture is an important phenomenon that can directly affect both worker satisfaction as well as company performance. One very important influence on organizational culture is to be found in the explicit rules provided by management as to the conduct of affairs within the company. These explicit rules shape the behavior of people within the organization and give rise to implicit rules or norms. These implicit rules form a complex relational network, which itself may participate in a hierarchical relation with the descriptor "company ethos or philosophy," for example.

There are various types of explicit rules. One very general type of rule is the mission statement (e.g., 'We strive to provide the best service possible to the customer'). Explicit rules such as this shape behavior directly by instructing staff to take good care of customers and indirectly by providing an ethos of duty and hard work analyzable in terms of implicit rules or norms such as 'Staff should be punctual,' 'Staff should work hard,' and so on. Apart from the very general mission statement, there are more specific explicit rules dealing with various aspects of life in the organization such as rules for promotion, rules for joining unions, safety rules, etc. These rules will also act to determine the culture of the organization as well as providing the basis for further implicit 'norm'-type rules. For example, with regard to safety a great number of

explicit rules will guide behavior and make the organization a safer place in which to work, and may contribute to an organizational ethos in which there is a feeling that management is concerned with the health and safety of its workers. In other words, implicit norms such as 'Workers should be safe in whatever they do' may arise. Workers in that kind of organizational ethos may feel more highly valued than workers in a company in which safety is not a core part of the culture. It seems likely that this sense of being more highly valued in a safety-conscious organization is largely verbal because it derives from formal rules (e.g., the company's safety code) and probably involves "if-then" relational frames–"if management are concerned about safety then they must care about the well-being of their employees."

One study has been conducted on organizational attitudes that was explicitly driven by RFT conceptions. In this study, Clayton (1995) identified beliefs commonly held by workers in a human service organization about their work environment. The executive director of the organization gave a persuasive speech that attempted to move these beliefs toward a more desirable end. The scripted speech used two methods. In one case, the desired attributes of the organization were instructed. In the second, the desired attributes were instructed but were linked to the undesirable attributes already held to be true by the workers. Desired attributes were randomly assigned to each condition and the speech was scripted accordingly. To give one small example, one goal was to have a work environment that was believed by workers to be creative and caring. 'Creative' was assigned to the negative attribute condition; 'caring' to the instruction only condition. Pre-testing had shown that the workers believed that the work environment was chaotic. Thus, the speech included the statements 'This is a caring place–we care about our clients. And yes, it is a bit chaotic, but that gives us the freedom to be creative in meeting our clients' needs.' Testing showed that worker attitudes changed more when desired positive organization attributes were linked to existing negative beliefs. This effect is predicted from RFT concepts since it should be much easier to elaborate an existing verbal network than to establish a new network that may literally conflict with the existing one.

Leadership

Models of transformational leadership place emphasis on the role of the leader as someone who 'manages meaning' and defines organizational reality by articulating an organization's mission and the values

that will support it. Thus, one way in which to understand the role of the leader is to see it as involving selling the mission of the organization to various parties including the workforce, management, and customers. For this job, the most important psychological tool is persuasion and/or rhetoric.

In trying to persuade employees to take a course of action the leadership of an organization might use motivative augmentals to increase the value of verbally constructed consequences. Such motivative augmentals aim to bring the listener into direct emotional (i.e., non-arbitrary) contact with verbally constructed consequences of their actions. For example, imagine a situation in a company in which industrial action is threatened. The company leadership might exhort the workforce as follows 'If you go on strike it will make the situation a lot worse for the company and for everyone who works here. The company will not be able to afford it and could go out of business resulting in massive job losses.' Meanwhile the union might claim: 'If you do not go on strike the injustices that have been endured by the workforce will continue and worsen and eventually many of us may lose our jobs.' In both cases, 'if-then' relations are used to increase the value of verbally constructed consequences; in non-technical terms, to play on the worst fears of the workers.

Another technique that might be used by either management or union leadership involves the showcasing of the listener's verbal incoherence. Good speakers/rhetoricians know that verbal incoherence functions as a punisher for most individuals. Put simply, nobody likes to feel foolish or confused. The rhetorician may thus find ways to actualize the frustrating functions of two incoherent verbal relations that are produced by the listener. For example, the management in the previous example might exhort the workforce thus: 'People who care about the future of this company will not go on strike.' Here the worker must respond to a verbal relation (the exhortation) that does not cohere with other relations in his or her verbal repertoire (e.g., 'I care about this company and I am going on strike'). If verbal coherence is to be maintained then one of the two verbal relations must change (see Festinger, 1957). If effective, the rhetorical devices used by the leadership of the company in our example will be powerful enough that the verbal behavior of some employees will be transformed such that coherence is achieved. For others, however, previously established verbal relations such as 'the company management is fundamentally untrustworthy and will say whatever is needed to stop a strike' will reduce the impact of the exhortations of the management. Thus, in this latter case there is no relational incoherence

because the company management's statements in the context of an impending strike are not to be believed.

One potentially effective means of countering widespread distrust of the leadership may be provided by a relatively simple form of rhetoric that involves the weakening of psychological functions maintained by verbal relations. It is necessary for rhetoricians to achieve this because, as Hovland et al. (1949) established, individuals are slow to respond positively to messages that compete with their beliefs and opinions. For illustrative purposes, let us consider the example of a newly appointed executive director who is taking over leadership of an organization from a previous director who was unpopular with and distrusted by the workforce. The new director has to make a speech to the employees but they are skeptical about her ability to improve things. In facing this challenge she has to contend with many problematic socially established verbal relations such as 'the management is untrustworthy.' Once such relational frames are established, it is difficult for the director to say anything without actualizing the functions of 'untrustworthy' for at least some members of the workforce. That is, her title as a manager and her actions as a director, at least initially, will acquire some of the functions of the previous unpopular director via a frame of coordination (because they are both labeled 'director'). One rhetorical means by which the functions of the 'you-cannot-be-believed' relational network can be weakened, however, is to elaborate the existing relational network (as demonstrated in Clayton, 1995, for instance) and to use terms and phrases that coordinate with trustworthy individuals and that participate in frames of opposition with dishonest leadership. An example might include 'I know that the previous director was not completely honest with you (thus elaborating the network), but I hope that we can all work together in an open and transparent way to move this company forward.' A statement such as this serves to reinforce the prevailing view of the workforce, but elaborates the network in the direction of working together. The first part of the statement coordinates with the workforce's existing relational network, and thus the latter part of the statement is less likely to actualize functions of dishonesty (because it would produce a possibly incoherent network).

The new director is unlikely to weaken the problematic 'dishonesty functions' by contradicting them directly. RFT provides a sound rationale for this. Any direct reference to dishonesty itself is bound only to actualize the relevant functions, even when the term is placed in a frame of opposition with the present leadership. In the same way, it is impossible to literally follow the rule 'do not think of a pink elephant' because

in order to do so one must first respond covertly to the visual perceptual features of a pink elephant. Thus, a poor way for the director to generate trust may be to start by using the phrase 'trust me' because the phrase may actually serve to strengthen the problematic functions of dishonesty attached to the leadership.

CONCLUSIONS

In the current article we have attempted to show how both the basic and applied sciences of behavior analysis are being transformed by the modern behavior analytic research agenda in human language and cognition. The traditional behavioral view of human behavior, in terms of direct operant and respondent contingency analyses, appear inadequate in a modern light, particularly when it comes to explaining complex human behavior such as is found in the context of I/O psychology. A more complete analysis and understanding of such behavior requires that we deal with the inherently relational nature of human language and cognition. RFT concepts, such as relational frames, relational networks, rules, problem-solving, and self provide a behaviorally coherent conceptual and empirical framework, for developing a modern behavior analysis of I/O psychology. On balance, we are only at the beginning of what needs to be done. Much of the basic studies in RFT are focused on very simple relational networks, and only the most recent studies have examined such high level processes as rule-governance, and the verbal self. Moreover, new research programs are needed that directly target RFT analyses of key psychological processes in the I/O environment. The conceptual tools are available and in other areas of application the empirical studies are rapidly being done. The same has begun to occur in organizational behavior, but it is not yet clear whether OBM will begin more comprehensively to apply these conceptual and empirical tools wholeheartedly.

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When Knowing You Are Doing Well Hinders Performance: Exploring the Interaction Between Rules and Feedback

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SUMMARY. The effect of two types of verbal consequences, rule-following feedback and task performance feedback, on rule-induced insensitivity to programmed schedules of reinforcement were examined. Rule-following feedback could be either accurate or non-contingently positive. The task involved moving a sign through a grid using telegraph keys operating on a multiple DRL 6/FR 18 schedule of reinforcement in the presence of an initially accurate rule. After acquisition, the multiple schedule was changed without notice to a FR 1/FI Yoked schedule. Accurate rule-following feedback plus feedback on task performance produced striking insensitivity to the DRL 6 to FR 1 schedule change, the opposite of what might be expected by a common sense analysis of task performance feedback, even after controlling for contact with the changed con-

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tingency. It is argued that findings such as these can only be understood by considering the mutual verbal relations evoked by the combinations of rules and feedback, rather than treating feedback as a simple consequential event or as a verbal consequence whose effects do not depend on the relations sustained with other events. doi:10.1300/J075v26n01_04

KEYWORDS. Task performance feedback, rule following feedback, Relational Frame Theory

People learn about contingencies both by experiencing them first hand and by being told about them. Behavior analytic research on what happens when people are told about contingencies has almost exclusively examined the impact of antecedent rules on subsequent control by contingencies, both in basic accounts (Baron & Galizio, 1983; Hayes, 1989) and organizational extensions (Agnew & Redmon, 1992; Malott, 1992). In the natural environment, however, many verbal formulae about the nature of existing contingencies are delivered following, not preceding, performance. There the literature is far less elaborated.

Basic behavioral research very commonly uses events of this kind as consequences (e.g., "You have earned two points.") but without a specific analysis of their functional nature beyond their consequential functions. Specifically, what is generally not studied is whether their verbal nature, however defined, contributes to their functions.

The applied literature particularly has studied verbal consequences more extensively, particularly under the rubric of "feedback." The feedback literature is substantial (see Alvero, Bucklin, & Austin, 2001 and Balcazar, Hopkins, & Suarez, 1985/1986 for reviews), but the effects are inconsistent and the basic principles that account for the effects of feedback (e.g., is it a consequence, a discriminative stimulus or an establishing operation? Do these functions depend on verbal relations sustained with other events?) are more a cause for debate than carefully crafted functional analytic investigation (Alvero et al., 2001).

Leaders in organizational behavior management have called for a return to basic behavioral functional analysis (Austin, Carr, & Agnew,

1999; Normand, Bucklin, & Austin, 1999) in order to move the field forward. This nexus between rule-governed behavior and feedback or, said differently, between antecedent and consequential control of verbal events, is a good example of an area where basic research driven by applied concerns could be helpful.

Without a technical behavioral account of verbal events per se, it does not seem possible to bring these two areas together. In the absence of that account, what divides them (antecedent and consequential functions) seems more behaviorally important than what unites them (that both involve *verbal* events). If their verbal nature is emphasized, however, rules and feedback seem more similar than different.

Relational Frame Theory (RFT: Hayes, Barnes-Holmes, & Roche, 2001) provides an account from which one can view their common "verbal" nature. From an RFT point of view, verbal stimuli are *verbal* stimuli when their functions are dependent on their inclusion in relational frames. Because relational frames are extensively discussed elsewhere in this issue we will not repeat that description here.

Events that are the objects of relational operants are not as dependent on their place in a temporal stream for their functions because relational networks are sets of mutual and combinatorial relations, as is discussed elsewhere in that article. Consider a person being told, "Do this" by an instructor demonstrating a behavior, followed by "Very good. Here is a dollar" when the participant then demonstrates it. At one level of analysis, one of these events is an antecedent and one is a consequence. At the level of the derived stimulus relations that are now likely, however, the situation is more complex. For example, "this," the actual behavior, and "good" may all be in frames of coordination, and that entire set may be part of an "if . . . then" relation with the money received. The temporal sequence in which these verbal stimuli were presented may not be central in a simple and direct sense to the relational functions established.

This way of thinking suggests that what may be particularly important to normal adult humans is the verbal relations sustained between antecedent, behavioral, and consequential events. Among the relations of this kind that are possible are those between verbal antecedents and the verbal response-consequence relation (e.g., are rules accurate?), between verbal consequences and the behavior as verbally described (e.g., task performance feedback), and between verbal consequences and the description of the antecedent-response relation (e.g., rule-following feedback). In broad terms this general idea is supported by a recent review of performance feedback in the OBM literature that indicated that

feedback in conjunction with some form of antecedent control produces the most consistent effects (Alvero et al., 2001).

The verbal nature of rules and feedback creates a complex set of considerations when several of these relations are involved. Consider the consequences of responding during common work performance tasks, for example, a worker being told of the number of items produced during a shift. It would be a mistake to settle for a direct parallel between these types of consequences and the food reinforcers that are used in the nonhuman operant laboratory. Not only are these consequences verbal, some of their effectiveness is established verbally (e.g., workers are told how many produced items will lead to a bonus; they sign contracts, or are given performance goals). In most human performance situations, the target behavior of interest is established at least in part through verbal rules, and verbal feedback includes feedback not just on task performance but also on the form of rule-governed behavior observed.

The verbal complexity of this situation could have unexpected effects. Suppose a worker is instructed how to operate a machine to produce a certain product. Feedback will usually implicitly or explicitly include both feedback about rule following (e.g., "That's right. Like I said, push that one first, and then turn this hard. Good.") and about task performance (e.g., "See how they are coming out smoothly now? Three a minute is just about what I'd normally hope to see and you are already there."). As an example of the kind unexpected effects that could occur in this situation, consider task performance feedback, which superficially one might think would simply encourage greater productivity. In the presence of rules or rule-following feedback it might actually have the opposite effect. If a particularly creative worker discovers new and more productive ways of completing the task, this behavior might violate the initial rules that the worker was given, or that are sustained by co-workers (e.g., "don't work *too* hard, you make us all look bad."). If it became clear to the worker, co-workers, or supervisors that unusually successful task performance feedback indicates relationally (i.e., verbally) that the rule has been broken, this kind of feedback might paradoxically *increase* rigid rule-following and *decrease* actual performance.

This kind of effect should not occur if feedback is a simple consequence, or indeed if it is thought to be "verbal" in the non-relational sense of the term (e.g., Skinner, 1957). If task performance feedback indicates rule-breakage, and as a result such feedback decreases effective performance, then it seems likely that the effects of feedback in this case depend on its *verbal* relation to the original rule.

The present study is the first we are aware of which examines the possible interaction between antecedent rules, rule-following feedback, and task-performance feedback. A laboratory task, which permitted the assessment of rule-induced "insensitivity" to programmed contingencies, was used (Baron, Kaufman, & Stauber, 1969; Hayes, Brownstein, Haas, & Greenway, 1986; Hayes, Brownstein, Zettle, Rosenfarb, & Korn, 1986; Shimoff, Catania, & Matthews, 1981). Both task performance and rule-following feedback were manipulated. Since verbal antecedents often induce insensitivity regardless of their accuracy, the actual contingency between rule-following and rule-following feedback was also manipulated. Due to the possible irreversibility of these conditions, a group design was used. In the absence of rule-following feedback, task performance feedback should not increase schedule sensitivity, but if the opposite was found when it was combined with rule-following feedback, it would indicate that the verbal relational nature of feedback needs to be given particular attention.

METHOD

Participants

Participants were college students recruited by signs, visits to classes, and through the introductory psychology participant pool. Only the 60 (10 in each experimental condition) who successfully contacted the contingencies in baseline (explained below) were retained.

Setting and Apparatus

The experiment was conducted in a small laboratory room containing a chair, table, a microcomputer with a color monitor, and two telegraph keys.

Experimental Task

The task was similar to that used by Hayes, Brownstein, Haas et al. (1986). A five by five grid of 4 cm by 3.5 cm boxes appeared on the monitor with a circle in the upper left hand corner. Below the grid, either a blue or red 4.5 cm by 1.5 cm rectangle was illuminated (but not both).

According to the programmed schedule, presses on the left telegraph key moved the circle down one square, while presses on the right key

moved the circle one square to the right. If the circle was moved more than five squares down or five squares to the right, it reset to the upper-left hand corner. If the circle reached the lower right-hand corner, a message on the screen instructed the participant to press either key in order to receive a point. The screen then displayed the total number of points that had been earned for that session and the circle was reset to the upper left hand corner.

Procedure

At the beginning of the experiment, the participant was read the following instructions:

> Please read these instructions with me as I read them out loud. This is an experiment in learning, not a psychological test. We are interested in certain aspects of the learning process which are common to all people. During the experiment, you will be alone in this room for approximately 96 minutes. The experiment will begin when a five by five grid appears on the monitor. When the experiment is over, the monitor will say so. When the grid appears, there will be a circle in the upper left-hand corner. To make points, move the circle to the lower right-hand corner; then when the monitor says to, push either button to receive your point. Try to see how many points you can get. Each point is worth a chance at two $20.00 prizes to be given at the end of the semester. Moving the circle to the lower right-hand corner involves the buttons and the lights. When the blue rectangle is lit, the best way to push the buttons is slowly with several seconds between each push. When the red rectangle is lit, the best way to push the buttons is rapidly. Please do not push both buttons at the same time during the task. If you have any questions, ask them now, because during the experiment the experimenter will not be able to answer any questions.

During the first 32 minutes of the experiment, movement of the circle was programmed according to a multiple schedule of differential reinforcement of low rate–6 seconds (DRL 6) alternating with a fixed ratio 18 (FR 18) schedule of reinforcement. Components alternated every two minutes. When the blue rectangle appeared, the DRL was in force and each press following a six second period without a press resulted in a movement, while presses with shorter latencies reset the timer. When the red rectangle appeared, an FR 18 was in force and the 18th response

on either key produced a movement. In all schedules, the direction of movement was determined by the particular key pressed (and note that the rule was accurate regarding rate).

Following 32 minutes of exposure to the first multiple schedule, the schedule was switched to a multiple fixed ratio 1 (FR 1)/fixed interval yoked (FI Yoked) schedule of reinforcement for the final 64 minutes of the experiment. The change in schedules was not announced or signaled in any way. When the blue rectangle (previously associated with the DRL schedule) was present, each press on a key moved the circle. When the red rectangle (previously associated with the FR schedule) appeared, the circle moved following the first press after a fixed interval that equaled the average number of seconds it took to respond 18 times during the last FR component. For example, if a participant responded 432 times in the last two minute FR 18 component, the interval value was 5 seconds.

These schedules were selected to permit two different kinds of schedule changes to be examined. If the participant showed no rate changes when exposed to the second multiple schedule, the circle would move in the same way as originally and the same number of points would be earned. However, when the DRL 6 changed to an FR 1, an increase in rate could lead to substantial increases in movements and points. Thus a large increase in the *effectiveness* of responding was possible. When the schedule switched from the FR 18 to the FI Yoked, the participant could show a substantial decrease in rate without reducing the number of movements or points, but the number of movements or points could not be increased. Thus an increase in *efficiency* but not effectiveness was possible.

Rule messages. Initially, the screen went blank for four seconds after each component of the multiple schedule. Two control groups continued in this condition throughout the experiment. After the first 20 minutes (and for the next 44) experimental participants were shown a 4 second message instead of the blank screen. The form of the message varied for each experimental group. The messages were introduced 12 minutes before the unannounced change in schedules in order to avoid associating the schedule change with a salient contextual change. In the final 32 minutes of the experiment, all participants were again shown a blank screen between components.

The first type of rule-message was referred to as *rule-following feedback.* It stated whether or not the participant's behavior corresponded with the original rule (fast rates when the red rectangle was present and slow rates when the blue rectangle was present) and took the form:

"You are (not) following the rule that you were given at the beginning of the session."

The second type of message was referred to as *rule-following/task performance feedback.* It added feedback on the number of points that the participant had earned during the component and took the form: "You are (not) following the rule that you were given at the beginning of the session. You earned *X* point(s) in the last two minutes."

Dependence of rule-messages. For half of the participants, rule-following feedback was dependent on the participant's actual behavior. Participants were told that they were following the rule that was given at the beginning of the experiment if they responded 30 times or less in a component when the blue rectangle was present (DRL 6 and FR 1 schedules), or more than 100 times in a component when the red rectangle was present (FR 18 or FI yoked schedules). Otherwise participants were told that they were not following the rule. Half of the participants were always told that they were following the rule regardless of their performance.

Control conditions. There were two control conditions in this experiment. These groups received no rule messages. The *Rule Alone Group* received the standard instructions at the beginning of the experiment but received no rule-following feedback during the course of the experiment. The *Minimal Rule Group* received the same instructions as those given to the other participants with the following section omitted:

> When the blue rectangle is lit, the best way to push the buttons is slowly with several seconds between each push. When the red rectangle is lit the best way to push the buttons is rapidly.

Experimental Design

The experimental design thus crossed the type of rule-message with their dependence. There were two control groups. In one control group the participants received the standard antecedent rule but did not receive rule-following feedback messages of any kind. This allows for the evaluation of the impact of verbal consequences per se on rule-following, above and beyond the effects of rules alone. The other control group received minimal instructions, which allowed for the evaluation of the effects of rules alone.

Of primary interest in this study were changes in participants' behavior in response to transitions from one schedule to another and following withdrawal of the rule-messages. Because different variables may

affect sensitivity to schedule changes enabling greater response efficiency (FR 18 to the FI Yoked) versus greater response effectiveness (DRL 6 to the FR 1), the findings for each type of transition was analyzed separately.

For analytic purposes, the experiment was divided into three phases: for the first 32 minutes the initial schedules of reinforcement were in effect, and for the last 12 minutes of that time rule-messages appeared for some participants. The last 12 minutes (covering three 2-min components for each schedule) were treated as *baseline*. The *New Schedule Phase* referred to the next 32 minutes, in which the new schedules were in place and rule-messages continued. The final 32 minutes of the experiment was termed the *Message Withdrawal Phase*, since rule messages, in groups that received them, were withdrawn. The number of responses and points earned per two-minute component were the principle dependent measures.

RESULTS

There were six groups that were each exposed to the three phases. While a two step analysis could be conducted–a 2×2 analysis supplemented by additional comparisons with the two control groups–this lowers the power of this small study and focuses the analysis on more general factorial questions than the ones examined here. Thus a one-way analysis across all six groups was conducted. A repeated measures analysis could not be used because of the violation of the assumption of homogeneity of variance across the three phases (given the highly structured patterns of responding in the baseline phase caused by the accurate instructions). Thus, a one-way analysis of variance was computed to examine differences in group performance during the Baseline phase (no differences were found on any measure) followed by a similar set of analyses on the differences from Baseline to the New Schedule Phase, and from that phase to the Message Withdrawal Phase.

Effectiveness-Based Transition

In the DRL to FR transition, sensitivity to the schedule change should lead to much higher rates of responding, and greater numbers of points earned. An increase in the New Schedule Phase in the number of responses or points compared to Baseline was the primary measure of schedule sensitivity. Differences between the New Schedule Phase and

Message Withdrawal Phase measure the maintenance of behavioral patterns when the rule-messages are withdrawn.

Parametric analyses of response rate. The average rate of responding in each component of each phase is shown in Table 1. A one-way ANOVA revealed a significant difference in these difference scores across the six conditions ($F(5, 54) = 2.35$, $p < 0.05$). On average, the number of responses during each two minute component in the New Schedule Phase increased over baseline most in the Minimal Rule condition (an average increase of 170.8 responses), and least in the Dependent Rule-Following/Task Performance feedback condition (70.4) with the others groups falling in the middle. A Tukey test (which was used for all post-hoc comparison throughout the study) showed that the De-

TABLE 1. Means and Standard Deviations for Each Group for the Average Number of Responses per Two Minute Interval in Each Component During Each Phase.

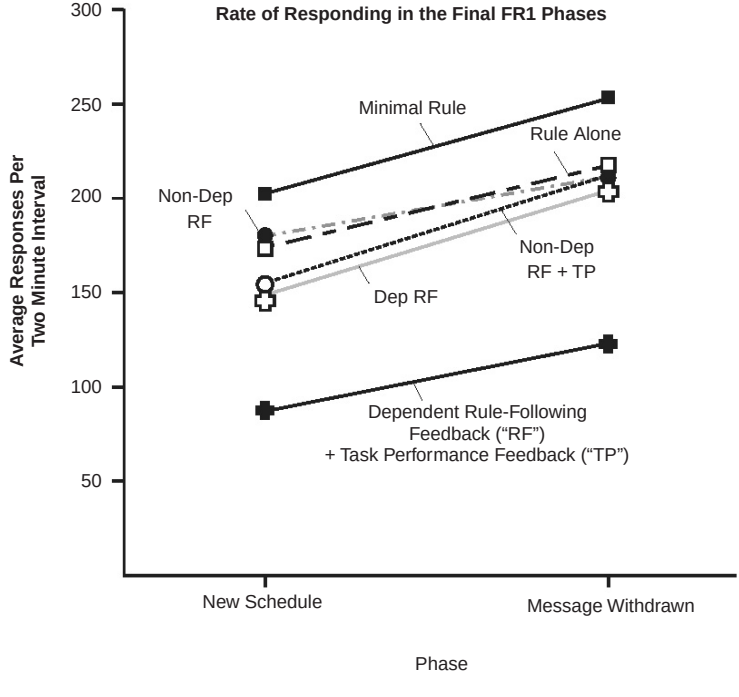
		Condition					
		DRL 6/FR			FR18-FI		
		Phase					
Group		Baseline	New Schedule	Message Withdrawal	Baseline	New Schedule	Message Withdrawal
Non-Dependent Rule Following Feedback	*Mean*	24.6	147.7	203.9	512.3	274.7	284.2
	SD	15.1	105.2	105.7	119.6	140.1	173.6
Dependent Rule Following Feedback	*Mean*	16.5	178.7	210.6	481.9	327.4	230.5
	SD	1.4	72.3	84.7	121.6	187.6	164.3
Non-Dependent Rule Following Feedback Plus Task Performance Feedback	*Mean*	17.3	87.7	123.7	511.8	390.6	266.9
	SD	2.4	68.2	83.9	146.1	121.1	152
Dependent Rule Following Feedback Plus Task Performance Feedback	*Mean*	17	154.2	211.1	464.8	343	257.4
	SD	1.5	61	52.9	82.9	150.6	203.2
Rule Alone Condition	*Mean*	20.2	173.9	215.8	499.9	326.9	266.4
	SD	5.05	68.3	51	95.3	214.9	180.6
Minimal Rule Condition	*Mean*	31.3	202.1	253.1	461.0	340.5	197.5
	SD	18.5	82.4	41.9	118.4	192.1	181.1

pendent Rule-Following plus Task Performance feedback condition was the only one to show significantly less schedule sensitivity than the Minimal Rule Group when controlling for overall alpha. These results are shown graphically in Figure 1.

A one-way ANOVA revealed no significant differences between the six conditions when the difference in responding between New Schedule Phase and Message Withdrawal Phase was analyzed ($F(5, 54) = 0.36$, p = ns) suggesting that this same pattern was maintained after rule messages were withdrawn.

Non-parametric analysis of insensitivity. To examine the increased insensitivity caused by task performance feedback when combined with rule-following feedback, the specific types of insensitivity found was then analyzed. Pilot work had suggested that two specific patterns could

FIGURE 1. Rate of responding during the final FR1 conditions under each of the six conditions tested in the experiment. "FR" means rule-following feedback, either dependent on actual performance ("Dep") or consistently positive ("Non-Dep"); "TP" means task-performance feedback.



indicate insensitivity to a change from the DRL 6 to the FR 1 schedule of reinforcement. One pattern was characterized by a failure to show more than 30 responses in any of the 8 components in the New Schedule Phase (30 responses was chosen because it was also the cutoff for receiving a positive versus a negative rule-following message in the dependent groups). This form of insensitivity gives no indication that the changed contingency was contacted effectively. A second pattern consisted of more than 30 responses (at which point the changed contingency would be contacted) and then a return to below 30 responses across any of the 8 components in the New Schedule Phase: this pattern of insensitivity indicates that the changed contingency was contacted but behavior then reverted to a less effective form.

These data can be seen in Figure 2, which present all of the participants' actual data in the Dependent Rule-Following feedback plus Task Performance feedback condition. Participants S25 and S45 never responded above 30 response per minute in the New Schedule phase. Participants number S13, S22, S43, S44, and S50 all responded well above that level but returned to lower rates of responding. S5 showed a similar pattern briefly, but did not quite fall below the 30 response cutoff and was not counted as insensitive. However, this participant did return to low levels of responding in the final phase when the rule-messages were withdrawn. The pattern shown by the most sensitive group, those in the Minimal Rule condition, was strikingly different. The results for the participants in this condition are shown in Figure 3. All but one show unambiguous sensitivity to the change to the FR1. Only participant S41 does not, and this participant's pattern is of the type of insensitivity that never contacted the contingency. The pattern shown by all of the other nine participants in the Minimal Rule condition is shown by only two of the participants in the Dependent Rule-Following feedback plus Task Performance feedback condition (S17 and S31).

These patterns of responding were analyzed statistically using nonparametric comparisons across groups. A Chi-square test comparing all six groups on the number of participants showing insensitivity of either type was significant ($\chi^2 = 23.30$, $p < .001$, Cohen's $d = 1.59$). The Dependent Rule-Following/Task Performance condition (which showed the most insensitivity in the parametric analysis) was also insensitive using these measures: 7 of 10 participants were identified as being insensitive to the schedule change compare to no more than 2 of 10 in all other groups (the Dependent Rule-Following condition was next highest with that value).

FIGURE 2. Rate of responding for each participant in the condition with dependent rule-following feedback and task performance feedback, in three phases: DRL 6 (alternated with an FR 18, not shown), FR 1 with rule-messages (alternated with a yoked FI not shown), and FR 1 with the rule messages withdrawn.

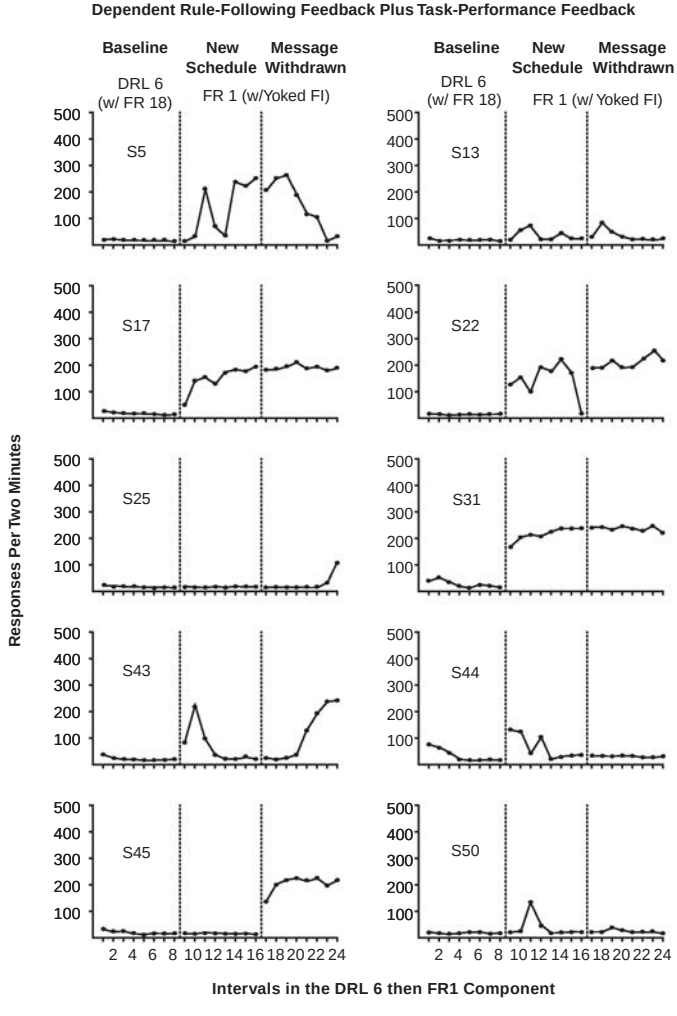
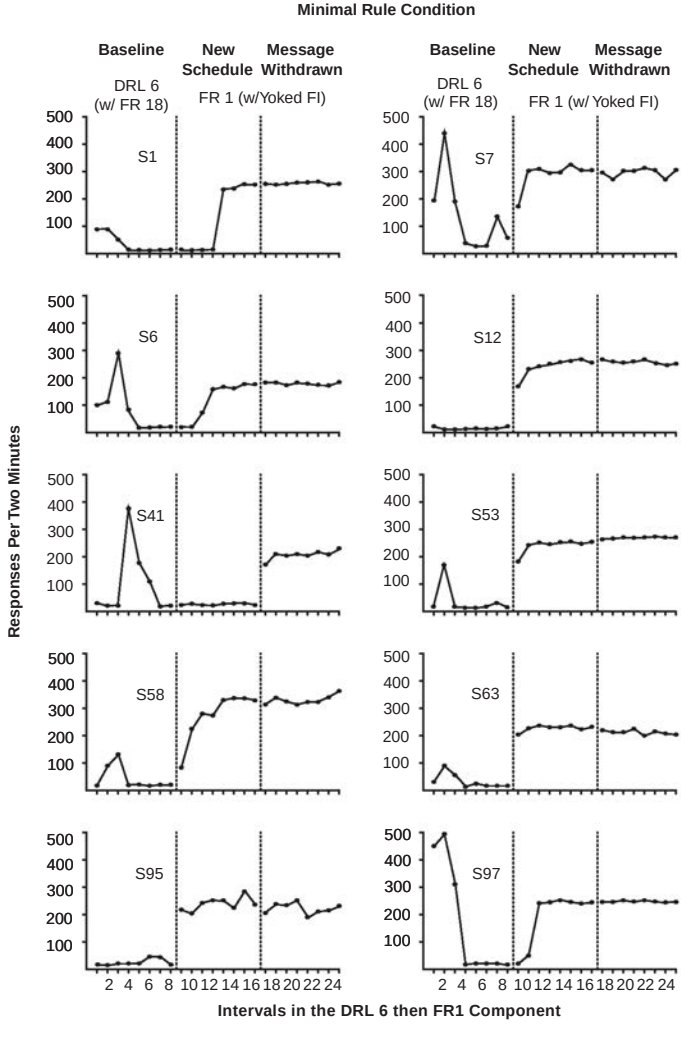


FIGURE 3. Rate of responding for each participant in the minimal rule condition in three phases: DRL 6 (alternated with an FR 18, not shown), FR 1 with rule-messages (alternated with a yoked FI not shown), and FR 1 with the rule messages withdrawn.



In order to guard against the possibility of error due to a large number of cells with low expected values, the data were collapsed to compare the number of sensitive versus insensitive participant in the Dependent Rule-Following/Task Performance condition compared to the combined figures for all of the remaining conditions. It too was significant ($\chi^2 = 17.45$, $p < .001$, Cohen's $d = 1.28$).

The first type of insensitivity was then removed to focus the analysis only on participants who exceeded 30 responses in a component and then reverted to a lower rate. This kind of "insensitivity" seems particularly like examining the effects of feedback per se since it means that participants received a negative rule message ("you are not following the rule") and then returned to rule-consistent performance. Fifty percent of the Dependent Rule-Following feedback plus Task Performance feedback participants (5 of 10) showed this pattern but only 6% (3 of 50) of the remaining participants did so. The overall test was significant ($\chi^2 = 17.51$, $p < .01$, Cohen's $d = 1.28$) as was the comparison of the Dependent Rule-Following/Task Performance participants to all others ($\chi^2 = 10.41$, $p < .01$, Cohen's $d = .91$).

Point of contact with the schedule change. It has been known for some time that rules produce insensitivity in part by altering the form of the responses that are available to make contact with programmed contingencies (e.g., Hayes, Brownstein, Zettle et al., 1986; Joyce & Chase, 1990).The non-parametric analysis examined this issue for overall rates within a component but even a single response with a short latency exposed the participant to a light movement in the FR 1 condition that would not have occurred in the DRL 6 condition. This kind of contact would not be detected using overall rates. Because it seems functionally important to distinguish between insensitivity that is caused by a failure to contact changed contingencies versus insensitivity that occurs despite that contact, a set of additional analyses were conducted.

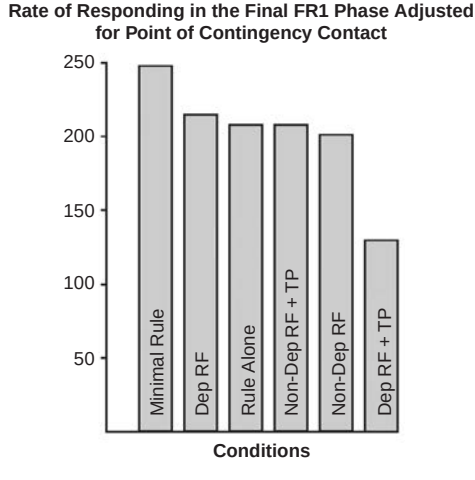
After the schedule change, the first component during which the participant accumulated a total of one, four, and eight IRTs of less than two seconds were recorded for each participant. Because the patterns of results were highly similar across these three values, we will discuss only the data in which contact with the changed contingency was defined as at least 8 short latency responses in a two minute FR1 component (8 was selected in part because this is the minimum number of responses needed to earn a point).

There was a significant negative correlation between participants' mean number of responses in New Schedule Phase and the component

number at which they accumulated eight short latency responses ($r = -0.60$, $p = 0.0001$) indicating that earlier contact predicted greater schedule sensitivity. To examine the insensitivity effect while attempting to control for contact with the changed contingency a one-way analysis of covariance was conducted on responses in the New Schedule Phase, using the component during which the contingency was contacted as a covariate. This analysis was significant (F (5, 54) = 2.59, $p < 0.05$). Post hoc analyses revealed that participants in the Dependent Rule-Following/Task Performance condition had significantly fewer responses per component (adjusted mean of 101.8) than did each of the other five groups with the exception of the Rule-Following Point Nondependent Group (149.0). There were no additional significant differences between the remaining groups.

A similar analysis was conducted for the Message Withdrawal Phase (see Figure 4). This phase showed the insensitivity differences controlling for contingency contact. A one-way analysis of covariance was significant (F (5, 54) = 3.15, $p < 0.05$) and post hoc analyses revealed that

FIGURE 4. Rate of responding during the FR1 condition when rule-messages have been withdrawn under each of the six conditions tested in the experiment, adjusted for the initial contact with the contingency defined as at least 8 short latency responses during the two minute interval. “FR” means rule-following feedback, either dependent on actual performance (“Dep”) or consistently positive (“Non-Dep”); “TP” means task-performance feedback.



participants in the Dependent Rule-Following feedback plus Task Performance feedback condition had significantly fewer responses per component (adjusted mean of 131.8 responses) than each of the other five groups. Thus, the effects seen in the Dependent Rule-Following/Task Performance condition were not due to changes in topography that altered contact with the programmed contingencies.

Points earned. Parametric analyses identical to the response rate analysis were conducted using points earned as the measure. As might be expected, given the dependent relation between response rate and movements of the marker, these analyses confirmed the response rate analysis. Because they are highly redundant with those already presented, they will not be presented in detail here. The most important finding was that the lower rates of responding characteristic of the Dependent Rule-Following/Task Performance participants lead to significantly lower numbers of points earned (only about 45% of those earned in the Minimal Rule condition), showing that the patterns described above truly did hinder the utility of performance (see Haas, 1992).

Summary. Taken together, these results show that rule-following feedback plus task performance feedback produces considerably more insensitivity to programmed contingencies than any other type of feedback tested. These effects are seen even when initial contact with the contingencies are factored out statistically.

Efficiency-Based Transition

Similar numbers and kinds of analyses were conducted on the effects of feedback and verbal rules on the transition from an FR 18 to a yoked FI. No statistically significant effects were shown and thus these results will not be discussed here.

DISCUSSION

The present data show the danger of thinking of rules and feedback solely in terms of direct contingencies or more common sense accounts of verbal events. Participants in the Rule Dependent feedback plus Task Performance feedback condition were no less likely than other groups to contact the changed contingency that allowed them to earn many more points, and because they were receiving task performance feedback they knew when they were doing well. But in this condition the

dependent rule and task feedback interacted in a way that caused performance to revert to a less effective form even after making effective contact with the contingency. In effect, accurate task and rule following feedback undermined performance due to the relationship between the rule and the two types of feedback used.

When giving rule-following feedback, the verbal community can often make use of response products. For example, the feedback "You smoke too much" may be based not on actual observation of smoking but on the number of cigarette butts observed in an ashtray. Points are similarly response products, and thus incorporating these response products into feedback may increase the specificity of the feedback because points can then be taken to be a verifiable metric by which the verbal community metes out reinforcement or punishment for rule-following or rule-breaking. If points become a "verifiable metric" for rule following, however, the reinforcing value of points may also change because points and rule-breakage can come into a relational frame.

At the onset of the experiment, the participants were told: "Try and earn as many points as you can." From an RFT point of view, if the initial instructions put "points" into a frame of coordination with achievement, money, and so on, the positive functions of these events may transfer in some contexts to points themselves. This is supported by several aspects of the data. Participants given minimal rules and accurate rules worked readily to earn points, both pressing slow on the DRL 6 schedule and pressing many times per minute on the FR 18 schedule. Following the effectiveness-based transition, most participants showed marked increases in rate soon after making contact with the transition.

The combination of dependent rule-following and task performance feedback may have the opposite effect, however. The words "You are not following the rule" and "You earned x points," could establish the points as aversive if rule-breakage is aversive. The possibility that points themselves became aversive indications of rule-breakage is supported by the insensitivity effects that continued into the Message Withdrawal Phase. Previous research has shown that when antecedent rules are presented and subsequently withdrawn, compliance with the rule rapidly desists if non-compliance is known to be more effective in terms of point earnings (Hayes, Brownstein, Haas et al., 1986; Hayes, Brownstein, Zettle et al., 1986). In the Message Withdrawal phase, only point feedback was presented and yet behavioral rigidity persisted even

though the changed contingency had been contacted (see Figure 2). This makes sense if the functions of the points themselves were changed as a result of the combination of task performance and rule following feedback because the continuance of point presentation might punish rule-breakage, possibly for some time after the feedback was removed (e.g., see S5, Figure 2).

It should be noted that rule-following feedback was not effective in reducing rule breakage in and of itself, but only when combined with task performance feedback. This provides additional evidence for the relational nature of the effects seen. It should be recalled that points were presented immediately following each successful response sequence. The delayed nature of rule-following feedback appeared to eliminate its behavior regulatory role. By combining it with task performance feedback an immediate consequence was now continually available that was related to that delayed aversive consequence.

It may also be important that points as response products are readily identifiable and quantifiable. In the past, the verbal community may have been more likely to administer aversive consequences for breaking a rule when the behavior of interest or its products are likewise readily identifiable. Thus, part of the increased effect from the combination may have to do with participants' social history regarding the rule breakage linked to verifiable and socially available task performance products.

IMPLICATIONS FOR ORGANIZATIONAL BEHAVIOR MANAGEMENT

The counterintuitive effect of feedback found in this study mirror findings on the mixed effectiveness of feedback in two reviews of the performance feedback literature (Alvero et al., 2001; Balcazar et al., 1985/1986). Workplace settings may frequently involve situations in which both rule following feedback and task performance feedback occur and can have synergistic effects. If a particular supervisor is wedded to the status quo or particularly resistant to change, and provides messages and feedback to do things as you were taught, task performance feedback might actually *undermine* performance improvement for the reasons identified in this study. Similarly, co-workers may socially re-

inforce compliance with a "go slow" rule in order to decrease the likelihood that production standards would be increased, or to undermine pliance to the rule messages of supervisors. In these conditions, public feedback of actual task performance may provide the group information about colleagues whose production exceeds the norms. In effect, public measures of task performance could become proxy measures of social rule-breakage by "brown noses." Academic settings have been known to show similar effects when test scores are posted and those who are known to have high test scores are teased or ridiculed for complying with the task expectations and verbal instructions of the teacher ("curve breakers"; "teacher's pet").

The prevalence of workplace feedback based on response products underlines the importance of assessing the verbal relations and social contingencies that surround stated achievement of specified outcomes. The paradoxical effects of feedback have been noted before (Goodman & Wood, 2004). The present data provide support for the idea that feedback is not a simple consequence. Rather, feedback is a complex verbal event whose functions depend in part on the verbal relations sustained with other events, sometimes to the detriment of the very behavior one is attempting to establish or maintain through its use.

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The Ability of Psychological Flexibility and Job Control to Predict Learning, Job Performance, and Mental Health

Frank W. Bond
Paul E. Flaxman

SUMMARY. This longitudinal study tested the degree to which an individual characteristic, psychological flexibility, and a work organization variable, job control, predicted ability to learn new skills at work, job performance, and mental health, amongst call center workers in the United Kingdom (N = 448). As hypothesized, results indicated that job control, psychological flexibility, and the synergistic interaction between the two, predicted people's ability to learn a new computer software program, as well as their mental health and job performance, which was objectively measured. Discussion focuses on the implications of these, and previous findings, for organizational behavior. doi:10.1300/J075v26n01_05

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There is an increasing need for people continually to gain high level skills over the course of their working life, in order to adapt to new technological developments and ever changing business requirements (Boswell, 2003). This view is reflected in the widespread trend for organizations to adopt an 'organizational learning' strategy, whereby all employees engage in continual learning as part of their role requirements (Argyris, 1999). Such an emphasis on career-long learning is very much reflected in the large amount of money that organizations spend on training their employees: approximately £23bn per year in the UK, alone (Boswell, 2003). As learning is now an expensive business requirement, it is important to identify individual, work, and organizational characteristics that enhance people's ability to maximize their learning.

JOB CONTROL AND LEARNING NEW WORK SKILLS

One of the variables known to influence learning is job control–people's perceived ability to exert some influence over their work environment, in order to make it more rewarding and less threatening (Ganster, 1989). Several theories of organizational behavior have hypothesized that providing people with control over their work serves to improve performance, mental health, and job satisfaction (e.g., the job characteristics model) (Hackman & Lawler, 1971), the sociotechnical systems approach (e.g., Emery & Trist, 1960), action theory (Frese & Zapf, 1994; Hacker, Skell, & Straub, 1968), and the demands-control model (Karasek, 1979). Consistent with these views, literature reviews have found consistent evidence that high levels of worker control are associated with low levels of stress-related outcomes, including anxiety, psychological distress, burnout, irritability, psychosomatic health complaints, and alcohol consumption (Terry & Jimmieson, 1999). In addition, Bond and Bunce (2003) showed that job control predicts, one year later, mental health, job satisfaction, and an objective measure of job performance (i.e., keystroke errors amongst call center operators), and it can function as a mediator by which a work reorganization interven-

tion improves people's mental health, absenteeism levels, and self-rated performance (Bond & Bunce, 2001).

There has been limited theoretical work on how job control may support learning (Taris, Kompier, deLange, Schaufeli, & Schreurs, 2003). Karasek and Theorell's (1990) demands-control model specifies that workers who have higher levels of control can choose how best to cope with new demands or challenges. If their responses are effective in meeting those challenges, they will be integrated into the person's behavioral repertoire. As workers discover how to perform their job more effectively, they also gain increased competence, confidence, and feelings of mastery that can serve to promote mental health and buffer against potentially deleterious effects (e.g., depression, cardiovascular disease) of a demanding or challenging job (Karasek & Theorell, 1990; cf., Frese & Zapf, 1994).

From a more behavior analytic perspective, greater levels of job control should offer workers more influence over the contingencies under which they work, which should reduce unnecessary aversive control. For example, if workers can take lunch when they wish, they may prevent having to work while hungry, which in addition to being aversive could reduce work effectiveness. Similarly, if call center workers have control over how they interact with customers instead of following a word for word script, they may be able to fit these interactions to their social skills and styles, resulting in less social distress and perhaps greater effectiveness.

There is limited empirical research on the degree to which job control promotes learning, but extant studies do show a positive relationship between job control and various proxy measures for learning: for example, perceived mastery and self-efficacy (Parker & Sprigg, 1999; Taris et al., 2003), and skill utilization (Holman & Wall, 2002; Morrison, Upton, & Cordery, 1999). The current study aims to extend these findings in three ways. First, it uses an objective behavioral measure of learning, instead of a self-reported one. Second, unlike the studies just noted, it examines not only mental health, but an objective measure of job performance. Finally, the present study considers job control in the context of a general behavioral style that is argued by Acceptance and Commitment Therapy (ACT, said as one word, not initials; Hayes, Strosahl, & Wilson, 1999), to be critical to effective performance: psychological flexibility (Hayes, Strosahl, Bunting, Twohig, & Wilson, 2005).

PSYCHOLOGICAL FLEXIBILITY AND LEARNING NEW WORK SKILLS

A preceding article (Bond, Hayes, & Barnes-Holmes, this volume) has already laid out the case for the importance of psychological flexibility, and has described how Relational Frame Theory (RFT; Hayes, Barnes-Holmes, & Roche, 2001) leads to the concept. In brief, it is argued that the utility of relational framing leads naturally to cognitive fusion (the unhealthy domination of verbally derived functions over other behavior regulatory processes) and temporal and comparative frames lead naturally to experiential avoidance (the tendency to alter the form, frequency, or situational sensitivity of negative private events even when doing so causes behavioral harm). Both of these processes also reduce contact with the external and internal events present in the moment, and increase attachment to a conceptualized self. All of these processes interfere with psychological flexibility, which refers to contacting the present moment fully and, depending upon what the situation affords, acting in accordance with one's chosen values.

There are several types of research on psychological flexibility. Correlational research has generally used the Acceptance and Action Questionnaire (AAQ; Hayes, Strosahl et al., 2004) which was created from a pool of items that are directly targeted by ACT, including acceptance, defusion, and valued action items. Examples of items include "When I evaluate something negatively, I usually recognize that this is just a reaction, not an objective fact" or "When I feel depressed or anxious, I am unable to take care of my responsibilities." There have been over 25 studies that have used the AAQ, covering nearly 6,000 participants. Across this literature (see Hayes, Luoma, Bond, Masuda, & Lillis, 2006) the AAQ correlates .4 to .5 with mental health measures, but importantly it also correlates similarly with behavioral effectiveness. For example, Bond and Bunce (2003) showed that higher levels of psychological flexibility predict, one year later, better mental health and improved job performance (using an objective, behavioral measure) amongst telephone call-center operators in a UK financial organization.

Correlational data of this kind does not alone show that psychological flexibility has a controlling relationship with others behaviors. One way this issue has been examined is longitudinally and in such studies (e.g., Bond and Bunce, 2003; Hayes et al., 2004) psychological flexibility predicts positive work and mental health outcomes more so than vice versa.

Another kind of research is experimental work that specifically targets psychological flexibility and looks at the additional impact on other outcome variables. For example, a randomized, controlled experiment by Bond and Bunce (2000) evaluated the effectiveness of an ACT worksite stress management intervention (Bond & Hayes, 2002) in a large UK media organization. Results indicated that ACT improved employees' mental health more so than both a wait list control and a direct behavioral intervention designed to teach workers to modify their work environment to reduce stress. Interestingly, although not targeted directly, ACT increased actual work innovation as much as did the direct behavioral intervention. Furthermore, findings showed that all of these improvements were mediated by the AAQ in the ACT group but not the others groups; that is, ACT improved outcomes only if it improved participant's psychological flexibility. That relationship has been examined in a number of ACT studies (see Hayes et al., 2006, for a meta-analysis). For instance, Hayes, Bissett et al. (2004) found in a randomized controlled trial of ACT for work burnout that that ACT was effective in reducing burnout; this result occurred because it increased defusion and acceptance.

THE PRESENT STUDY

Following from the organizational behavior literature (e.g., see Terry & Jimmieson, 1999), the first hypothesis of this study is that higher levels of job control will predict greater learning, as well as better job performance and mental health. Consistent with Hayes et al. (1999), it is also expected that higher levels of psychological flexibility will predict enhanced learning, as well as better job performance and mental health. Finally, this study will consider whether these two factors interact.

There are good reasons to think that job control and psychological flexibility do interact. Job control allows workers to adjust how they contact work contingencies, but this affordance seems more likely to make a powerful difference if workers are psychologically flexible enough to engage in new behaviors. Due to their experiential openness, workers with greater psychological flexibility and good job control should be more sensitive to the wider range of values-consistent contingencies of reinforcement that their job control provides them. As such, they should learn over time to perform their work more effectively, as well as have better mental health, confidence, mastery, and motivation.

In support of this idea, Bond and Bunce (2003) found that greater levels of psychological flexibility at Time 1 increases the association between higher levels of job control at Time 1 and better mental health and performance one year later at Time 2. This synergistic strengthening effect for flexibility is consistent with the final possibility examined in the present study, namely, that psychological flexibility and job control together facilitate learning among workers, as well as better mental health and performance.

METHOD

Design and Participants

This study constituted a three-wave panel design, but it was not a full-panel study, as every variable was not measured at each of the three observation points (Zapf, Dormann, & Frese, 1996). Six hundred and eighty-nine customer service center (or call center) workers of a United Kingdom financial institution were asked to participate. (This financial organization was distinct from the one studied by Bond & Bunce, 2003). These employees had an entry-level data processing role [Mean tenure in that role was 5.64 years (SD = 4.42).] that allowed us to obtain objective measures of their learning and performance. Five hundred and three of these employees (or 73% of the sample) volunteered to take part. At the first observation point (Time 1), participants completed questionnaires that assessed job control and psychological flexibility; in addition, their performance was tested on a new computer software system on which they were to be trained.

Time 1 occurred just before participants began a five day training program on an entirely new computer software system that they needed for doing their job: processing customer applications, requests, and accounts. Following this course, all trainees immediately began using the new program in their daily work; after four weeks of doing so (i.e., Time 2), their learning was formally assessed via a mock 'customer service scenario' using the new software. As with the pre-training test, performance on the scenario was determined automatically by the computer software, and, when compared to performance on the pre-training test, constituted the measure of learning in this study. Two months following this test of learning (i.e., Time 2), and three months following the training program (i.e., Time 3), participants were asked to complete a measure of general mental health, and 488 participants (or 71% of the

original sample) agreed to do so. Finally, the organization provided records of these 488 participants' performance-to-target ratios for the three months following the training program. In the final sample of 488, 57% were women, and 52% worked part-time. Further demographic characteristics are presented in the analyses following.

Measures

Predictor Variables

Job control (Ganster, 1989). This 21-item scale assesses a range of areas over which people can have control at work: variety of tasks performed, the order of task performance, pacing, scheduling of rest breaks, procedures and policies in the workplace, and arrangement of the physical environment. Each item (e.g., "How much control do you have personally over the quality of your work?") is rated on a five-point Likert scale that is labeled "Very little" (scored 1) to "Very much" (scored 5). Higher scores indicate greater levels of control. Psychometric properties of this scale appear good (see Ganster, 1989; Smith, Tisak, Hahn, & Schmieder, 1997), and, in the present study, the alpha coefficient for this scale was .85.

Acceptance and action questionnaire (AAQ; Hayes et al., 2004). This is a 16-item scale of psychological flexibility. Each item (e.g., "If I get bored of a task, I can still complete it"; "When I feel depressed or anxious, I am unable to take care of my responsibilities" (reversed for scoring purposes)) is rated on a seven-point Likert scale labeled "Never true" (scored 1) to "Always true" (scored 7) and higher scores indicate greater flexibility. Published research on the AAQ, summarized by Bond and Bunce (2003) and Hayes et al. (2004), indicate that it has acceptable construct and criterion-related validities. Its alpha coefficient in this study was .81.

Outcome Variables

Performance on customer service software (Learning). Learning is assumed to have occurred when people can perform a previously unknown pattern of contextually-controlled behaviors as a result of their exposure to a situation (Patrick, 1992). In this study, participants learned an entirely new software system in a five day training program. Their success in learning it was assessed by comparing their pre-training to post-training performance on it. Their pre-training performance

was tested by asking them to use the program to access customer account details, a list of recent transactions, and product information, since these three pieces of information would have to be obtained prior to handling any customer account query. At the very beginning of the first training session, participants were given one minute to access all three pieces of information, four times as long as it would normally be expected to take. Test scores were automatically determined by the software program and ranged from 0 (no pieces of information obtained) to 3 (all pieces of information obtained). It was this number that constituted the pre-training score that was used to calculate the learning score.

In order to evaluate learning, participants' performance on this very basic test was compared to their performance on a post-training test, one month later, which assessed their ability to complete one of three, mock, randomly assigned 'customer service scenarios,' using the new software system. Each of the three scenarios was based upon real customer account problems, and the participants had to rectify them, by successfully obtaining and then altering seven pieces of information, using the computer software system. In each of the three scenarios, there was only one correct solution for each of seven tasks, and participants received one point for each task successfully completed (a maximum of seven points for the test, and these scores were automated by the software program). These points constituted the post-training mark, from which the pre-training mark was subtracted; the result was the learning score for this study. As this score is considered confidential by the host organization, it was standardized for the purposes of this study. This mock customer service test, along with the pre-training test, was designed by the organization's information technology and training departments, and all employees took it, but only the scores of participants of this study were obtained, with their consent, by the author.

Performance-to-target ratio (Performance). Customer service center workers were set daily targets that they were expected to achieve. The actual nature of the targets (e.g., how many items a person had to process) differed between teams, when the type of work varied (e.g., processing mortgage applications or replying to customer enquires). Employees worked in teams of approximately 10 people, and individuals within a team were set the same target. No participants' target differed from day-to-day, during the course of this study. Targets for part-time workers were based, pro-rata, on the number of hours that they worked per week. Failure of individuals consistently to have met their target resulted in disciplinary action against them. Teams received bonuses every three months, based upon their mean, daily perfor-

mance-to-target ratio (P/T), over the previous quarter. For the purposes of this study, performance was assessed by an individual's mean, daily P/T for the three months following the training session. As this ratio was also considered confidential by the host organization, it was standardized.

General Health Questionnaire-12 (*GHQ*; Goldberg, 1978). This is a 12-item scale, typically used as a measure of general mental health (McDowell & Newell, 1996). Here the Likert method of scoring was used (see Banks, Clegg, Jackson, Kemp, Stafford, & Wall, 1980), where each item (e.g., "Have you recently. . . ." "Lost much sleep over worry") was scored 0 ("Not at all") to 3 ("Much more than usual"). Higher scores indicate greater mental ill-health. The alpha coefficient was .88.

Procedure

Each of the 689 customer service center workers selected to participate in this study received an envelope the working day before the training program started (typically a Friday). It contained a cover letter that explained the study, and it asked them to print their name, sign, and date the letter in the appropriate places, if they wished to participate. This letter was attached to a questionnaire pack (measuring job control and psychological flexibility), and participants were given work time that day to complete it. Upon doing so, they were asked to seal this material in an envelope (provided) and then to deposit it in a centrally located steel ballot box, which was locked and sealed. They were assured that only the author's research team would ever see their completed forms.

The letter explained that the purpose of the study was to 'understand how people's attitudes, and the way their work is managed, affect well-being and performance levels at work.' The letter made clear that they did not have to participate in this study, and that the only person within their organization who would know whether or not they did so would be one employee in the human resources department who was coordinating the study. The letter noted that, by signing the form, and thus consenting to participate in the study, their performance-to-target ratio for the following three months would be obtained by the research team. Furthermore, the research team would obtain their results from the computerized pre- and post-training tests that they were going to take, in order to assess learning. The letter also noted that any report to the organization, or anyone else, would only present summary data. At Time 3 (i.e., three months after Time 1), participants received this same

cover letter, in order to ask for their continued consent, and it was attached to the mental health questionnaire. Once again, participants were asked to put their completed questionnaire and signed letter of consent in the centrally located ballot box.

RESULTS

The means and standard deviations for all variables are shown in Table 1, along with bivariate correlations among all variables. All of the predictor, mediator, and outcome variables (excluding the control variables: job tenure, education, age, and gender) were intercorrelated in the expected directions. Performance on the pre-training test (which was subtracted from that on the post-training test, in order to assess learning) was not significantly correlated with any other variable and is not included in Table 1.

The questions examined in this study were addressed using hierarchical multiple regression. Following Cohen, Cohen, West, and Aiken (2003), the predictor variables (i.e., job control and psychological flexibility) were standardized, and then the cross-product of these *z*-scores was computed, in order to form the Job control × Flexibility interaction term. For job performance and general mental health, the four control variables were entered in the first step, with the standardized predictor variables, control and psychological flexibility, entered at the second

TABLE 1. Means, standard deviations, and bivariate correlations (N = 488)

Variable	M	SD	1	2	3	4	5	6	7	8	9
1. Performance	0	1		−.083*	.212**	.267**	.240**	−.101**	−.035	.264	.036
2. Mental ill-health	12.09	5.70			−.399**	−.328**	−.318**	.112**	.005	.015	.114**
3. Flexibility	57.73	12.54				.299**	.147**	−.069	.030	.069	−.027
4. Learning	0	1					.173**	−.058	.063	.037	−.034
5. Job control	68.24	21.46						−.099**	−.100**	−.062	.009
6. Tenure	3.26	1.38							.006	.038	−.036
7. Education	3.02	1.13								−.094*	−.021
8. Age	28.15	7.42									.080*
9. Gender											

Note. Performance and learning scores were standardised, at the request of the host organization. Flexibility = Psychological flexibility. For the education variable, 1= no formal qualifications, 2 = educated to age 16 (i.e., "O" levels, GCSEs), 3 = A levels (i.e., high school graduate), 4 = undergraduate degree, 5 = postgraduate (or graduate) degree. For the gender variable, males were coded 1 and females 2.

* p < .05 ** p < .01. *** p < .001.

step; finally, the predictor, Job control × Flexibility was entered at the third step. The same sequence was used to predict learning, with the addition, though, of pre-training performance scores included in a step between the four control variables and the predictor variables (see Table 2). This resulted in a psychometrically acceptable measure of learning (or change in ability to use the new software program) (Cohen et al., 2003). Based on the recommendations of Cohen (1988), the standardized regression coefficients that resulted were termed small, medium, or large if they met or exceeded the values of .10, .30, and .50, respectively.

The first hypothesis was that greater levels of job control would predict better learning, as well as better job performance and mental health, over a three month period. As can be seen in Tables 2 to 4, respectively, this prediction was supported. In particular, job control significantly predicted objectively assessed learning to a medium extent, and it significantly predicted performance and mental health to a relatively small degree. The second hypothesis, that higher levels of psychological flexibility at Time 1 would predict better learning, as well as better job performance and mental health, was also supported. As shown in Tables 2 to 4, respectively, greater flexibility significantly predicted better learning and performance, to a small degree, and it significantly predicted better mental health, to a medium extent.

Hypothesis three stated that job control and flexibility would synergistically interact at Time 1 to predict learning, job performance, and mental health, and. As can be seen in Tables 2 to 4, this hypothesis was

TABLE 2. Standardized beta coefficients from hierarchical regression analyses for the prediction of learning

	Regression step			
Predictors	1	2	3	4
Job tenure	−.006	−.005	−.013	−.011
Education	.021	.021	.017	.017
Age	−.175***	−.174***	−.133**	−.135**
Gender	−.039	−.038	−.041	−.042
Pre-training performance		.023	.042	.043
Job control			.313***	.402***
Psychological flexibility			.139***	.168***
Job control × Flexibility				.107*
ΔR^2	.036***	.001	.128***	.074***

Note. * p < .05 ** p < .01. *** p < .001.

TABLE 3. Standardized beta coefficients from hierarchical regression analyses for the prediction of job performance

	Regression step		
Predictors	1	2	3
Job tenure	−.107**	−.072	−.071
Educational attainment	−.009	.010	.009
Age	.267***	.271***	.273***
Gender	.116**	.108**	.107**
Job control		.238***	.399***
Psychological flexibility		.145***	.231***
Job control × Flexibility			.225***
ΔR^2	.081***	.087***	.054***

Note. ** p < .01. *** p < .001.

TABLE 4. Standardized beta coefficients from hierarchical regression analyses for the prediction of general mental ill-health

	Regression step		
Predictors	1	2	3
Job tenure	.113**	.064*	.063
Education	.005	−.004	−.002
Age	.011	.021	.019
Gender	.004	.008	.006
Job control		−.240***	−.311***
Psychological flexibility		−.371***	−.425***
Job control × Flexibility			−.489***
ΔR^2	.013*	.220***	.177***

Note. *p < .05. ** p < .01. *** p < .001.

supported for all three outcomes. Specifically, the cross-product interaction term for job control and flexibility were significant for each outcome and the signs of the coefficients (i.e., positive for learning and performance; negative for mental health) indicate a synergistic effect for the Job control × Flexibility interaction across the three outcomes (Cohen et al., 2003). At Time 1, higher levels of flexibility increased the subsequent, beneficial effects that higher levels of job control had on learning, performance, and mental health. The size of this moderating effect was small for learning, relatively small for job performance, and very nearly large for mental health.

Examination of semi-partial correlation coefficients revealed that job control, flexibility, and their cross-product interaction term combined to account for what was approaching a statistically large (Cohen et al., 2003) amount of the variance of learning and job performance outcomes: 24% and 22% of the variance, respectively. In addition, these three predictors accounted for 41%, a large amount, of the variance in mental health.

DISCUSSION

The primary aim of this longitudinal study was to examine the extent to which a work organization variable, job control, and an individual behavioral characteristic, psychological flexibility, independently and synergistically enhanced people's ability to learn an important new job skill, and, secondarily, improved people's job performance and mental health.

Effects of Job Control

Consistent with the organizational behavior literature (e.g., Hackman & Oldham, 1975), results indicated that job control at Time 1 predicted better job performance and mental health, over a three month period. More uniquely, and consistent with Karasek and Theorell (1990) and Frese and Zapf (1994), findings also showed, as posited, that higher levels of control longitudinally predicted greater levels of objectively assessed learning, to a moderate degree. As was reviewed earlier, prior research has shown that job control predicts mental health and performance (e.g., Bond & Bunce, 2003; Terry & Jimmieson, 1999) as well as having a positive impact on perceived mastery, self-efficacy (Parker & Sprigg, 1999; Taris et al., 2003), and skill utilization (Holman & Wall, 2002; Morrison, Upton, & Cordery, 1999). This study extends those findings by demonstrating that job control predicts an objective measure of learning. Furthermore, it showed that job control predicted learning, job performance, and mental health, amongst the same participants in the same organizational setting. In so doing, these findings demonstrated a wider range of effects for job control than has previously been seen in a single study.

Effects of Psychological Flexibility

Consistent with Hayes et al. (1999), results indicated that higher levels of psychological flexibility at Time 1 were associated with better

mental health and job performance at Time 3. These findings are consistent with the hypotheses of this study, as well as previous research by Bond and Bunce (2003), who showed that higher levels of flexibility longitudinally predicted better mental health and job performance (as assessed by another objective measure of this construct: computer input errors among call center operators). This study extends their findings, as well as those of Bond and Bunce (2000) and Hayes et al. (2004), by also showing that greater psychological flexibility at Time 1 predicts the better learning of a new and important job skill at Time 2, albeit to a statistically small extent.

These three findings are consistent with the ACT model of effectiveness (Hayes et al., 2006), which suggests that psychological flexibility allows people not to be enveloped and driven by their unwanted thoughts and feelings (e.g., in the present case those centering around the frustration of learning a new work skill). As a result, people are better able to contact, and be shaped by, contingencies of reinforcement that operate, for example, in a training session or their workplace. By successfully contacting such contingencies, people are, by definition, better able to learn a new skill, perform their job more effectively, and have better mental health: all through greater contact with values-centered contingencies.

The Interaction Between Job Control and Psychological Flexibility

As predicted, results supported the hypothesis that the beneficial effects of job control on learning, performance, and mental health are enhanced when people have higher levels of flexibility. These findings replicate and extend those of Bond and Bunce (2003), who showed these same synergistic effects of job control and flexibility on mental health and a different, yet still objective, measure of performance. They are also consistent with the ACT derived hypothesis that workers with greater flexibility are more sensitive to, and better able to fulfill, the greater array of values-consistent contingencies of reinforcement that higher levels of job control typically provide. As such, these people have better mental health and learn to perform their work more effectively.

Limitations

The most important limitation of this study is that it does not constitute a full panel design, in which all variables are assessed at all obser-

vation points. As a result, it is possible that job control and psychological flexibility at Time 1 would not have predicted job performance or mental health at Time 3, over and above people's levels of those outcome variables at Time 1. Bond and Bunce (2003), though, did use a full panel design and found that flexibility and job control did predict mental health and job performance, over and above previous levels of these two outcome variables. Regardless, the primary and unique aim of this study was to establish the extent to which job control, psychological flexibility, and the interaction between the two, predicted an objective measure of learning; to this end, the design of this study appears adequate.

Another limitation of this study concerns its external validity. As with Bond and Bunce (2003), the present sample was comprised of non-managerial customer service center employees who worked for one financial services organization (which was different from the one investigated by Bond and Bunce). This sample allowed the current study to obtain objective measures of learning and job performance, which had the beneficial effects of extending the research on job control and flexibility, into the arena of organizational learning; it also allowed a partial replication of Bond and Bunce's findings. Nevertheless, the homogeneity of this sample has undesirable implications for its external validity. Namely, it does not allow one to comment upon the generalizability of these findings to other industries, or other financial services organizations. As a result, future studies that examine the impacts of flexibility and job control on learning, performance, and mental health may do well to use a population that complements customer service center workers in financial organizations.

IMPLICATIONS AND CONCLUSIONS

There are two primary implications of these findings for OBM and occupational health psychology. First, these results add to those of others that demonstrate the ability of psychological flexibility to predict both mental health and job performance (e.g., Bond & Bunce, 2000, 2003; Donaldson & Bond, 2004). It appears, then, that it may be helpful for organizations to maximize workers' levels of flexibility, perhaps through worksite training, in order to improve learning, performance, and mental health. Indeed, this implication is consistent with the findings of Bond and Bunce (2000), who showed that psychological flexibility was the mechanism by which a flexibility-enhancing, worksite

stress management intervention (i.e., ACT at Work; Bond & Hayes, 2002) improved mental health and propensity to be innovative, in a media organization. Hayes et al. (2004) found similar effects for ACT. This is important because they elevate psychological flexibility from a purely correlational or self-report variable to a genuine target of OBM interventions.

Second, these results link behavior analysis itself to the cutting edge of applied organizational and occupational health psychology. Psychological flexibility is a contextually controlled, functional response that is now considered an important determinant of mental health by contemporary, empirically-based, cognitive-behavioral models of psychopathology (e.g., Hayes et al., 1999; Linehan, 1993; Segal, Williams, & Teasdale, 2002). Rather than appealing to older traditions in industrial/organizational psychology in order for OBM to seem relevant (Wiegand & Geller, 2005) a more satisfactory approach is thus viable: explore the implications of modern behavior analysis itself. The inclusion of the concepts drawn from ACT and RFT into OBM, and other models of OB, may provide a more comprehensive, empirically based guide for developing holistic interventions that meet today's need for maximizing career long learning and, more generally, helping organizations, and their employees, become more effective and healthy.

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Goal Statements and Goal-Directed Behavior: A Relational Frame Account of Goal Setting in Organizations

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SUMMARY. Goal setting has consistently been shown to increase performance under specific conditions. These goal setting effects have previously been explored from both a cognitive perspective and in terms of traditional behavioral concepts. We highlight limitations of these approaches and propose a novel account based on Relational Frame Theory. This account focuses on both the content of goal statements and the contingencies that maintain goal-directed behavior. The content of goal statements is analyzed in terms of relational networks established for employees. We then detail how the current account explains the major effects noted in previous empirical studies. Two broad types of rule fol-

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lowing contingencies that support goal-directed behavior, pliance and tracking, are then described. We then outline how these different types of contingencies results in the variety of goal-directed behavior observed in organizations. Throughout we relate this two-part approach to goal setting to specific recommendations for practice and future basic research. doi:10.1300/J075v26n01_06

KEYWORDS. Goals, goal setting, goal statements, feedback, relational networks, Relational Frame Theory, pliance, tracking, organizations

Goal setting is one of the simplest and most effective organizational interventions that can be used to increase employee performance. Empirical research on goal setting has a thirty-year history underlining its value as a technology for increasing individual performance (Ludwig & Geller, 2000). When Locke and Latham conducted their comprehensive book-length review in 1990, researchers had conducted 239 laboratory and 156 field studies involving over 40,000 people. It is not surprising, therefore, that goal setting has been a common intervention strategy used and recommended by organizational behavior analysts for a number of years. Indeed, goal setting and feedback interventions have been used successfully in a variety of settings including education (Felixbrod & O'Leary, 1973), occupational health and safety (Ludwig & Geller, 2000), and business (Kim & Hammer, 1976; McCuddy & Griggs, 1984).

Goal setting theorists have explained goal setting in terms of the relation between the conscious performance goals and task performance (Locke & Latham, 2002). While satisfactory from a cognitive perspective, this approach leaves many behavioral questions unanswered. In particular, such accounts were not intended to establish the precise behavioral histories that give rise to the effects of goal setting observed in organizations. Conversely, previous behavioral accounts have not provided comprehensive explanations of the effects observed in the cognitive literature. Consequently, the current paper outlines a novel behavioral account of goal setting for organizations in terms of the content of goal statements and the contingencies that maintain goal-directed behavior. First, we outline the major effects of goal setting demonstrated in the empirical literature. Second, we introduce previous

cognitive and behavioral accounts of goal setting. Finally, we provide a detailed account of goal setting based on a new behavioral approach to language and cognition, Relational Frame Theory (Hayes, Barnes-Holmes, & Roche, 2001).

EMPIRICAL FINDINGS ON GOAL SETTING

Edwin Locke and Gary Latham are two of the foremost contributors to theory and research on goal setting. In a recent article (2002), they summarize 35 years of research into the efficacy of goal setting. Perhaps the most widely reported findings are that higher levels of performance and effort are obtained when employees are provided with difficult goals (i.e., that prescribe a high level of performance) than with easy goals and that higher performance is obtained when specific, difficult goals (i.e., that prescribe a specific high level of performance) are provided rather than less precise goals (e.g., to do one's best). In fact, in nearly 400 studies conducted on goal difficulty and goal specificity, this effect has been demonstrated 91% of the time (Locke & Latham, 1990). Locke and Latham (2002) suggest that less specific goals (e.g., "Do your best") do not provide an external referent, and as such, performance is individually defined and consequently variable. Consequently, even though specificity alone does not produce higher performance, providing specific goals removes performance variability due to the fact that there is less ambiguity about what is expected.

In addition to goal specificity and goal difficulty, a number of other goal setting variables have been well researched including (but not limited to); employee participation in goal setting, incentives and feedback, task complexity, and learning versus performance goals.

Incentives and feedback. Monetary incentives have also been found to improve performance (Locke & Latham, 2002). Generally, the larger the incentive, the greater the performance improvement, but this is not observed in all situations. Rather, much of the literature on goal setting suggests that external rewards are not necessary to improve performance (Locke & Latham, 1991), because goal setting improves performance in the absence of additional rewards (Heath, Larrick, & Wu, 1998). Furthermore, in some instances, incentives may be detrimental to performance. In particular, when a goal is difficult, providing incentives for goal completion alone may reduce performance, especially when the individual believes that she will not receive a reward ("I will not achieve that goal so why try to?"; Locke & Latham, 2002). How-

ever, this effect is not observed if the goal is moderately difficult or with other types of pay systems such as piece rate or pay for performance, where achievement toward the goal is rewarded (Latham & Kinne, 1974; Latham & Yukl, 1975; Lee, Locke, & Phan, 1997).

Employee participation in goal setting. Employees are typically consulted when setting the goals for their performance. The belief is that when goals are established in collaboration with management, employees feel ownership of the goals, which enhances employee commitment and leads to improved productivity (Locke & Latham, 2002). Data on assigned versus participative goal setting are, however, somewhat conflicting. A series of studies conducted by Latham and colleagues reported that when goal difficulty is held constant, participation in goal setting makes no significant difference (e.g., Dossett, Latham, & Mitchell, 1979; Latham & Marshall, 1982; Latham & Saari, 1979a, 1979b). Conversely, others have found that it does (Erez, 1986; Erez, Earley, & Hulin, 1985; Erez & Kanfer, 1983). Further studies suggest that the manner in which goals are set is the crucial factor. Specifically, assigned goals are found to be just as effective as those set collaboratively provided that a rationale or purpose for the goal is communicated. However, if the goal is assigned in a curt manner and without explanation (e.g., "Do this"), performance will be significantly lower than if set in participation (Latham, Erez, & Locke, 1988).

Another critical determinant of goal effects is the provision of feedback with respect to goal attainment (Locke & Latham, 2002). Feedback allows an employee to check the status of her performance in relation to her goal such that she can adjust her behavior in terms of effort, direction, or strategy if needed. Thus, providing goals plus feedback has been found to be much more effective than goals alone (Bandura & Cervone, 1983; Becker, 1978; Erez, 1977; Strang, Lawrence, & Fowler, 1978).

Task complexity. Task complexity interacts with goals in a variety of ways. For example, it has been shown that when confronted with task related goals, people will use their already acquired repertoires of skills and knowledge to accomplish their goal (Latham & Kinne, 1974). Likewise, when faced with a new situation, people will draw upon the skills and knowledge they had used previously in a similar context, and apply them (Latham & Baldes, 1975). Under such conditions, specific difficult goals tend to result in higher performance than less precise goals. However, when faced with complex tasks, urging people to "do their best" can sometimes lead to better goal attainment strategies relative to setting specific difficult goals (Earley, Connolly, & Ekegren, 1989).

Learning and performance goals. Locke and Latham (2002) suggest that the foregoing effects may depend on the type of goals employed. Specifically, they distinguish performance goals from learning goals. Performance goals specify a particular level of an outcome (e.g., completed sales, new products developed) that must be attained whereas learning goals specify a particular level and variety of constituent behaviors (e.g., ways of contacting customers, research behaviors) that facilitate the outcome. For high complexity tasks, this is a particularly important distinction because specific difficult *performance goals* can lead to anxiety and task avoidance, which interfere with the discovery and application of effective goal attainment strategies. In these cases, specific challenging *learning goals* have been shown to lead to the systematic discovery of multiple task strategies and higher performance on complex tasks (Seijts & Latham, 2001; Winters & Latham, 1996).

CONCEPTUAL ACCOUNTS OF GOAL SETTING

Goal Setting Theory

Goal mechanisms. Locke and Latham (2002) suggest that goals impact performance through four mechanisms. First, goals are *directive*. That is, goals direct attention and effort toward goal-relevant activities and away from activities that are task irrelevant. Second, goals *energize* people. That is, people put forth greater effort with hard goals than with easy goals. Third, goals influence *persistence*. When people are allowed to control the time they spend on a task, difficult goals lead to prolonged effort. There is, however, a trade off between time and intensity of effort. That is, when given a difficult goal, people will work rapidly and more intensely for a short period of time or more slowly and less intensely over a longer period of time. Thus, tight deadlines tend to produce a more rapid work pace in comparison to loose goals. Finally, goals affect action indirectly in that they facilitate the *development, discovery and/or use of task-relevant strategies and knowledge.*

Goal moderators. In addition, Locke and Latham (2002) suggest that the goal-performance relationship is influenced by three moderators: personal commitment, feedback on goal attainment, and task complexity. First, when people are committed to their goal, or in other words, "bought-in," performance increases. Personal commitment is also influenced by two additional factors: how important the goal is to the individual and their self-efficacy (i.e., their belief in their ability to achieve

the goal). That is, the more important the goal is to the employee, the more likely the goal will increase performance and the employee will subsequently achieve the goal. Moreover, when employees are confident that they can complete the task, they are more likely to do so. Second, feedback on goal attainment also influences goal performance by allowing the individual to gauge the relationship between their current performance and their goal. Thus, feedback is a critical determinant of goal-directed performance. Lastly, task complexity moderates goal effects in that more complex tasks require a greater variety of skill and strategies, and goal effects are dependent on the employee's ability to identify effective task strategies.

Behavioral Theory

Previous behavioral accounts have defined goals as *discriminative stimuli, conditioned reinforcers* (Fellner & Sulzer-Azaroff, 1984), and *establishing operations* (Agnew, 1998). In addition, Malott's (1992) work on rule-governed behavior in organizations has attempted to explain the efficacy of goal statements and the type of contingencies that maintain goal directed behavior.

Discriminative stimuli and conditioned reinforcers. Fellner and Sulzer-Azaroff (1984) contend that when a goal statement[1] reliably accompanies a reinforced response, it acquires discriminative control over that response such that the presence of the goal statement increases the probability that goal directed behavior will repeat, and thus, the goal statement functions as a discriminative stimulus. Furthermore, if meeting a goal is repeatedly correlated with a positive consequence, or removal of a negative consequence, goal achievement can function as conditioned reinforcement. The following example describes this process. A manager states that increasing sales to 60 by the end of the week will result in a $50 bonus. According to Fellner and Sulzer-Azaroff, the goal (i.e., the antecedent stimulus) will acquire discriminative control over sales behavior because of the correlation of the goal statement with reinforcement for such behavior (i.e., a $50 bonus). After several correlations of achieving the assigned goal and receiving reinforcement for that achievement (i.e., praise or other reinforcers), goal achievement becomes a conditioned reinforcer. However, Fellner and Sulzer-Azaroff caution that goals do not always occasion or reinforce behavior. If goal achievement is not reinforced in the presence of a goal statement, the goal statement will not acquire discriminative control over performance, nor will goal achievement function as a conditioned reinforcer.

Thus, individual performance is directly influenced by prior and present contingencies of reinforcement with respect to goal setting.

In addition, Fellner and Sulzer-Azaroff (1984) suggest that the functions of goal statements may be influenced by rule-governed behavior. For example, when an employee engages in sales-related behaviors in order to achieve a set goal *but* prior to receiving reinforcement (a $50 bonus), her behavior is said to be under the control of the manager's instruction. This is because the employee does not have the required history with the goal statement and reinforcement for discriminative control or conditioned reinforcement to occur. Fellner and Sulzer-Azaroff contend that it is important to distinguish between contingency shaped and rule-governed behavior for two reasons. First, behavior that is under instructional control may be more efficiently managed in organizations because each response does not need to be independently shaped. Second, contingency shaped behavior may be more resistant to extinction (p. 37). Specifically, they suggest that, in the absence of explicit consequences, particular classes of rule-governed behavior may extinguish over time.

Establishing operations. The concept of the establishing operation has attracted much interest recently in the field of organizational behavior management (Baum, 2001; Luthans, 2001; Malott, 2001; Olson, Laraway & Austin, 2001; Poling, 2001). In particular, Agnew (1998) suggests that goal statements[2] may function as establishing operations. To support this position, Agnew first draws a distinction between these two concepts. She states that a discriminative stimulus is one in the presence of which a response has been reinforced and in the absence of which a response has not been reinforced, and that discriminative stimuli therefore evoke behavior by signaling the *availability* of reinforcement. Establishing operations, on the other hand, change behavior due to their capacity to *alter* the value of consequent stimuli. Based on this distinction, Agnew suggests that goal statements are often sometimes appropriately described as establishing operations.

To illustrate her point, Agnew (1998) provides an example of a goal setting intervention designed to improve customer service turnaround time. In her example, customer service representatives track the number of days from request for service-to-service delivery and thus have immediate feedback on their own behavior. In addition, the manager, who also receives data on the customer service representatives' turnaround time, verbally provides feedback to those representatives that she believes have achieved an optimal turnaround time. The manager then decides to implement a goal of six days turnaround time. In this situation,

the introduction of the goal does not make the reinforcers (feedback from the manager) more *available,* since feedback was available prior to the goal. Rather, the goal is likely to make the reinforcers more *valuable*. In this case, manager feedback may be more reinforcing in the presence of the goal and not in its absence because of a history of goal achievement being paired with other reinforcers (e.g., pay, promotion, etc.).

On other occasions, however, Agnew (1998) suggests that a goal statement may be more appropriately described as a discriminative stimulus. That is, when reinforcement is available only in the presence of the goal and not in its absence, it functions as a discriminative stimulus. Using the example above, if the manager made a monetary bonus contingent upon having an average turnaround time of six days or less, the bonus would only be available in the presence of that goal. In this case, the goal statement would be more appropriately described as a discriminative stimulus.

Rule-governed behavior and goal setting. Malott (1992) provides a detailed account of rule-governed behavior in organizations that is particularly relevant to goal setting. Malott first distinguishes between natural contingencies that are *effective,* and those that are *ineffective.* An effective natural contingency is one for which the outcome of the response reinforces or punishes that response. Malott describes such contingencies as *direct-acting* (e.g., piece-rate pay with immediate feedback). In contrast, an ineffective natural contingency is one in which the outcome is too delayed and improbable to directly reinforce or punish the causal response. Malott argues that most of the natural contingencies operating within organizations are ineffective due to long delays (e.g., working hard to get a promotion or raise) and therefore, they only become effective by way of verbal descriptions of those contingencies (i.e., rules). Ineffective natural contingencies that are made effective through rule-governed behavior are described as *indirect-acting* contingencies. Rules allow for "the rule-governed analogs to reinforcement by the presentation of a reinforcer" (i.e., an increase in the likelihood of a response because of a rule stating the occasions when the response will produce a reinforcer; p. 47) to maintain responding until actual reinforcement occurs. In simpler terms, the rule (e.g., "Work hard to get a promotion or raise") allows for self-statements about reinforcement (e.g., if I keep making sales, I'll get a raise) to maintain behavior (e.g., making sales) until the actual reinforcer (e.g., a pay raise) occurs. In this way, rules describing indirect-acting contingencies allow such contingencies to maintain employee behavior.

For some ineffective (i.e., delayed) contingencies, however, rules fail to exert control over behavior. Malott suggests that this occurs when the contingencies described by the rule are too improbable, small, or of only cumulative significance, making these rules "hard to follow." An example of a rule that is hard to follow is one describing the natural contingency that operates upon off-task behavior. No particular instance of off-task behavior will produce a significant impact on the immediate circumstance. However, over the course of a month or a year the cumulative impact of each instance of off-task behavior will likely produce a negative impact on the organization and, perhaps, the performer (Mawhinney & Gowen, 1989). Malott suggests that a rule describing this contingency is not likely to control behavior because the immediate negative consequence is too small and the larger more harmful outcome is too delayed and not sufficiently probable.

Conversely, rules that specify outcomes that are *sizeable and probable* are "easy to follow" (Malott, 1992). In the previous off-task behavior example, if employees were told that, "If you make four unscheduled coffee breaks in a month, you will face a disciplinary hearing" (delayed consequence, but sizeable and probable), then employees would be more likely to follow the rule. In reality, most natural organizational contingencies result in rules that are hard to follow because they involve small and improbable outcomes. Management interventions such as goal setting are employed to make these ineffective contingencies more effective. Specifically, rules that are hard to follow are supplemented with rules that are easy to follow (i.e., that describe outcomes that are sizable and probable). For Malott, therefore, effective goal statements are easy to follow rules. For example, a manager states that all employees will receive a bonus if all specified tasks are completed by the 25th of the month. The rule describing this indirect-acting contingency is likely to control employees' task completion behavior because the consequence for doing so is sizeable and probable even though it is delayed.

Even though Malott (1992) admits that some rules function as discriminative stimuli (e.g., Galizio, 1979), he also suggests that sometimes rules control behavior because "a rule statement might function as a conditioned establishing operation that establishes noncompliance with the rule as a learned aversive condition" (p. 54). He provides the following example in which a person has four hours to finish a project before the deadline. The person states the rule: "If I do not get to work right now, I will miss the deadline and look bad" (p. 54). In this example, beginning to work is an escape response that alleviates the learned

aversive condition. Malott proposes that all operant control may require direct-acting *escape* contingencies to be effective even when the rules describe indirect-acting contingencies. "In other words, delayed, indirect-acting contingencies, by themselves will not control behavior" (p. 62; cf. Hayes & Hayes, 1989; Schlinger & Blakely, 1987).

Limitations of Current Accounts

The foregoing accounts of goal setting in organizations are part of a thirty-year empirical enterprise that has endeavored to understand the functions of goals within organizations. In particular, the account of goal setting provided by Locke and Latham has produced a veritable cornucopia of research ranging from organizational interventions to strictly controlled experiments that have employed college students as participants. The strength of their conceptual account stems from this wealth of research. Specifically, they have identified many variables that interact within the goal setting situation to produce different effects on the behavior of those to whom the goals have been provided. From a behavioral perspective, Locke and Latham's account is weak, however, in so far as the behavioral histories that give rise to these observed effects are not precisely described. Consequently, it can be difficult to distinguish between the outcomes of goal setting and the mechanisms that are presumed to underlie such outcomes. For instance, providing goals may lead to increases in the amount of time that a person engages in task relevant behavior but it is unclear how suggesting that the goal directs the person's attention to the task explains this effect. From a behavioral perspective, the outcome has simply been restated rather than *explained*. Within the cognitive literature, more precise accounts have been provided (e.g., Heath et al., 1999), but again these have not attempted to embed the behavior in the historical context of the organizational setting.

In contrast, previous behavioral accounts of goal setting have attempted to provide explanations of goal setting effects in terms of putative behavioral histories that give rise to goal directed behavior. Unfortunately, these accounts have largely ignored the effects of goal setting demonstrated in the cognitive literature. For example, only Fellner and Sulzer-Azaroff (1984) attempted to explain the basic finding that specific difficult goals result in higher levels of performance. It is our contention that previous behavioral accounts have not addressed this and the various other findings in the thirty years of research conducted by Locke, Latham and colleagues because they were simply too

limited to do so. Indeed, if one considers that the more difficult a goal is the less probable that it will be attained, then one reading of Malott's account seems to predict that more difficult goals would be less likely to produce higher levels of behavior. In addition, in the behavioral accounts on goal setting to date, the central focus has been on the acquisition of goals for explicit rewards. As pointed out by Heath et al. (1999), a considerable number of studies in the cognitive literature on goal setting did not specify or provide reinforcement for goal attainment. In fact, in many of these studies, the most productive participants were those in the groups for which the goal was most difficult to obtain and in which goal attainment was rare. Thus, the variety of contexts within which goal setting has been examined goes far beyond the contexts for which current behavioral accounts are suitable. Furthermore, these accounts have not provided the detailed predictions that facilitate empirical research and consequently, empirical studies based on a behavioral approach to goal setting remain few and far between.

A RELATIONAL FRAME APPROACH TO GOAL SETTING

The current paper seeks to outline a novel behavioral account of goal setting for organizations. We have used the foregoing sections to illustrate what such an account will be required to address. Specifically, we will focus on the *content* of goal statements and the *contingencies* that maintain goal-directed behavior. First, we will address how the content of a goal statement gives rise to changes in behaviors. For example, any theoretical account of goal setting must address the robust finding that as goal difficulty increases so does performance, regardless of whether the goal is attained. Second, we will describe the organizational contingencies that maintain goal-directed behavior. In so doing, it is hoped that we will provide a comprehensive behavioral account of goal setting in organizations that will facilitate both empirical research and intervention.

The current paper will approach the content of goal statements and the contingencies that maintain goal-directed behavior from a Relational Frame Theory (RFT; Hayes et al., 2001) perspective. Before we detail the current approach, however, a brief introduction is necessary. In the following section, we will first introduce the concept of derived relational responding and its relation to complex language and cognitive behaviors such as goal setting. Then we will introduce the core concepts of RFT, mutual and combinatorial entailment and transformation

of function. Finally, we will detail particular types of relational frames that may control behavior. In this way, we will provide the foundation upon which our account of goal setting organization is based.

Derived Relational Responding and Language

Within recent years, there has been a renewed attempt to update the behavioral approach to complex language behaviors (Hayes et al., 2001; Horne & Lowe, 1996; Sidman, 1994). The primary impetus for this revived interest has been the analysis of derived stimulus relations (Sidman & Tailby, 1982). Derived relations refer to relations between stimuli that are not trained directly but are observed reliably given the training of other relations in particular contexts. Stimulus equivalence is the best known and most well researched of these performances. Stimulus equivalence is said to have occurred when following reinforcement for choosing a stimulus, A, in the presence of a stimulus, B and choosing the same stimulus, A, in the presence of a further stimulus, C (two trained relations), participants choose B in the presence of A and C, and C in the presence of A and B without further training (four derived relations). The phenomenon has been the focus of hundreds of laboratory studies (see Hayes et al., 2001; Sidman, 1994, for reviews). In addition, in recent studies, responding in accordance with derived relations other than equivalence has been demonstrated. These relations have included Opposition (Dymond & Barnes, 1996; Roche & Barnes, 1996; Roche, Barnes-Holmes, Smeets, Barnes-Holmes, & McGeady, 2000; Steele & Hayes, 1991), Difference (Roche & Barnes, 1996; Steele & Hayes, 1991), More than and Less than (Dymond & Barnes, 1995; O'Hora, Roche, Barnes-Holmes, & Smeets, 2002), and Before and After (O'Hora, Barnes-Holmes, Roche, & Smeets, 2004).

For a number of reasons, these derived relational performances have become a focus of attention for researchers wishing to enhance the behavioral explanation of language. First, the bidirectional quality of these relational performances bears a striking similarity to the bidirectionality required to maintain the referential properties of words (e.g., the spoken word "apple" stands for an actual apple if and only if an actual apple is called the spoken word "apple"). Hayes and Bissett (1998) provided further evidence of functional similarity when they demonstrated that priming, a classic property of semantically related stimuli, occurred between members of equivalence classes. Second, the ability to demonstrate such performances and the complexity of those performances correlates with an individual's linguistic proficiency (O'Hora,

Pelaez, Barnes-Holmes, & Amesty, 2005; see also Dickins & Dickins, 2001, for a review). Third, the physiological correlates of derived relational responding and complex language performance have been shown to be strikingly similar in both fMRI investigations (Dickins et al., 2001) and analyses of event related potentials (Barnes-Holmes et al., 2004).

Relational Frame Theory

From an RFT perspective, derived stimulus relations are the core process of language insofar as these predictable untrained relations provide an explanation of the productive quality of language behavior. To date, empirical models of many complex language phenomena have been based on RFT. These include metaphor and analogy (Stewart & Barnes-Holmes, 2001; Stewart, Barnes-Holmes, Roche, & Smeets, 2001), moral behavior (Hayes, Gifford, & Hayes, 1998), instructional control (Hayes, Thompson, & Hayes, 1989; O'Hora et al., 2004), perspective taking (McHugh, Barnes-Holmes, & Barnes-Holmes, 2004), and sexual behavior (Roche & Barnes, 1995, 1996).

Relational Frame Theory posits that the core process of language is that of derived relational responding. Humans and a wide variety of animals demonstrate relational responding in accordance with non-arbitrary relations between stimuli (Reese, 1968). Non-arbitrary relations between stimuli are those relations depend on the physical, temporal and spatial properties of the stimuli; a basketball is larger than a baseball, canvas is rougher than silk, clouds come before rain, fruit are found on trees, the sun is above the horizon. Verbally able humans, however, also respond to arbitrary relations between stimuli. That is, having learned that a basketball is larger than a baseball, the phrase "is larger than" may control responding in accordance with this relation in the absence of any non-arbitrary difference in size. Given that "A wiggle is larger than a basketball," we respond to this new term "wiggle" as though the object it seems to denote is larger than a basketball. At this point, we describe the relation as arbitrarily applicable because responding in accordance with the relation may occur in the absence of any physical relationship. We can then respond predictably to any number of questions that test for this relation. For example, if asked, "Which is heavier, a wiggle or a basketball?" we are likely to choose the wiggle, even though we have never lifted one. From an RFT perspective, such arbitrarily applicable relations between stimuli comprise the functional

heart of language behavior (For more detail on the development of such relations in young children, see Hayes et al., 2001).

Arbitrarily applicable relational responding has three properties that allow it to play its functional role in language: mutual entailment, combinatorial entailment and transformation of function. Mutual entailment refers to the bidirectionality of arbitrarily applicable relational responding. It is observed when a specific relation in one direction entails a relation in the other. For instance, when we are told, "A wiggle is larger than a basketball," a further relation is *derived* in the opposite direction, "A basketball is smaller than a wiggle" without further training. Combinatorial entailment refers to the combination of derived stimulus relations, which results in further derived relations. For example, "A wiggle is larger than a basketball" and "A basketball is larger than a baseball"; therefore, "A wiggle is larger than a baseball" and "A baseball is smaller than a wiggle." Transformation of function occurs when the functions of one event that participates in a network of such derived relations alter the functions of another event according to the derived relation between the two events. As mentioned in the previous paragraph, given that "A wiggle is larger than a basketball," we might expect a "wiggle" to be heavier than a basketball, so if we see a box with "wiggle" written on it, we would prepare to put more effort into lifting the box than if we saw "basketball" or "baseball" written on the box. In this way, the functions of "wiggle" have been transformed in accordance with the derived relations between "wiggle" and "basketball" and "baseball." Indeed, from this perspective, in reading and understanding this paragraph, the functions of "wiggle" have been transformed for you. From an RFT perspective, these properties of arbitrarily applicable relations form the basis of language.

Types of Relational Frames

As earlier noted, responding in accordance with a number of derived relations has previously been examined. In order to appreciate how these relations are employed in our account of goal statements and goal-directed behavior, a limited number of these relations will be outlined briefly here (Again, for a more comprehensive list of relational frames, see Hayes et al., 2001).

Coordination is the most fundamental type of relational responding. At the core of stimulus equivalence, it is the relation of sameness or similarity and is most commonly observed in the use of names to refer to objects or events in the environment (e.g., spoken word "apple" is the

same as an actual apple). Transformations of function in accordance with Coordination relations are observed when a response trained in the presence of one stimulus also occurs in the presence of further stimuli that participate in the derived relation. Consider this simplified example. A child who likes to eat apples sees a new object that someone tells him is an "apple." The child will then be more likely to eat this new object. The functions of the new object have been transformed in accordance with the Coordination relation between the new object and apples. In this way, novel responses may occur in the presence of otherwise neutral stimuli. As will become apparent in the following account, such processes are central to understanding goal statements. Distinction (i.e., difference) and Opposition relations interact with coordination relations to control the occurrence of such novel responses (e.g., if the new object is not an "apple," then the child will be less likely to eat it).

The relation "larger than" employed previously in the wiggle example to demonstrate the properties of derived relations is an example of a *Comparison* relation. Comparison is involved when an event or object is responded to in terms of a quantitative or qualitative relation along a specified dimension with another event (e.g., a "wiggle" is bigger than a basketball). Such relations may be made more specific by quantification of the dimension along which the relation obtains (e.g., a "wiggle" is twice as big as a basketball). *Temporal* relations share some properties with relations of comparison, in that they denote relative location on the abstracted dimension of time (e.g., "morning" is before "afternoon"). However, transformations of function in accordance with Comparative relations usually involve change in the physical properties of responses to the transformed stimuli (e.g., putting more effort into lifting a "wiggle" than a basketball), whereas transformations in accordance with Temporal relations usually involve the occurrence or not of the response as a whole (e.g., one has lunch in the afternoon, not in the morning).

The final family of relations that we will briefly introduce here is that of *Deictic* relations. Deictic relations such as I-You, Here-There and Now-Then specify a relation in terms of the perspective of the speaker. Unlike the forms of relating previously mentioned, these relations do not appear to have any nonarbitrary counterparts. Rather, the relationship between the person and other events provides the environmental constancy upon which Deictic relations are based. These relations are especially important in the understanding of the self and perspective taking. In organizations, employees are adult humans who have complex "self-stories" that may impact on their performance. For instance,

if an employee thinks that "I am better than you" or "I must be right" and is inflexible in these forms of relating, then his or her perspective of the work situation will be transformed in accordance with these relations. So, if another employee tries to inform the first employee of an unobserved complication in his or her plans, the first employee will be less likely to see the problem because "Your view of the situation is different from mine" and "I am right," therefore "Your view is wrong." Indeed, Deictic relations are almost certainly central to the work experiences of human adults, but to deal effectively with the many effects of these relations is beyond the scope of the current paper. Nevertheless, the contribution of these relations will be evident in the following analysis of goal setting in organizations.

Goal Setting in Organizations

This section will outline an approach to goal setting in organizations in two parts: goal statements and understanding and goal-directed behavior. It must be stressed that we are not suggesting that these two processes are different in any fundamental fashion. Rather, this is a pragmatic distinction that will allow us to deal with two broadly different levels of contingencies that combine to explain the effects of goal setting in organizations. The first section will largely be concerned with the content of goal statements and how this content gives rise to certain types of behavior. Consequently, in this section, it will be assumed that goal-directed behavior is already at a reasonably high strength. The second section will then focus on more global contingencies that maintain goal-directed behavior of all kinds within an organization.

Rule Governed Behavior and Relational Frame Theory

When employees understand a goal statement, it functions as a rule or, more specifically, a relational network. At first blush, this may not seem to add to earlier rule-based accounts of goal setting (e.g., Fellner & Sulzer-Azaroff, 1984; Malott, 1992). However, the Relational Frame Theory approach to rules adds a considerable level of detail to our proposed account. As an example, Hayes and Hayes (1989) provided a relational description of a simple rule. They suggested that rule governance might be explained in terms of responding in accordance with a network of derived relations between words and environmental stimuli. Consider the example, "When the bell rings, then go to the oven and get the cake." In this rule, certain words participate in Coordination rela-

tions with environmental events (i.e., the word "bell" with actual bells, the word "oven" with actual ovens) such that responding to a particular stimulus (an actual bell) is controlled by arbitrary sounds (spoken word "bell") or visual stimuli (the visual symbol b-e-l-l). Other words occasion responding in accordance with Temporal relations (i.e., "when," "then," and "and" establish the sequence; bell BEFORE oven BEFORE cake). Thus, this rule may be explained in terms of responding in accordance with the arbitrarily applicable Coordination and Temporal relational frames.

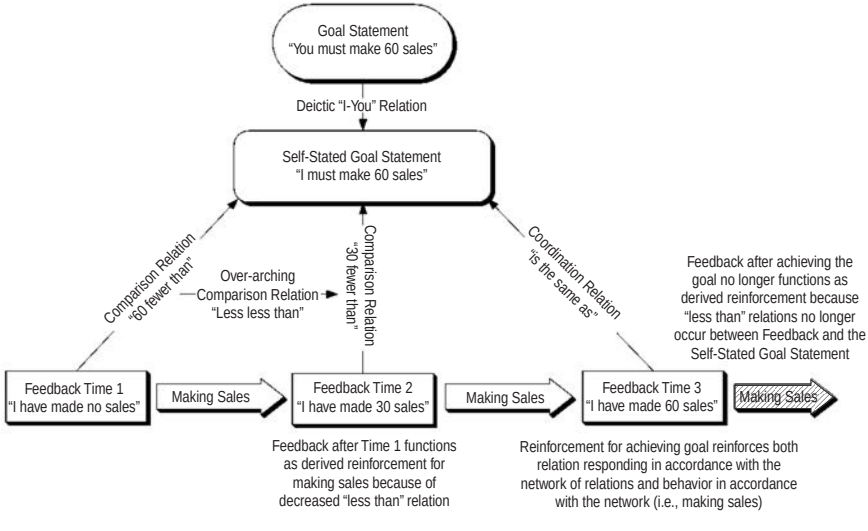
Neither Fellner and Sulzer-Azaroff (1984) nor Malott (1994) explicitly address *how* a rule or goal specifies the contingencies that it describes. The RFT approach to rules constitutes a theoretical advance on these approaches to rules and rule following in explicitly addressing how stimuli "specify" behavior. According to RFT, when environmental stimuli participate in derived relations with words in presented rules and the functions of those stimuli are transformed such that when a person comes into contact with the transformed stimuli, particular responses may then be controlled by them (i.e., the responses "specified" by the rule). However, the opportunities for understanding and initiating organizational intervention offered by this approach are more than simply theoretical. On the contrary, an analysis of goal statements in terms of their constitutive relations allows for prediction and control of behavior in a more precise fashion.

Goal statements and understanding. Effective goal statements differ from the example of a rule provided by Hayes and Hayes (1989) in that they specify a level of performance. Without the specification of a level of performance, we are left with a simple request to perform an action. Let us imagine a situation in company where staff members are averaging 30 sales a week and they are told, "You are expected to make sales." When this is understood, the employee responds in accordance with Coordination relations between "sales" and actual work transactions and, in accordance with Deictic I-You relations between "You" and the employee himself or herself. In this way, each employee can state "I must make sales" and that statement can control sales behavior. As a direction, this statement works perfectly well, because, similarly to the Hayes and Hayes (1989) example, the functions of sales-related environmental stimuli are transformed by participation in this rule. For example, if sales are usually made by phone, the functions of the phone are transformed such that making calls is more likely. In general, we can say that sales-making behaviors will therefore become more likely for staff members who are not attempting to make sales. However, for those

staff already making calls, this statement does not set the conditions for higher levels of performance. This is because the functions that we wish to establish in the environmental stimuli are already in place (e.g., the phone already occasions call making behaviors). For this latter group, therefore, it is likely that performance levels will remain about the same.

When a level of performance is included in a goal statement, however, control of employees' behavior becomes more complex. Arbitrary relations are established between the level of performance prescribed in the goal statement and employees' ongoing self-statements about current performance (see Hayes et al., 2001 for further detail on such self-statements). Let us continue with the previous example, but, in this case, we provide the employees with the goal statement: "For this week, everyone is expected to make 60 sales." In addition to the transformations of function mentioned above that direct staff to relevant behavior, "less than" Comparison relations may be established between the employees' self-statements concerning their ongoing level of behavior and the assigned goal (see Figure 1). It is our contention that these "less than" relations allow for *derived* reinforcement of goal-directed behavior (see Whelan & Barnes-Holmes, 2004 for an empirical example of derived reinforcement).

FIGURE 1. Relational control of an employee's behavior presented with the goal statement "Everyone is expected to make 60 sales this week."



When the manager prescribes a particular level of performance as a goal for an employee, the level of behavior prescribed participates in a Coordination relation with whatever it is that usually reinforces an employee's work behavior ("60 sales" = positive feedback, escape from punitive measures, etc.; see Feedback Time 3 in Figure 1). At the start of the week (Feedback Time 1 in Figure 1), each employee will note that he or she has no sales, which is "60 fewer than" the goal *and* reinforcement. After every sale, the "less than" relation between the current level of performance and the level prescribed in the goal statement decreases. Thus, if the employee has been working (i.e., making sales), when she is provided with feedback (e.g., Feedback Time 2: "You have made 30 sales"), she will always be closer to the assigned goal than when previously provided with feedback (Feedback Time 1: "You have made no sales"). In this way, feedback on performance, whether provided by a manager or self-stated by the employee, is transformed such that it acquires derived reinforcing properties. At the same time, even though the current "less than" relation (e.g., between Feedback Time 2 and the Self-Stated Goal) is smaller than the previous "less than" relation (e.g., between Feedback Time 1 and the Self-Stated Goal), the employee remains "30 fewer than" the level required for reinforcement. Thus, the employee must continue to work to reduce this "less than" relation until the goal level of performance is achieved. From an RFT perspective, in so far as the presentation of a goal statement verbally establishes feedback statements as reinforcement for goal directed behavior, the goal statement functions as a particular type of rule called a motivative augmental (Hayes, Zettle, & Rosenfarb, 1989).

The foregoing analysis suggests that as goal difficulty increases, so will performance. However, goals can be too difficult to effectively manage behavior. Specifically, the employee must feel that he or she is getting closer to the goal. Technically, feeling closer to the goal depends on a third over-arching Comparison relation (less "less than") that occurs between the current "less than" relation (e.g., Feedback Time 2: "30 fewer than") and the previous "less than" relation (e.g., Feedback Time 1: "60 fewer than"). Through mutual entailment, this overarching Comparison relation also provides the measure of what the employee has done (e.g., "I have done 30 more than the last time"). It is likely, then, that the optimum goal level will be determined by the relationship between the amount left to do (the "less than" relation at Feedback Time 2) and the amount done (the over-arching "less than" relation between the "less than" relations at Feedback Time 1 and Feedback Time 2). To put it simply, for a goal to effectively control an employee's behavior, he or

she must feel as though he or she is "getting somewhere." This form of relational control is related to job-specific self-efficacy in the cognitive literature.

For goal-directed behavior to persist, however, achievement of the goal must be reinforced for two reasons. First, the Coordination relation between the goal level of performance and external reinforcement must be maintained in order for the derived reinforcing effects of feedback to occur. Second, the complex sequence of behaviors that constitute goal-directed behavior must be reinforced (see later sections for detail on this). Once the goal level of performance is achieved, "less than" relations no longer occur between feedback on current performance and the goal level of performance (Feedback Time 3). Feedback then loses its derived reinforcing properties and goal-directed behavior ceases (extreme right of Figure 1) because working no longer reduces the relation between current performance and the goal statement (in fact, working now increases the "more than" relation between current performance and the goal statement).

"Mechanisms" of goal setting. The utility of the current account of goal statements is highlighted when we consider how it accounts for Locke and Latham's (2002) four mechanisms of goal setting. First, goal statements are directive in two ways. In simply pointing out behaviors that are required, such behaviors come under control of environmental stimuli and are therefore more likely. As mentioned earlier, for the employee, derived reinforcement is conditional on making sales and thus the functions of stimulus objects that facilitate making sales will increase in salience. Also, environmental stimuli that would otherwise occasion non-goal relevant behaviors are less salient because of the reinforcement available for goal-directed behavior. That is, the relative salience of distracting stimuli decreases relative to the transformed stimuli. Then, once employees engage in goal relevant tasks, goal statements energize employees and increase persistence because of the derived reinforcing functions of feedback. Finally, the development and discovery of strategies and information to achieve goals may result from the decreased levels of behavior irrelevant to goals.

Specific goals. Locke and Latham point out that when employees are provided with specific goals, variation in performance reduces as employees work towards the specified goal. According to the current model, behavior will continue to increase until the goal level of performance occurs and will then cease because the relationship with reinforcement no longer maintains performance (the "less than" relations no longer occur; extreme right of Figure 1). Without a specified goal, it

is likely that each employee will work at a different level because self-stated goal statements (if they occur) could be different across employees. This is especially true if there is poor communication between managers and employees regarding their performance or there are no obvious external measures of such performance. Stating specific goals, thus, has considerable advantages for both management and staff. Using specific goals, a manager has a far greater degree of control over the goal-directed behavior of employees. Employees also benefit because their task relevant behavior is more likely to be positively reinforced.

Difficult goals. According to the current model, when employees are provided with a specific goal, "less than" relations occur between ongoing self-statements about performance and the goal. Employees then work to reduce and eventually eliminate these "less than" relations (i.e., to achieve the goal) in order to acquire goal-based reinforcement. It therefore follows that the more difficult the goal is, the harder and longer employees will work, because this "less than" relation will be present for as long as employees do not achieve the required level of performance. From an RFT perspective, this will happen under two conditions. First, for the reinforcing function of decreased "less than" relations to be maintained, employees' goal-directed behavior must be reinforced. How such behavior is reinforced is the subject of a later section, but without such reinforcement, the derived reinforcing functions of feedback and employees' self-statements will extinguish over time. Second, the "less than" relations between current and goal levels of performance must reduce predictably and to a sufficient degree contingent upon task-relevant behavior. In our earlier example, sales personnel were asked to make 60 sales in a week. In this situation, each sale allows for the occurrence of a new self-statement with a decreased "less than" relation between current performance and the goal statement and thus, derived reinforcement will occur reliably contingent on sales behavior.

Now, let us consider a situation in which the completion of each sale takes at least one week (e.g., the order must be processed, stock released, finance approved and so on). In this situation, even if the sales personnel work extremely hard during the week and pull in more than the required 60 sales, the sales will not be completed by the end of the week. If our goal is stated in terms of completed sales, then the employees cannot achieve goal levels of performance. Consequently, the "less than" relation between their statements of current performance and the goal statement will not decrease contingent on their behavior. Therefore, this goal statement will be less likely to establish control of employee behavior. Indeed, in situations where goals are unrealistic,

difficult goals tend to reduce behavior compared to easier goals (Audia, Locke, & Smith, 2000; Earley & Perry, 1987). To remedy this, we might recast the goal statement in terms of verifiable sales-related behaviors that are likely to result in sales, such as reception of a completed order form. Alternatively, we could simply change the time within which the 60 sales must be made to two weeks instead of one so that sales behavior may be reinforced.

Choosing behaviors for goal statements. As mentioned in the foregoing section, certain behaviors are not suitable for certain goal statements. Goal statements establish relations between specific behaviors and reinforcement and consequently, it is crucial to choose the behaviors wisely. To illustrate this, consider these three possible outcomes of goal setting. First, behaviors that are not task-relevant are less likely when goal statements are provided. While this means that unproductive and counterproductive behaviors should be less likely, it also means that behaviors that support task-relevant behaviors may also be less likely. Suppose, in our sales example, none of the staff took responsibility for maintaining stock levels because it reduced the amount of time they could spend making sales. Although sales would increase in the short term, in the longer term, there would be no stock to sell.

Second, if a quantity of behavior is what you ask for, a quantity of behavior is what you will get. When reinforcement is provided for increased quantity of behavior, then other features of the behavior may suffer. For example, if the salespeople in our example sell stock that cannot be delivered, or inaccurately describe the product, then initial sales will be impressive but product returns will be high leading to increased administration and, in a competitive marketplace, a drop in sales in the longer term.

Third, behaviors that occur at a higher rate contact derived goal-related reinforcement more often. Consequently, large complex behaviors should be broken into smaller constituent behaviors that occur at a higher rate so that reinforcement may be contacted. For example, Locke and Latham (2002) suggest that "learning goals" may be effective in increasing behaviors that contribute to more complex lower rate behaviors and effectively increase these latter behaviors. If a team is required to solve a problem by a certain deadline (e.g., a software firm needs a new product), then the goal might be to brainstorm a number of solutions by an earlier date. In so doing, the goal statement facilitates the occurrence of complex "composite" behaviors (developing a product), by increasing the rate of constituent "component" behaviors (ideas for possible products).

Stating the goal in objective terms. When considering the performance of employees in a company, it is understandable that a manager would think in terms of improvement on current performance. However, in providing a goal, there is evidence to suggest that it should be provided purely in terms of the level of performance rather than in terms of improvement on past performance. Specifically, Wright, Hollenbeck, Wolf, and McMahan (1995) conducted an experiment in which college students were provided with goals of equal difficulty as either objective performance level (e.g., 60 in an hour; PL) or performance improvement (e.g., 20 more than the 40 you did last time; PI) goals on a class scheduling task. In the PL condition, there was a linear relationship between goal difficulty and performance, but in the PI condition, an inverted U-shaped relationship was observed. That is, participants performed very well for low and medium difficulty goals but performed poorly when provided with high difficulty goals. Wright et al. stress that the form in which a goal statement is provided does not necessarily determine employees' self-statements, because employees can translate performance level goals to performance improvement goals and vice versa. Nevertheless, their research suggests that providing goals in terms of performance is a sensible practice.

In our sales example, we provided all staff with a goal of 60 sales per week. In this situation, we provided a goal in terms of performance. If we cast the goal in terms of improvement on past performance, this can result in a subtly distinct form of relational control. Specifically, a goal cast in terms of previous performance complicates the relational network such that not only is there a "less than" relation between current and goal level of performance, there is also a "more than" relation between current performance and previous levels of performance. Whereas one might well use current performance as a guide to setting objective goals (it is the probably best source of performance data), when previous performance is included in a goal statement, the statement provides two sources of derived reinforcement to the employee, because part of the goal statement is to perform "more than" previously. Including performance improvement in goal statements thus provides an alternative way to gain goal-based reinforcement and one that is easier for employees that are already performing at low rates. In fact, once employees are performing at a level higher than their previous level of performance they have satisfied part of the goal statement. Consequently, at that point, the derived reinforcing properties of feedback reduce (one source of derived reinforcement has been removed) and so does sales behavior.

If staff members are operating at different levels and we ask all employees to improve by a set percentage, then high performers may feel penalized in that they are expected to do more. So, thinking in terms of performance improvement may lead to the provision of different goals to employees with similar jobs. One of the most significant negative effects of this is on cooperation. In RFT terms, providing the same goal to employees is beneficial in that it allows Coordination relations to occur based on the Deictic (I-You) relations between each employee's view of him or herself and his or her view of other employees (e.g., "We're all in the same boat"). These Coordination relations promote cooperation. In contrast, providing different goals to different employees allows Comparison and Distinction relations to be derived that threaten cooperation (e.g., "You have it easier than me so I'm not helping you").

Employee participation in goal setting. When constructing goal statements for employees, it may be useful to include employees in the process of determining goals. One way in which including employees in the process helps the organization is that it increases "buy in." This is especially important in cases where relatively little external reinforcement can be provided for goal attainment. From a theoretical perspective, "buy in" occurs when I-you derived relations are established such that "That is your goal" becomes "This is my goal." In business situations, this occurs through establishment of Coordination relations between the goals of the business and the employee. When both managers and employees acknowledge that the goal of "running a successful business" is important for them to achieve their respective goals, effective and objective goals can be provided for work related behavior. The Coordination relations between overall work goals then allow for Coordination relations to be established between specific work goals. Employee participation in goal setting also provides information that helps the manager to set the performance level of specific difficult goals and highlight potential issues with quality and supporting behaviors. However, as mentioned earlier, employee participation in goal setting does not always lead to higher performance. From the current perspective, insofar as such participation allows managers and employees to agree on goals (and those goals are in the organization's interest), then participation will be likely to increase goal-directed behavior. If managers and employees already agree on their goal, then such participation may not be necessary. Finally, the overall level and type of goal-directed behavior reinforced in the organization will also influence whether participation in goal setting increases behavior and this will be described in a later section.

Goal-Directed Behavior

To this point, we have provided a technical account of how goal statements may control behavior and set the conditions for higher levels of performance. Specifically, we suggested that goal setting transforms the functions of feedback statements so that such statements reinforce higher levels of task-relevant behavior. Thus, goal statements can be understood as a form of augmental, a type of rule described by Zettle and Hayes (1982; see next section). These new reinforcing functions occur because decreasing "less than" relations are established between the descriptions of current performance and the level of performance described in the goal statement. However, these decreased "less than" relations would not set the conditions for reinforcement unless performing the task at the level stated in the goal statement was likely to be reinforced (i.e., responding in accordance with similar rules in the past was reinforced). Some "real" (i.e., external) reinforcement must participate in the networks for these transformed functions to occur. In the following section, we will discuss two ways in which goal-directed behavior may be reinforced and the implications of these behaviors for organizations. Specifically, this analysis will employ the two remaining units of rule-governed behavior provided by Zettle and Hayes (1982): pliance and tracking. We will show how these two types of rule-governed behavior may support or hinder goal setting. This is not intended as a conclusive list of all possible forms of goal-directed behavior. Rather, the distinctions introduced in this paper are designed to orient managers to two types of such goal-related control that may be operating in their organizations and the implications of these behaviors for their organizations.

Pliance and Tracking

Skinner (1969) introduced the term rule-governed behavior and defined a rule as a contingency specifying stimulus. This led to a considerable amount of research on how verbal contingencies control the behavior of human subjects as well as the insensitivity of such 'rule governed' behavior to nonverbal contingencies (see Hayes et al., 1989 for a review). Zettle and Hayes (1982) added an extra layer of analysis to Skinner's account by focusing on the types of contingencies that maintain rule-governed behavior. Specifically, they suggested three main functional units of 'listener' behavior: pliance, tracking and augmenting. Pliance is rule-governed behavior under the control of appar-

ent speaker-mediated consequences for correspondence between the rule and the relevant behavior (p. 80). To put it in more everyday terms, reinforcement, usually social, is provided for "doing what you're told." Tracking is behavior under the control of the apparent correspondence between the instruction and the way the world is arranged (p. 81). This type of rule is arguably the closest to Skinner's "contingency specifying stimulus" in that the rule controls behavior because rules previously provided by the rule stater have accurately described environmental contingencies. Finally, augmenting refers to instructed behavior under the control of apparent changes in the capacity of events to function as reinforcers or punishers (p. 81). For instance, on hearing, "Fancy a cold drink?" cold drinks are established as reinforcers due to their participation in this relational network. The previous section dealt with how goal statements function as augmentals by establishing reinforcing functions in particular self-statements. In the current section, however, we will examine how such augmental control is maintained by higher level pliance and tracking contingencies.

In order to illustrate the different sources of control in pliance and tracking, consider the following example. A mother tells her daughter "Wear a sweater when you go outside, or you will be cold." If the child wears the sweater because her mother has reinforced behaving in accordance with previously presented instructions, then this would be an example of pliance (history of rule = behavior reinforced). Indeed, if the child refuses to wear the sweater because her peers have previously reinforced responding that is not in accordance with previous parental instructions, this would also be a form of pliance (history of rule = / = behavior reinforced). In this latter case, following the rule is also under control of consequences for following rules per se, but the control is in the opposite direction. For convenience, examples of such responding are described as counterpliance (Hayes et al., 1989). If the child wears the sweater to avoid feeling cold in the absence of the aversive stimulation and because she knows that her mother is usually right about these things, this would be an example of tracking (history of rule = environment reinforced). If, however, the child wears the sweater because she feels cold and putting on the coat is reinforced by removal of the aversive stimulation then it would neither be an example of pliance or tracking (history of behavior under the control of environmental contingencies).

In organizational settings, pliance and tracking repertoires of employees allow for goal statements to increase performance. Let us consider the organizational example that we introduced earlier. In our

hypothetical organization, staff members were averaging 30 sales a week and we introduced the goal statement, "For this week, every staff member is expected to make 60 sales." Following our analysis of the effects of this statement on sales behavior, one crucial question remains unanswered: Why would staff members bother trying to achieve this goal? Simply, employees must expect that reinforcement is conditional upon achieving 60 sales. More technically, repertoires of rule following must support the derived reinforcing properties of feedback established by goal statements. Without such behavioral histories, employees' behavior would not change reliably with respect to goal statements. For instance, a goal statement functions as a ply when it functions as a member of a class of statements that describe specific behaviors and performing those specific behaviors is controlled by consequences provided by the goal setter or others aware of the goal (i.e., doing what you're told to do is reinforced). On the other hand, a goal statement functions as a track when it functions as a member of a class of statements that participate in Coordination relations with self-statements about environmental conditions (i.e., rules are accurate descriptions of contingencies).

As one might expect, how a goal statement is "interpreted," therefore, will have considerable effects on the efficacy of the goal statement in changing behavior both initially and in the longer term. In addition, as demonstrated by the example of the mother and the child, the topography or form of the rule provided does not dictate the contingencies that will control rule-governed behavior. The same is true of goal statements. We may endeavor to provide clear goal statements that specify explicit reinforcement, but it is the practices of the organization that will, to a large extent, control how employees will respond to these statements. One of the considerable advantages of a behavioral approach to goal setting is this focus on the historical context within which goals are provided.

Pliance and Tracking in an Organizational Setting

This section of the current paper will focus on the rule following repertoires of pliance and tracking in the organization. It will provide a number of further recommendations (see Table 1) for the use of goal setting that are based on the relative strengths and weaknesses of pliance and tracking for the attainment of particular organizational goals.

Suitable goals. Pliance and tracking repertoires are suitable for the attainment of different goals. One of the conspicuous features of organizations is that environmental contingencies are usually weak. The strongest contingency in a typical workplace is that if one performs at a low level for too long (or, more precisely, one is caught doing so), then one will be fired. Although this contingency negatively reinforces a certain level of behavior that may keep an organization profitable, it is not the kind of contingency that will result in high levels of performance. In situations where environmental contingencies are weak, the easiest way to increase behavior is to introduce goal statements and reinforce goal attainment to encourage *pliance*. For instance, in our sales example, a goal setter might introduce the new goal of 60 sales and provide praise or an explicit tangible reinforcer (e.g., money, time off) as a consequence of goal attainment. A second strategy is to change the environmental contingencies (or highlight contingencies that employees are not aware of) and provide *tracks* based on these new contingencies. An example of such a strategy would be to provide sales staff with stock options and to inform them of the contingency between attaining the goal of 60 sales per week and the increase in the value of their stock. Another example would be to make them aware of the increased likelihood of promotion (not provided or controlled by the goal setter) if they attain their goal.

From the foregoing examples, two typical features of pliance and tracking can be observed. Pliance is rapid acting because the reinforcement contingency is short term, socially regulated, and focused solely on the employees' behavior. If we decide to change the contingency, we can do so. This also means, however, that pliance may be somewhat arbitrary and, once established, it may be insensitive to changes in envi-

TABLE 1. Characteristics of Pliance and Tracking as Goal-Directed Behavior

	Pliance "Do what I tell you"	*Tracking* "Do A to get B"
Suitable Goal	Rapidly changing	Enduring
Primary Function	Directive	Informative
Goal Presentation	One to one	Team
Historical Variables	Previous goal setters	Personal goals
Measurement	Employee focus	Organizational focus
Negative Effects	Inward focus Goal setter dependence	Slower to establish Organizational change

ronmental contingencies. Thus, employees engaging in pliance may continue to do what they are told even if what they do is ineffective (i.e., they are not producing optimal results for the organization). Conversely, tracking is more difficult for a manager to change because the contingencies maintaining the behavior may not be wholly hers to control. Nevertheless, tracking is more likely to be sensitive to changes in contingencies because tracks explicitly describe those contingencies. Thus, the control of employees' behavior depends on the manager's knowledge of the environmental contingencies, the employees' previous contact with them under the control of such rules, and the resultant "trust" that the employees have in the judgment of management (e.g., Do the relational networks of goal and environment correspond?). Consequently, pliance tends to be more suitable for short term rapidly changing goals for various tasks and tracking is more suitable for longer term enduring goals linked to readily discriminable non-arbitrary consequences.

Primary function. The primary function of pliance is directive. Employees are provided with goal statements that prescribe behaviors that will be reinforced if they achieve a certain level. The primary function of tracking, on the other hand, is informative. These goal statements relate employee behaviors to environmental contingencies within which the behaviors participate. Consequently, the focus of pliance goals is most effectively on employee behavior whereas the focus of tracking goals is most effectively on the environmental contingencies within the company and outside within which employees' behaviors participate.

Goal presentation. When providing goal statements for employees, it is useful to consider the types of goals that we are presenting and the most suitable context for their presentation. Pliance and tracking have long histories as behaviors for employees and it is worth considering the contexts within which those behaviors are already at a high strength when providing goal statements. Pliance is inherently social, but different social contexts can evoke different behavioral forms. For many people, pliance is at a higher level in a one-to-one situation with rule-givers who control significant reinforcers. That is, we are often more likely to do something for someone when they ask us in a one-to-one situation. This situation emphasizes both respect for the employee and also the attention paid to their performance. Conversely, pliance can tend to be weaker in group settings than in one-to-one settings, because it is more difficult to attend to the performance of each individual and to effectively reinforce or punish it. Tracking, on the other hand, depends on the perceived accuracy of the track itself, the importance of the contingen-

cies specified, and the reliability of the goal setter. Thus, even though some tracks can be more effective in a one-to-one setting (e.g., describing a secret way to succeed that others do not know), a team setting is typically more effective, because environmental conditions can be discussed and agreed upon, which enhances the perceived accuracy of the track. Also, by considering other opinions and defending their own, the goal setter enhances their own credibility. Finally, given the aversive contingencies for the goal setter for the provision of inaccurate goal statements in such a situation, the goal setter is likely to commit more time to making sure that the tracks that they provide are accurate in preparing for such goal presentation.

Historical variables. The historical variables that will impact on pliance and tracking of employees also inform goal presentation. In most organizations, it is unrealistic to perform a functional analysis of every employee's behavior in order to work out how best to facilitate goal-directed behavior. However, if we consider the type of behavior we would like to engender in response to a particular goal statement, different historical variables are likely to influence pliance and tracking. Specifically, employees' histories of reinforcement for rule following with previous managers are an important historical variable to consider if we wish pliance to occur. If employees generally liked their previous managers, then it is useful to establish Coordination relations between the goal setter and previous managers; if not, then Distinction relations are more useful. With tracking goals, Coordination with respected members of the organization and related organizations may be useful. However, the employees' personal goals play a far greater part in controlling tracking behavior. If the environmental consequences coincide with the employees' personal goals, then tracking is likely, but if they do not, then tracking is less likely. For example, if we told our sales staff that achieving our goal of 60 sales a week would make us the best sales team in the company, staff that valued achievement or recognition as personal goals might well work towards the goal of 60 sales. Staff members that were not interested in these personal goals would, however, be less likely to try to achieve the goal of 60 sales. For that reason, it may be important to allow employees to link tracks to personal goals, such as through negotiation of individual performance contracts.

Measurement and public access. The measures required to support pliance and tracking may be slightly different. In order to support pliance, it is crucial that employee *behavior* is measured so that consequences can be reliably provided contingent on goal attainment. This is because it is the frame of Coordination between the goal statement and

the description of current performance that leads to reinforcement in the case of pliance. Consequently, two of the conditions under which pliance is most likely to be undermined are when there is a lack of social clarity about the goals set (goal setter and employee may have different goal statements), or when there is an inability to measure the results of pliance (goal setter and employee may have different statements of current performance; e.g., Hayes et al., 1985; Hayes et al., 1986; Rosenfarb & Hayes, 1984).

Tracking reduces the need for moment-to-moment monitoring of behavior but requires greater focus on the environmental contingencies within the organization and beyond. This leads to a greater focus on the bottom-line impact of the employees' behavior on the organization and thus measurement will tend towards a more organizational focus. If management provides accurate tracks, then the environmental consequences will support the repertoire of behavior. If management provides inaccurate tracks, however, they will very quickly be classed as "not knowing what they're talking about."

Negative effects. Both pliance and tracking repertoires may have negative consequences for the organization. Even when employees come under control of the contingencies that we wish them to, the sole use of pliance and tracking contingencies to maintain behavior can have drawbacks. Pliance, as we mentioned earlier, allows for the rapid establishment of higher levels of sought after behavior and is flexible to the changing demands of the company in the hands of an able manager. However, the weaknesses of pliance contingencies for the organization rest in the dependence upon the goal setter and their ability to monitor adherence to the rule. If pliance is the "only game in town" in terms of reinforcement, the organization can tend towards an inward focus and will be slow to react to changing external contingencies for the organization. This is because, for employees, such contingencies will be less important than "doing what they are told." An able goal setter will be able to change the goals of employees to change their behavior in accordance with external contingencies, but if the goal setter loses track of those contingencies, then the organization will suffer. This likelihood can be increased with pliance, since it tends to socially reinforce rule-giving by the goal setter, regardless of the actual effectiveness of that rule.

Moreover, effectively changing pliance contingencies requires considerable input from the goal setter and, in pliance-heavy organizations, this behavior is rarely subject to social countercontrol from employees

(employees are rarely encouraged to question management decisions). Both these features of pliance contingencies make it more likely that the goal setter will lose contact with external contingencies. Pliance is inherently a hierarchical form of social control and thus the more an organization depends on pliance contingencies, the more the goal setters and employees become concerned with the internal politics of the workplace. This can mean that the organization will be less able to change with the changing business environment.

The major weakness of tracking is the relatively slow rate of behavior change that we can expect, especially when reinforcers specified are relatively long term or relatively weak compared to other sources of reinforcement. Employees are already engaging in behaviors and if there are lucrative sources of reinforcement for their behavior in the environment, it is likely that they will already have identified them. Thus, tracks will tend to highlight longer term and weaker contingencies than can be arranged using pliance. Consequently, a mix of pliance and tracking is perhaps best for organizations. Pliance is ideal for setting up short-term contingencies for smaller, high rate tasks, but this could be supported by tracks that describe longer-term contingencies for more complex, lower rate tasks. An alternative approach is to change the contingencies to enrich the reinforcement for employees' work-related behavior (e.g., introducing pay-for-performance), and to provide novel tracks based on these new contingencies. Although this reduces the dependence on pliance, it takes time for these new contingencies to take effect and it can be risky.

A more "open book" approach can help support effective tracking. Because tracks detail the contingency between worker performance and organization performance, tracking becomes more likely when employees are made aware of the performance of the organization and the variables that impact upon the organization's performance. This empowerment of employees has the potential to disrupt social networks that exist in the organization. In the longer term, this feature of tracking may help to keep management on their toes and aware of the external contingencies for the organization. In the short term, however, this empowerment may lead to friction amongst employees and between employees and management, especially in organizations that have previously been heavily dependent on pliance contingencies (because pliance depends on employees "doing what they're told" rather than "doing what's right").

Form and Function of Goal Statements

Throughout the current section, we have suggested types of goal statements as plys and tracks, and types of contingencies that support pliance and tracking. These examples are intended to be illustrative and hopefully they will provide ideas for managers who wish to encourage either type of goal-directed behavior in their organizations. However, the actual contingencies in effect in any particular organization are necessarily more complex than can be described here. Pliance and tracking are rarely observed in isolation. For example, an employee who hears that he or she will receive a bonus for achieving a particular level of work specified by a manager (which may establish pliance) may also know that improved performance leads naturally to job security (which may establish tracking). Also, goal-directed behavior that begins as pliance may eventually be maintained by tracking contingencies and vice versa. As an example, bonuses that are originally provided by the goal setter for specific behaviors may initially control behavior because of a pliance contingency, but if the contingency remains the same for a while, it may become a track because the goal statement now describes a stable feature of the environment. If the contingency is then arbitrarily changed, employees feel that they have lost that to which they are entitled. If the contingency is changed often, then it is more likely to be maintained as a pliance contingency. Importantly, from this functional perspective, it is *why* we do what we do (i.e., the function of the behavior) and not *what* we do that distinguishes pliance from tracking.

Goal-Directed Behavior in the Absence of Reinforcement

In the current paper, we have suggested that goal-directed behavior may be controlled by reinforcement in two specific ways and that such reinforcement underlies the effects of specific content of goal statements. However, the vast majority of the goal setting literature refers to the function that "mere" goals (i.e., goals that do not specify consequences; Heath, Larrick, & Wu, 1999) have on behavior. How are these effects explained in terms of the current behavioral model of goal-directed behavior? First, both pliance and tracking repertoires may give rise to goal-directed behavior that is not reinforced. If pliance is at a high strength for an employee in a particular context, then pliance will occur until it extinguishes. For instance, a context that might facilitate pliance would be one in which the goal setter participates in a Coordination relation with individuals who have previously provided rules and

reinforced following those rules or punished disobeying those rules. So, in empirical goal setting experiments, when student participants are asked to work towards a particular goal (e.g., organize 25 timetables, given these subjects and time slots), it is likely that they do so because of a history of obeying authority figures in academic institutions (cf., Hayes et al., 1985). This is certainly not true of all participants, but those that do not exhibit pliance are less likely to follow even the most basic rules of the experiment and are therefore less likely to be included in the final analyses. If either reinforcement for pliance or punishment for counterpliance is weak, then it is likely that pliance will decrease. If no other reinforcement is available for task relevant behavior, then that will decrease too. So, if the goal setting context is similar enough to a context within which pliance is usually reinforced, then goal-directed behavior is likely to occur.

Tracking may also give rise to goal-directed behavior in the absence of reinforcement. A useful way to think about tracking is in terms of making sense of the world. We compare our descriptions of the world (tracks) to our ongoing self-statements about the world and then revise these descriptions. Again, let us consider a student participant in a goal setting experiment. The student "knows" that if she completes the task, she can leave the experiment and go back to enjoying university life. Thus, the goal statement is completed by the student to form the track, "Organize 25 timetables in order to leave the experiment." When the student completes the task, responding in accordance with this track is negatively reinforced.

Goal-directed behavior in the absence of reinforcement will also occur in organizational settings. This is because when a goal statement is provided by a superior, this goal statement occurs in the context of the employee's previous experiences in the organization. For the employee, therefore, acting in accordance with the goal statement predicts particular environmental consequences even if they are not actually presented. Going back to our sales example, consider two different supervisors who provide the same goal of 60 sales. One of the supervisors is typically quite attentive to performance and reinforces task relevant behavior, the other supervisor has previously provided many rules, but rarely follows up on them and provides reinforcement for behavior inconsistently. It is quite obvious that goal-directed behavior will be more likely with the first supervisor than with the second. Regardless of whether reinforcement will or will not occur, pliance repertoires will be stronger in the presence of the first supervisor. As a tracking example, consider two supervisors that differ in terms of their knowledge of environmental

contingencies; for instance, one may be an ex-salesman with a strong sales record and the other has no sales experience whatsoever. In this situation, tracking repertoires will be stronger in the presence of the first of these two supervisors.

Finally, for some individuals, behavior may be reinforced by "achievement." From an RFT perspective, when an individual has spent time working in order to decrease the Comparative relation (e.g., less than) between ongoing self-statements and a goal statement, "achievement" occurs once the self-statement and goal statement are in a relation of Coordination. Some individuals have histories in which achievement has predicted a high level of reinforcement relative to other sources of reinforcement available for the individuals' behaviors. This achievement-reinforcement relation will often be supported by natural contingencies. For such individuals, achievement will be a strong reinforcer and this may maintain goal-directed behavior in the absence of explicit reinforcement. However, if such individuals work in an environment where the achievement-reinforcement relation is not supported by environmental contingencies, this relation will eventually extinguish and achievement will eventually fail to reinforce behavior (it becomes a "hollow" achievement).

Other Sources of Reinforcement

Both pliance and tracking repertoires facilitate goal-directed behavior. Once goal-directed behavior has occurred, however, these repertoires need not maintain goal-directed behavior. We have already shown how goal-directed behavior initially established as either tracking or pliance may shift to the other type of contingency. It is also possible for other sources of reinforcement to maintain higher levels of performance once they have been established. For example, an employee that thinks that she can make no more than 20 sales in a week may increase her performance when provided with the goal of 60 sales a week to a level above 20 sales. When this happens, she may receive more reinforcement from her manager and other colleagues for engaging in task relevant behavior. If so, her performance will increase based on this source of reinforcement even if goal-based reinforcement is not provided (e.g., if she fails to make the 60 sales).

CONCLUSION

The current paper describes an approach to goal setting in organizations based on Relational Frame Theory. We have addressed how the content of goal statements and the contingencies that maintain goal-directed behavior interact to provide a comprehensive behavioral account of goal setting. When individuals are provided with goals, they strive to decrease the verbal distance between their current performance level and that specified by the goal statement. This behavior may be maintained by contingencies for obedience to the goal setter or by environmental contingencies either explicitly described in the goal statement or abstracted by the employee. A number of recommendations for organizational intervention have also been outlined throughout the text. It is our hope that this account will contribute to the behavioral investigation of goal setting in the laboratory and in the workplace.

NOTES

1. Fellner and Sulzer-Azaroff (1984) suggest that "goals" may function as discriminative stimuli or as conditioned reinforcers. We have employed the terms "goal statement" and "goal achievement" to distinguish between these two functions and also to avoid reifying goals as objects or stimuli other than as part of a statement (e.g., as internal representations that are established by goal statements). We are confident that we are not changing the substantive contributions of these researchers.

2. Agnew (1998) also uses the term "goal" rather than "goal statement" in her account.

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