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In Search of Meaning: Values in Modern Clinical Behavior Analysis

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Skinner described behavior analysis as the field of values and purpose. However, he defined these concepts in terms of a history of reinforcement and failed to specify whether and how human and nonhuman values might differ. Human values have been seen as theoretically central within a number of nonbehavioral traditions in psychology, including humanism and positive psychology. However, these approaches have failed to provide explanations of the behavior–environment relations involved in valuing that might allow prediction and influence with respect to this phenomenon. Modern clinical behavior analysis in the form of acceptance and commitment therapy (ACT), however, succeeds in providing a functional definition of human values that meets this latter criterion. ACT is rooted in behavior analysis and relational frame theory (RFT) and defines values in terms of verbally established motivation. ACT empirical research into values has begun to blossom in recent years, and ACT-RFT researchers are currently investigating the concept at the most basic empirical level as well as in the applied clinical arena, heralding new interest in and insight into values within clinical behavioral psychology.

Key words: personal values, acceptance and commitment therapy, clinical behavior analysis, relational frame theory

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One of the distinguishing features of human behavior, compared to that of other species, is the extent to which our lives are influenced by values and purpose. Skinner once suggested that behavior analysis is the field of values and purpose. However, what he meant by purpose was a history of reinforcement (Hayes & Wilson, 1993), and in this sense, human behavior is no different than that of any other organism. However, there is an alternative sense in which human values and purpose are unique. This uniqueness is based on the fact that, unlike other species, we engage in verbal behavior. Thus, unlike nonhumans. which are constrained to the extent that their values and purpose, in the Skinnerian sense, are necessarily based on an actual history of responding involving relatively simple sources of reinforcement into which they must at some stage come in contact, humans can construct a verbal purpose pertaining to complex verbally constructed future consequences that might be extremely temporally distant or that we might never even experience. In fact, Skinner (1948) provides a good example of this. In *Walden Two*, he verbally constructed a possible future society in which the individual needs of all humans were maintained not by aversive but by appetitive control; throughout his prestigious career, he worked tirelessly in the service of the behavior-analytic science that might make this society a possibility.

Despite the importance of his own personal values in guiding his work, it may be argued that Skinner failed to produce an adequate account of

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values themselves. Nevertheless, a modern theoretically derived behavioral approach to values does currently exist, and there is promising empirical support for its application to the alleviation of human suffering and the development of meaningful life patterns. Acceptance and commitment therapy (ACT) provides a theory for values and values-based action, based on basic behavioral principles and grounded in a functional analytic theory of language and cognition (i.e., relational frame theory [RFT]; Hayes, Barnes-Holmes, & Roche, 2001) that we believe provides a strong foundation for creating flexible assessment and intervention strategies related to personal values.

Values, within the ACT approach, are defined as "freely chosen, verbally constructed consequences of ongoing, dynamic, evolving patterns of activity, which establish predominant reinforcers for that activity that are intrinsic in engagement in the valued behavioral pattern itself" (Wilson & Dufrene, 2009). Some of the terms used in this definition are nontechnical and, as such, must be functionally defined. In the current paper we will explain the basic theory underlying this definition and situate values within the ACT model of psychotherapy. Furthermore, we will discuss the empirical evidence that supports this conception of values, evidence which is beginning to emerge at a number of different levels of research including basic modeling, translational, and clinical outcome studies, and we will suggest directions for future research. Before beginning to describe and situate values within the ACT-RFT domain, we will first examine a number of more traditional perspectives on this concept.

VALUES IN MAINSTREAM PSYCHOLOGY

In psychology, the idea of human values and their importance is associated primarily with the humanistic movement, according to which people are motivated by psychological growth and self-direction and ultimately strive for the fullest realization or actualization of their human potential. Perhaps the best known humanistic psychologist is Carl Rogers, who regarded the pursuit of values as key to actualization and psychological health. Rogers (1964) distinguished between conceived values (verbal expressions of preference) and operative values (actual behavior) and suggested that much of human suffering resulted from discrepancies between these two, as in the case of a person stating a preference for a particular pursuit but not spending any time actually engaged in it. He developed client-centered therapy (later known as person-centered therapy), with the intention of guiding clients to live more congruently with their conceptualized values and hence live more fulfilling and psychologically healthy lives (e.g., Rogers, 1961/1989).

Perhaps the main problem with the humanistic approach, from a broadly scientific perspective, is the lack of cumulative empirical evidence for its theoretical statements, whether with regard to values or other concepts. This weakness in terms of its scientific underpinning is perhaps not surprising, because humanism was developed in part as a reaction against behaviorism and scientific psychology more generally (Rogers & Skinner, 1956). Accordingly, humanists regarded concepts such as determinism and objectivity as irrelevant and perhaps even as antithetical to dealing with the human condition. From the current perspective, this is a serious weakness.

Recent outgrowths of the humanistic movement have become more empirically oriented. Motivational interviewing (MI; Miller, 1983), for instance, is a modern humanistic approach with a Rogerian focus on values–behavior consistency that has accumulated a good deal of empirical

evidence in its favor as a treatment and as an adjunct to increase the effectiveness of other cognitive behavioral methods (e.g., Arkowitz, Westra, Miller, & Rollnick, 2008). Miller and Rollnick (2002) describe MI as a process in which clients come to be motivated to behave in a more values-congruent manner by identifying the higher personal values that are salient to any particular situation. MI therapists facilitate therapeutic change by helping clients to examine barriers to living values-congruent lives. For example, therapists help them to recognize the negative consequences of their current behavior, or the relevance of a value to a specific behavioral choice. MI therapists also work to help clients take responsibility for their behavior when clients blame an illness, diagnosis, label ("I am an alcoholic"), or a thought ("I just can't handle this anxiety") for the fact that they are not living values-congruent lives.

MI has accumulated research data in favor of its efficacy as a method of treatment (e.g., Arkowitz et al., 2008). However, it still lacks a theoretical account of values and values-consistent behavior, or any explanation of purported mechanisms of change linked to empirically supported principles or processes. We argue that such an account is required for a progressive scientific approach to effecting change based on values-consistent living.

The influence of humanism and in particular its emphasis on values is also evident in the recently emerged perspective of positive psychology. Kennon Sheldon has examined the effect on growth, development, and overall well-being of value-relevant behavior that he refers to as goal striving (e.g., Sheldon, Kasser, Smith, & Share, 2002). Sheldon et al. have provided evidence to link chronic (or lifelong) goal striving with psychological health. Contrasted with goal striving is working narrowly to achieve specific, concrete goals, particularly ones motivated by avoidance (e.g., fear of failure). Such avoidance-based goals tend to be achievement focused (e.g., getting a particular grade on a midterm exam) and are associated with physical symptoms and illness as well as lower levels of self-esteem, personal control, and psychological well-being (Elliot & Sheldon, 1997, 1998). In summary, Sheldon's data indicate that healthy behavior patterns are associated with overarching goals (or values), and that consistent pursuit of positive reinforcers may be better for long-term psychological and physical health than consistent patterns of avoidance.

Although positive psychologists such as Sheldon have espoused the importance of providing empirical evidence as support for theoretical statements, positive psychology has other weaknesses that it shares with the older humanist tradition. For example, positive psychology employs terms such as *character*, *potential*, *striving*, and *personal control* that remain relatively poorly specified at the level of basic behavioral processes. The absence of such specification is problematic because it entails a failure to achieve prediction and influence of behavior and hence to provide a basis for psychological interventions that might change a person's behavior in accordance with theoretical goals. Thus, although analyses provided by positive psychologists and humanists point the way towards potentially important variables such as values, the lack of behavioral precision in the definition of their terms means that specification of effective practical interventions on the basis of these analyses is much less likely.

Having briefly examined some well-known mainstream approaches to values, and described problems with these from a scientific behavioral perspective, we turn next to an examination of values in cognitive behavior therapy, the clinical tradi-

tion with which ACT is perhaps most closely associated.

COGNITIVE BEHAVIORAL THERAPY AND VALUES

The emergence of values as a specific focus of interest in cognitive behavior therapy (CBT) is a relatively recent phenomenon. It may be argued that several forms of CBT do seek to effect changes in line with the ACT conceptualization of values, but interventions do not typically conceptualize such changes as linked to personal values and do not target such changes as mediators of change or as outcomes. Traditionally (although there is great variation among CBT therapies), these therapies have been designed to treat sets of symptoms defined by the *Diagnostic and Statistical Manual of Mental Disorders* (American Psychiatric Association, 2000), and many psychological treatments have focused primarily on ameliorating symptoms. For example, treatment for depression has focused on alleviating feelings of depression by reducing automatic thoughts (e.g., Beck, Rush, Shaw, & Emery, 1979), and treatment for phobias has focused on exposing clients to feared stimuli until the fear response does not occur (e.g., Barlow, 2001). Such treatments, which have used the statistically significant reduction of depression or anxiety as the primary metric of success, are typical of traditional CBT.

However, one feature of these diagnoses and psychological problems has remained largely overlooked as CBT has become increasingly refined; that feature is negative impact on quality of life. To be diagnosed as a psychological disorder, a problem must cause an individual some functional impairment or clinically significant distress. However, the presence of significant psychological distress or impairment also invariably influences the person's ability to live a fulfilling life. Some CBT practitioners focus only on amelioration of symptoms, but others practice psychotherapy in line with this focus on functional impairment, and as such have begun to attend to quality of life in their practice, and some have also begun to include measures to assess changes in this variable following intervention.

A diversity of measures for this purpose had already been developed in the fields of medicine and health psychology (e.g., Anderson & Burckhardt, 1999; Diener, Emmons, & Larsen, 1985; Frisch, Clark, & Rouse, 2005; World Health Organization, 1995); thus, clinical psychologists have turned to these ready-made instruments for use in their work. However, from the current perspective, these instruments are missing something very important; namely, any link to a theory that allows the manipulation of important psychological or environmental variables in order to effect change. Nevertheless, the lack of such a link is not unusual with respect to instruments or strategies typically employed by mainstream cognitive behavior therapists.

To understand this phenomenon, we must consider the philosophical assumptions that underlie CBT. Mainstream CBT is not united by one philosophical or theoretical approach but instead is best described as a set of interventions linked in varying degrees to behavioral principles and cognitive theory. Nevertheless, the predominant philosophical perspective in traditional CBT (based on the cognitive model established by Beck et al., 1979) has been hypothetico-deductive cognitivism, a mechanistic approach whose underlying truth criterion is predictive verification. Hypothetico-deductive cognitivism models specific aspects of the normal functioning of the human mind and makes predictions on this basis regarding future behavior. However, the predictive truth criterion that characterizes this approach does not lend itself easily to practical

application; hence, there is a disconnection between cognitive theory and practical application (e.g., CBT). For example, a typical model of cognitive functioning might involve one or more variables (e.g., cognitive schema), the existence of which has been hypothesized based on the results of previous empirical work. In accordance with the mechanistic truth criterion, such a model might be reasonably useful at predicting relatively specific patterns of behavior based on relatively specific configurations of the cognitive system. However, the lack of emphasis on directly manipulable environmental variables and the specificity of the predictions mean that the model would be of little or no use for a clinician whose job is to influence a client's behavior. With respect to the development of new interventions, the clinician would then be left to rely more on clinical experience and common sense than on theory.

Thus, although cognitive behavioral researchers have successfully demonstrated empirical support for a range of CBT-based intervention packages for particular disorders, including support for effective treatment components within these packages, such treatment packages are typically based not on a comprehensive bottom-up theoretical model of human cognition linked to basic behavior but rather on clinically derived considerations about how patients think (Hayes, Levin, Plumb, Boulanger, & Pistorello, in press). Furthermore, even those theories that have been relatively successful in traditional CBT (e.g., Beck et al., 1979) have been specific in their scope and have tended to deemphasize aspects of context, such as overarching values.

Thus, traditional CBT does not lend itself readily to interventions to change behavior relevant to values, or even to measure such behavior. ACT, in contrast, although situated in the larger tradition of CBT, has its roots in an alternative set of philosophical assumptions that do allow both intervention and measurement of values-relevant behavior. ACT is closely linked to RFT, which is a behavior-analytic approach to language and cognition. Behavior analysis itself is rooted in the philosophical assumptions of functional contextualism, a form of scientific pragmatism in which truth is defined by the successful achievement of prediction and influence within the analytic domain (Hayes, Hayes, & Reese, 1988; Pepper, 1942). As a result, in RFT and ACT analyses, all concepts are explicitly linked to historical and situational contexts, because only contextual variables can be directly manipulated, thus allowing both prediction and influence (Hayes & Brownstein, 1986). Hence, a key feature of the ACT-RFT approach to values that distinguishes it from many alternative approaches to values in the CBT tradition is an explicit focus on a bottom-up theoretical conception of this phenomenon that facilitates measurement and manipulation of contextual variables relevant to producing values-consistent patterns of action. In what follows, we examine the scientific detail of this bottom-up approach.

BEHAVIOR ANALYSIS AND VALUES

ACT is rooted in behavior analysis, which provides an empirically well-grounded and practically oriented system for prediction and influence of behavior, including value-relevant behavior. We earlier criticized alternative approaches for their importation of everyday language terms that were not well defined. In behavior analysis, in contrast, terms are defined with sufficient functional precision for the purposes of analysis.

In presenting a functional definition of the term *value*, we start with a functional analysis of the conventional use of the term (Skinner, 1945). In

the case of *value*, Leigland (2005) suggests that, with respect to the context of nonverbal animal behavior, the term might be emitted in the presence of operant reinforcement, especially the establishing operation (EO; e.g., Michael, 1982) in which the actual reinforcing effect of a particular reinforcer is manipulated. The classic example of an EO in the behavioral laboratory is food deprivation, which might be said to increase the reinforcing power or, to lay observers, the *value* of food.

As Leigland (2005) indicates, "moving into the interpretation and analysis of human values naturally involves a considerable increase in complexity, because verbal contingencies are involved in any distinctively human behavioral phenomenon" (p. 137). He then describes a conception of human values that corresponds closely to the ACT-RFT approach. Although human values involve an increase in complexity, the idea of the EO is still relevant because when someone says that he or she values someone or something, that statement refers to the effectiveness of that person or thing as a reinforcer for their behavior. The difference is that in this case the EO is verbal, a phenomenon that can in turn be analyzed as a kind of rule-governed behavior and more specifically as an augmental verbal contingency (Zettle & Hayes, 1982).

According to Zettle and Hayes (1982), there are two types of augmental rules, formative and motivative. Formative augmental rules establish a stimulus as reinforcing or punishing. For example, the statement "These tickets are worth money" establishes the tickets to which it refers as reinforcing or valuable. Motivative augmental rules temporarily alter the effectiveness of a previously established consequence. For example, the realization that "I love my job" may, at least temporarily, make job-relevant activity even more reinforcing than before. There is now established empirical support for both these forms of augmental rule following (Hayes, Kohlenberg, & Hayes, 1991; Ju & Hayes, 2008; Whelan & Barnes-Holmes, 2004).

Leigland (2005) suggests that in the case of augmental rule following, "reinforcement may be a derived function established through participation in a network of relations among arbitrary stimuli" (p. 137). This is the contention of RFT, which explains verbal behavior, including augmental rule following, as a form of operant behavior and thus acts as a critical theoretical link to explain the exact difference between nonverbal and verbal forms of the EO. In what follows, RFT will be briefly outlined before we consider the ACT-RFT definition of values in detail.

Relational Frame Theory

From the RFT perspective, augmentals and other forms of rule following are forms of verbal behavior or, in RFT terms, arbitrarily applicable relational responding (D. Barnes-Holmes, Barnes-Holmes, Hayes, & McHugh, 2004; Hayes et al., 2001). This concept is explained as follows. Many species can be trained to respond to physical relations between objects, for example, picking the biggest object from an array (Reese, 1968). However, extensive empirical evidence suggests that language-able humans uniquely can show an additional type of relational responding in which they relate stimuli not based on physical relations alone but based at least to some extent on contextual cues that determine which relation is appropriate. For example, imagine a verbally able child is given an exercise involving the hypothetical characters Mr. A. and Mr. B, in which she is told that "Mr. A is taller than Mr. B." If she is subsequently asked to say which person is shorter, she will likely say "Mr. B" without needing to be told anything further. This response depends only on the contextual cues

"taller" and "shorter" rather than on physical relations and hence is arbitrarily applicable to any stimuli, no matter what their physical properties. Therefore, this type of responding is referred to as arbitrarily applicable relational responding.

According to RFT, learning language is based on learning many different patterns of arbitrarily applicable relational responding or *relational frames*. Examples include sameness (e.g., "One plus one is equal to two"), opposition (e.g., "Big is the opposite of small"), difference ("A boat is different than a ship"), comparison (e.g., "An elephant is bigger than a mouse"), and perspective taking (e.g., "I am here, but you are there"). There is an increasing quantity of empirical support for the existence of these and other frames (e.g., Dymond & Barnes, 1994, 1995, 1996; Roche & Barnes, 1996, 1997; Steele & Hayes, 1991) and for their capacity to be trained (e.g., Y. Barnes-Holmes, Barnes-Holmes, Smeets, Strand, & Friman, 2004; Berens & Hayes, 2007; Luciano, Gomez-Becerra, & Rodriguez-Valverde, 2007).

All relational frames involve three defining features: mutual entailment, combinatorial entailment, and transformation of functions. *Mutual entailment* refers to the fact that a relation in one direction between two objects entails or automatically gives rise to a second relation in the opposite direction. For example, if X is greater than Y, then Y is less than X. *Combinatorial entailment* is the phenomenon in which two relations are combined to form a third relation. For example, if $X > Y$ and $Y > Z$, then $X > Z$ and $Z < X$. *Transformation of stimulus functions* is extremely important in relation to the psychological relevance of relational framing because, from an RFT perspective, it is the process according to which language can control our behavior by changing the psychological functions of events in our environment; in other words, this is the process that RFT suggests can account for the linguistic conditioning of the human environment. In technical terms, if two stimuli, X and Y, participate in a relational frame for a person, and one stimulus (e.g., X) has a psychological function, then under certain conditions the stimulus functions of Y may be transformed for that person in accordance with that relation. For instance, imagine that X is a coin that a child has learned to value because it can buy candy, and that the child subsequently derives a relation such that Coin $Y >$ Coin X. If the child now prefers Y to X, in the absence of previous experience of Y, then this is an example of transformation of function through the relational frame of comparison.

According to RFT, relational framing, including the transformation of functions of environmental events, is the key process involved in human verbal behavior. Furthermore, RFT suggests how this form of responding can supplement and greatly extend simpler processes, including associative conditioning and the EO when it comes to explaining processes of reinforcement and of valuing. The example just provided suggests how, in the absence of the kind of explicit or prolonged training that a nonverbal animal might require before responding to a previously neutral stimulus as reinforcing, the process of transformation of function through a relational frame of comparison can instantaneously change the functions of a previously neutral stimulus (Coin Y) so as to produce a reinforcing stimulus.

The above is a prototypical example of how a stimulus can acquire reinforcing functions via relational frames. This is a relatively simple example of verbal reinforcement. However, RFT suggests that the processes involved in verbal reinforcement can become more complex as children learn to respond in accordance with combinations of relational frames referred to as relational net-

works, and to rules, which are particular kinds of relational networks.

As discussed previously, values may be conceptualized as particular kinds of rules (referred to as augmentals) that can establish neutral stimuli as reinforcers (formative augmentals) or temporarily increase the reinforcing quality of already established reinforcers (motivative augmentals). From the current perspective, we maintain that statements of value typically function in the latter capacity more than the former and thus work primarily as motivative rather than formative augmentals. An example of a values rule might be "I'm proud of my local community." This statement is a network of relations (e.g., between "I" and "local community") that makes salient (via relational frames) an already established source of reinforcement in my life and might thus make it temporarily more likely that I get further involved in that area (e.g., by doing community work). In accordance with our previous discussion, the fact that this statement can work to increase the reinforcing value of particular activities makes this an EO. The EO in this case is verbal because the actual valued phenomenon is not presented in itself; instead, names or descriptions that are in relational frames with that phenomenon are presented, and this is enough to increase the motivational power of that phenomenon. In more technical language, the verbally described phenomenon (i.e., "community") is presented (just as in the case of the nonverbal EO), and this increases the degree to which particular events in relational frames with that phenomenon (e.g., well-organized community activities, recognition by fellow members of the community) function as reinforcers for particular values-based action (e.g., community work).

THE ACT-RFT PERSPECTIVE ON VALUES

The RFT analysis of language provided above allows an explanation at a process level of the difference between the nonverbal and the verbal EO, and thus explains a core process involved in what Leigland (2005) refers to as *human valuing*. However, the ACT-RFT definition of values is more specific than Leigland's conception of values. Perhaps the main reason for this is that Leigland's description corresponds to the conventional use of the term *values*, whereas ACT-RFT defines *values* in accordance with theoretical predictions of the form of responding likely to produce optimal psychological outcomes. In what follows, we examine and provide functional explanations of the terms in this definition.

The ACT-RFT Definition of Values

Values are "freely chosen, verbally constructed consequences of ongoing, dynamic, evolving patterns of activity, which establish predominant reinforcers for that activity that are intrinsic in engagement in the valued behavioral pattern itself" (Wilson & Dufrene, 2009). The phrase "freely chosen" indicates that a person's pursuit of particular values is not under predominant and ongoing aversive control. This criterion is in accordance with Skinner's (1971) approach to the concept of freedom and seems likely on a theoretical basis to lead to better long-term psychological outcomes. This is not to say, as the use of the qualifiers "predominant and ongoing" suggests, that a pattern of valuing may not involve aversive control at some point. For example, it may be that a person initially practices the piano because he or she wishes to avoid parental punishment, but eventually playing music becomes an important and ongoing source of reinforcement. Alternatively, an individual might love his or her job and wish to succeed in it, but of course he or she also needs to work to make money to live. Thus, it might be arguable that there is some aversive

control involved in working; however, the job is primarily a source of reinforcement, and the individual has chosen to do this job rather than another that might also allow survival based on the quantity of reinforcement available.

The phrase "freely chosen" should also function to indicate that values should not be based on *pliance*, which is rule-governed behavior in which rule following is under socially mediated consequential control; it can be understood colloquially as obeying a rule in order to please or impress another person. Neither pliance nor aversive control is seen as values congruent, because both these patterns tend to be predictive of behavioral inflexibility (e.g., Bond, 2004), which is loosely defined as a failure to adapt behavior to current situational contingencies. Hence, each predicts less than optimal long-term psychological outcomes.

"Verbally constructed consequences" refers to the idea that, from an RFT perspective, stated values are central nodes in complex extended hierarchical relational networks that include higher order abstract consequences, midlevel goals in the service of those consequences, and concrete actions directed towards achieving those goals.

Consider the verbally constructed concept of *personal growth*, for example. For someone for whom personal growth is a stated value, this term might be a central node in a complex hierarchical relational network that includes other relatively abstract concepts such as *understanding* and *insight* higher up the hierarchy, goals (e.g., taking an evening course or learning to play a musical instrument) at the midlevel of the hierarchy, and concrete actions in the service of one or more such goals (e.g., attending a class or taking an examination) at lower levels. In this example, *personal growth* and related concepts function as verbally constructed consequences of the performance of particular actions and the achievement of particular goals at lower and middle levels of the hierarchical relational network, and thus they work to verbally motivate the individual to continue to perform the actions and achieve the necessary goals.

One of the distinctions made in the ACT clinical environment is between goals and values. Values are hierarchically related to goals, but unlike goals, values can never be fulfilled, satisfied, or completed. Instead, values are conceptualized as giving an individual's responding a kind of purpose or direction in each instance of behavior. The emphasis on this goal–value distinction in ACT-RFT accords with empirical work (e.g., Elliot & Sheldon, 1997, 1998).

Values are freely chosen, verbally constructed consequences of "ongoing dynamic patterns of action." The meaning of this phrase is relatively straightforward. Humans engage in a multiplicity of complex patterns of activity across a lifetime, and some of these are particularly relevant to values in that they may work (or not) towards achieving the kinds of verbally constructed consequences that we discussed in the last paragraph.

For example, let us assume that *intimacy* is a value for someone. There are certain patterns of behavior that a person can engage in that are more likely to produce intimacy in a relationship as a consequence. When one seeks to initiate and establish the conditions for an intimate relationship, certain patterns of behavior will be important. These might include socializing, going on dates, discriminating and reinforcing honesty, and engaging in emotional disclosure at appropriate moments as the relationship develops. As a person goes through adulthood, he or she may experience many dating situations and relationships, and the experiences and verbal descriptions of those experiences will form ongoing, evolv-

ing dynamic patterns of activity that may be either more or less in alignment with his or her verbally constructed value of intimacy.

Values are freely chosen, verbally constructed consequences of ongoing dynamic patterns of action that "establish predominant reinforcers for that activity that are intrinsic in engagement in the valued behavioral pattern itself." As discussed previously, values may be conceptualized as motivative augmental rules that temporarily increase the reinforcing quality of already established reinforcers. The final part of the definition indicates that these reinforcers are intrinsic in engagement in the valued behavioral pattern itself. The key word here is *intrinsic*. This term indicates that the reinforcers whose motivational power will be increased are already reasonably well-established consistent reinforcers for that person. For example, in the case of intimacy as a value, established reinforcers might include physical contact and emotional sharing. From an ACT-RFT perspective, it is important that values facilitate contact with these intrinsic reinforcers, or the values are unlikely to be maintained. Assuming they do facilitate such contact, then, based on their verbal status, they can potentially coordinate behavior over long time frames.

Values in the ACT Clinical Arena

The concept of values as previously outlined plays a key role in ACT. Consistent with theoretical and empirical analyses of values that emanate from alternative traditions (e.g., Arkowitz et al., 2008), ACT sees value–behavior consistency as key to psychological health. Unique to the ACT model of psychopathology, however, is the identification of psychological inflexibility as a key barrier to engaging in values-consistent behavior. Psychological inflexibility is a pattern in which behavior is controlled by verbal contingencies to such an extent that effective environmental control is reduced (e.g., Hayes, Luoma, Bond, Masuda, & Lillis, 2006). Processes relevant to this pattern include cognitive fusion (in which behavior is regulated by rules that are insensitive to changes in contingencies) and experiential avoidance (attempts to alter the form or frequency of private events) among others (see Hayes et al. for a full review). In brief, ACT describes a pattern of behavior in which a client comes under the control of unhelpful rules that transform the functions of his or her environment so that he or she engages in avoidance of certain types of private experiences (unpleasant thoughts and emotions) and public experiences (situations associated with unpleasant thoughts and emotions) to such an extent that he or she makes less contact with values-relevant activities, resulting in reduced psychological well-being.

ACT tackles psychological inflexibility in two key ways. On the one hand, it fosters *mindfulness* processes, including acceptance and contact with the present moment (actively contacting both internal and external stimuli, respectively, without attempting to alter their form or frequency) so that the client can learn to respond to private and public experiences without avoidance. An important part of mindfulness is defusion, which involves changing the psychological context of the unhelpful rules in accordance with which the client has been behaving so as to reduce levels of transformation of function and thus make avoidance less likely. The other key component of ACT is commitment to values.

Clinically, clients are encouraged to examine what matters to them in several different life domains (e.g., family, intimate relationships, education, career, community, spirituality, recreation, etc.). The client and therapist usually work together throughout therapy to clarify the values of the former. While working with the client

in this way, it is not the therapist's purpose to influence which values a client endorses, but rather to help him or her contact naturally occurring reinforcement for living consistent with his or her chosen values, whatever they may be. The issue of the function of values-relevant behavior is important in this regard. In many cases, early in therapy, clients report ostensible values that might be goal oriented (e.g., reaching the top of the promotion ladder) or might even be under aversive control (e.g., being pain free). Following defusion work, however, they may begin to identify values that transcend concrete goals, and may also begin to discriminate among aversive control, social compliance, and appetitive control when it comes to values-relevant behavior. Values clarification is therefore considered to be an important process that continues throughout therapy. A discussion of all of the relevant clinical issues involved in the values clarification process (e.g., potential for therapist coercion, dealing with values that involve behaviors that are harmful to others) is beyond the scope of this paper. Readers who wish to become more familiar with ACT techniques with respect to values are directed to more detailed sources (e.g., Dahl, Plumb, Stewart, & Lundgren, in press).

Committed action is the logical extension of values, wherein clients and clinicians work together to foster larger and larger patterns of values-directed behavior, and clients practice being open to contacting reinforcement for engaging in these patterns of behavior via mindfulness skills (e.g., acceptance, defusion, contact with the present moment). This is the place where goal setting is important, but goals are always in service of an underlying value. Because ACT is a behavior therapy, any technique for increasing desired behaviors can be employed here, as long as it serves the function of increasing values-based behavior. An important feature of committed action is flexible persistence. This refers to a pattern of consistently monitoring one's progression toward a chosen value and deciding at particular choice points whether (a) to change the form of behavior or goals when reinforcement wanes or is particularly infrequent or (b) to persist in values-relevant behaviors even if psychological and external barriers arise. Choosing between persistence and changing course should ideally be based on a careful functional analysis of one's own behavior and the overall effectiveness of either behavioral course with respect to stated values and goals.

Empirical Support for the Process of Values in ACT

A key advantage of the ACT approach to values is its empirical foundation in behavior analysis and RFT. As such, values within ACT are the subject of ongoing investigation. ACT researchers have recently begun to examine values in basic, analogue, and applied research with promising results. In this section, we discuss these early studies and emphasize the need for further empirical work in several key areas.

A number of studies in recent years have provided basic laboratory models of values-relevant processes. Ju and Hayes (2008) provided the first unequivocal demonstration of verbal establishing stimulation, the key process involved in valuing. Experiment 1, involving 4- and 5-year-old children, showed that stimuli in experimentally trained frames of coordination (equivalence) with reinforcing consequences increased operant responding that produced those consequences. Experiment 2 trained and tested college students on computer-based tasks and provided strong evidence that responding in both experiments was under the influence of a verbal EO. Other experiments have supported the RFT model of the process of valuing by demonstrating the transformation of

conditioned reinforcement functions through multiple relational frames (Hayes et al., 1991; Whelan & Barnes-Holmes, 2004; Whelan, Barnes-Holmes, & Dymond, 2006).

Further modeling of basic processes is needed. For example, the RFT conception of action in accordance with values involves the transformation of consequential functions through a hierarchical relational network. Thus, it will be useful to model hierarchical relational responding in adults and children, including transformation of consequential functions that leads to increased motivational value of activities in the hierarchical relational network. Basic modeling of this latter process in children will enable researchers to study the development of the valuing process, thus extending both developmental and psychotherapeutic knowledge.

Analogue studies of values are also starting to emerge. For a number of years, analogue studies have demonstrated acceptance of difficult or distressing experiences in the laboratory (e.g., Hayes et al., 1999; Zettle, 2005). Citing the theoretical rationale that values provide the context in which acceptance is possible (one does not typically accept discomfort simply for its own merit), assessing the additive impact of personal values to an acceptance intervention for a distressing task is the logical next step. As such, researchers have begun to examine the combined effectiveness of values plus acceptance in engaging in experimentally induced discomfort. Branstetter, Cushing, and Duleh (in press) compared the effects of values plus acceptance to a simple acceptance intervention for tolerance of cold-pressor-induced pain. In the acceptance and values group, participants completed a values measure and were taught an acceptance strategy in which they imagined that acceptance of pain was linked to their most important personal value. These participants were found to have higher pain tolerance than both acceptance-alone and no-instruction control groups. In another recent study, researchers incorporated personal as well as general values into a motivational context in which participants were exposed to a pain task involving brief electrical stimulation (Páez-Blarrina et al., 2008). It was found not only that the ACT motivational context amplified the effectiveness of an acceptance and defusion rationale for coping with pain but also that the motivational context was effective by itself in the absence of a coping strategy.

Future analogue work on values will likely involve examination of the processes involved in values-based acceptance in greater detail. For example, if hierarchical relational framing is implicated in values-congruent action as suggested, then it should be possible to isolate the effects of cues that produce transformations of function in accordance with hierarchy in values protocols, as hinted at in the work of Páez-Blarrina et al. (2008). Another issue that might be investigated in the context of analogue work is the extent to which social compliance (as opposed to values) might control behavior. One way in which to investigate this variable might be to compare computer-delivered with therapist-delivered intervention instructions.

In the applied arena, researchers are increasing the focus on values in ACT interventions and are examining the role of values in predicting outcomes. For valid inferences to be made, such process and outcome research requires the development and empirical validation of measures of values and valued living. Development of such measures is only in its nascent stages; however, a number of measures developed thus far appear to have good psychometric properties. One such measure is the Valued Living Questionnaire (Wilson, Sandoz, Kitchens, & Roberts, 2008),

which assesses importance of several values domains and the discrepancy between rated importance and activity levels in each. This has primarily been used in clinical settings to aid in values clarification and committed action. A second measure is the Bull's-Eye, which assesses values attainment, discrepancy between stated values and behavior, perceived barriers to valued living, and behavioral persistence (Lundgren, Dahl, Melin, & Strosahl, 2008) and has been shown to function well as an outcome measure and a process measure and as a tool for educating clients about values in a clinical context (Lundgren, Dahl, & Hayes, 2008; Lundgren, Dahl, Kies, & Melin, 2006; Lundgren, Dahl, Yardi, & Melin, 2008). The Personal Values Questionnaire (Blackledge & Ciarrochi, 2006) is an ACT-consistent modification of Sheldon et al.'s (2002) work that assessed the different functions of goals. It assesses several values domains for the function (appetitive control, social compliance, or avoidance) of values-relevant behavior in that domain, level of importance of that domain, recent commitment to or success in valued living in that domain, and desire for more value-consistent behavior within that domain. Values measures specific to particular clinical populations have also been created. For example, McCracken and Yang (2006) developed a values instrument for patients with chronic pain called the Chronic Pain Values Inventory that has been shown to be useful in measuring changes in client values and values-consistent behaviors in clinical research.

Measures of values-consistent behavior have thus far been assessed by self-report in the clinical domain, through the use of values homework sheets, the consistency portion of the Valued Living Questionnaire, or the Bulls-Eye diary. However, self-report measures have several potential limitations for research, including demand characteristics, social desirability, and respondents' lack of understanding of the constructs being assessed. Future research might employ alternative values measures that can circumvent some of these limitations, such as objective behavioral tests and measures of implicit attitudes (e.g., the Implicit Relational Assessment Procedure; D. Barnes-Holmes et al., 2006). In addition, future work should clarify whether values-relevant constructs function as processes of change or outcomes in and of themselves. Valuing as a verbal process is difficult to measure, but conceptually it should be considered a process measure. Valued living, meanwhile, is an outcome measure. Values-measurement work should strive to clearly delineate these constructs with instruments that are behaviorally based and theoretically consistent.

Developing measures to assess valuing as conceptualized by ACT is, of course, important in facilitating ACT applied values research. Concurrent with the validation of the values measures addressed above, researchers have examined the specific role of valuing as a process (e.g., its relation to other variables of interest or as a mediator) in the ACT model and have also assessed outcomes related to personal values (e.g., values-consistent living, increases in quality of life) in ACT interventions.

Values have been shown to be an important variable in relation to measures of psychological distress. When assessed prior to treatment, clients with higher discrepancies between stated values and current behavior are likely to show higher levels of distress (Wilson et al., 2008) and depression (Plumb & Hayes, 2008). Success at living in accordance with values (as measured by the Chronic Pain Values Inventory) was significantly correlated with measures of pain-related disability, depression, and pain-related anxiety (McCracken & Yang, 2006). When measured as part of large ongoing clinical trials, pliant and avoidance reasons for

apparent valuing (as measured by the Personal Values Questionnaire) were shown to be predictive of poorer psychological health at baseline in samples of substance abuse counselors and public school teachers (Hildebrandt et al., 2008) and were correlated with higher levels of depression prior to engaging in treatment (Plumb & Hayes, 2008).

Behavioral medicine is an area in which ACT research specifically targeting values has shown promising results. Many ACT interventions have assessed the role of values in coping with various forms of chronic pain. McCracken and Yang (2006) found that success at living according to values (as measured by the Chronic Pain Values Inventory) accounted for a significant portion of the variance in functioning, independent of acceptance of pain, following an ACT intervention for chronic pain. In a prospective analysis, McCracken and Vowles (2008) reported that values accounted for up to 27% of the variance in measures related to chronic pain among treatment-seeking chronic pain participants. Vowles and McCracken (2008) then reported a high effect size for a values-focused ACT intervention for treating chronic pain ($d = 1.07$). Further, participants reported significant changes in values-based activity from pretreatment to posttreatment and follow-up; specifically, there was a 60% increase (on average) at posttreatment and a 35% increase (on average) at 3-month follow-up.

In a similar study, Wicksell, Ahlqvist, Bring, Melin, and Olsson (2008) found that an ACT intervention significantly improved life functioning and life satisfaction (as indicated by reduced disability, depression, and fear of movement) in chronic whiplash-based pain patients compared to a control group, and that the differences were maintained at a 7- month follow-up. Although values were not assessed via direct measurement in this study, Wicksell et al. developed a measure of psychological flexibility (the ability to relate to difficult thoughts and feelings such that one may persist in values-based activity) that they applied with promising results.

Following a 9-hr values-focused ACT intervention for South Africans struggling with refractory epilepsy, Lundgren et al. (2006) found that 57% of participants were completely seizure free at posttreatment (as opposed to none in the control group), and 86% were seizure free (as opposed to 8% in the control group) at a 1-year follow-up. Further, participants' level of values attainment and persistence in the face of barriers (as measured by the Bulls-Eye) mediated improvements in frequency of seizures, overall well-being, and quality of life at a 1-year follow-up (Lundgren, Dahl, & Hayes, 2008).

Lillis, Hayes, Bunting, and Masuda (in press) found that a 6-hr ACT intervention for weight management significantly decreased self-stigma regarding weight and body image, increased rates of weight loss (even though weight loss was not a target), and increased meaningful life activity compared to the control group. In addition, Lillis (2007) found that values success in the health and personal well-being domain predicted 10% of the variance in body mass index at follow-up, and remained a significant predictor when weight-related acceptance was included in the analysis.

It is clear that ACT interventions have the potential to increase quality of life across many domains of importance. Particularly relevant from the current perspective, there is promising evidence that targeting values in ACT interventions can increase quality of life, and as such, attention to values may generalize to areas of functioning other than those directly targeted by the intervention. Taken together, the evidence suggests that personal values is an important area of clinical behavior analysis, and focusing on values in interventions

can increase quality of life, decrease suffering, and create a sense of meaning and purpose that may persist long after a client concludes therapy. However, future research will need to examine values as a mediating factor in outcomes research. In summary, the empirical support for the ACT-RFT approach to values is encouraging, but additional work in both basic and applied domains is needed to further support and develop this approach.

Valuing Outside the Box: Increasing Well-Being on a Larger Scale

Even as we have discussed areas in which values have been directly targeted and measured in clinical psychology and behavioral medicine, we should not overlook the importance of the impact of the ACT model (with more or less focus on the values component) in areas outside traditional CBT. Of note is a recent shift away from the study of ACT interventions in populations who struggle with a psychological or physical health problem toward a more positive approach, wherein ACT is being applied in areas such as the business world, public school education, and substance abuse counseling in an effort to improve performance and increase overall quality in these environments (e.g., Bond, Flaxman, & Bunce, 2008; Hildebrandt et al., 2008). Furthermore, ongoing research is examining the application of ACT processes to prevent health problems, reduce smoking and alcohol consumption in youth, and increase safety behaviors on a societal level (e.g., Biglan, Hayes, & Pistorello, 2008; Biglan, Sprague, & Moore, 2006). The ultimate goal of such prevention research is to work towards the creation of prosocial and sustainable communities wherein well-being is the norm (Biglan & Hinds, in press). Values may not be directly measured in these contexts, but they are a key part of the ACT interventions being employed.

These avenues of research also point to an important arena that is largely still unexplored: the creation of values-based organizations that promote the psychological well-being of the group. Although several studies have shown that ACT can be applied to organizational settings to improve outcomes for workers (e.g., increasing mental health and decreasing absenteeism) (e.g., Bond et al., 2008), these studies still target the individual workers as opposed to the organizations as a whole. Fruitful avenues of research would include directly targeting and measuring values and values-directed behavior in programs and organizations at both the individual and group levels. Values work of this kind suggests the potential of applied psychology in general and ACT in particular for helping to create a more psychologically healthy, values-focused society.

FUTURE DIRECTIONS

In providing an overview of the empirical research on values, we also pointed to directions for future ACT values research. We need to increase our understanding of values and values-directed behavior by conducting a number of different types of study. Basic work should include continued empirical analysis of motivative augmental processes, modeling of transformation of function through hierarchy, and exploration of the development of valuing in children. Analogue studies are needed to explore values processes as they might work in therapy, honing aspects of the protocol to maximize ecological and internal validity. Suggestions for future work include isolation of contextual control and examination of the possible role in analogue work of social compliance. Applied researchers should continue to examine values in applications of behavior analysis using single-case designs, time series designs, and randomized controlled trial investi-

gations of values-based interventions in clinical and other applied areas (e.g., occupational, educational). As a critical support to applied and other forms of values research, values measures need to be honed to better capture the phenomena of interest (e.g., controlling variables for values, correspondence between values statements and valued behavior, etc.), and there is a need to employ behavioral and implicit measures to reduce the reliance on self-reports.

Also of vital importance is the increase in methods and research programs that seek to encourage well-being in stressful work environments and on a societal level, including the health and well-being of adolescents. That ACT interventions have been applied to some of these areas is an important step for promoting healthy behaviors, but more is needed in areas of prevention that seek to increase overall quality of life and reduce the risk of problematic health behaviors on a societal level. Future research could include targeting values in various disparate groups (e.g., schoolchildren, adolescents, workers, educators, and public policy makers).

Overall, we affirm the need for translational research in which open communication between the basic and applied domains can inform both research agendas in service of the same ultimate goal: improvements in quality of life. In addition to the above, we recommend assessment of values within existing interventions, even in studies in which values are not the focus. Numerous ACT studies have been conducted in which formal measures of values were not employed. However, we suggest that values are a critical process and outcome of any ACT intervention and as such should always be measured.

SUMMARY AND CONCLUSION

In this paper, we first examined values as conceptualized within mainstream approaches, including humanistic and positive psychology, and suggested that their accounts were inadequate from a scientific perspective. As an alternative, we considered values as conceptualized by modern clinical behavior analysis and more specifically, ACT. The ACT approach is rooted in behavior analysis, including RFT, and presents a functional analytic approach that sees values as motivative augmental rules that can transform the psychological functions of the environment in important ways. ACT conceptualizes values as key not only to the treatment of psychopathology but to the optimization of performance and well-being more generally. An increasing quantity of ACT-based research is dedicated to the empirical investigation of this process. In the second part of the paper, we reviewed recent ACT research into values and made recommendations for future work.

In conclusion, we suggest that values play a key role in ACT interventions and that they could potentially add to other forms of clinical and nonclinical intervention. Extant research in basic, analogue, and applied areas shows strong support for valuing as an important process to promote meaning, well-being, and improved quality of life across psychological problems, but additional research is needed. Valuing is a complex verbal phenomenon, and its conceptualization and measurement as a construct are not simple. However, the tools for examining valuing are consistently being refined within the ACT community and beyond. We believe modern clinical behavior analysis is up to the challenge of measuring and applying values in diverse domains, and that doing so can have a broad impact on society.

REFERENCES

American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental*

disorders (4th ed., text rev.). Washington, DC: Author.

Anderson, K. L., & Burckhardt, C. S. (1999). Conceptualization and measurement of quality of life as an outcome variable for health care intervention and research. *Journal of Advanced Nursing*, *29*, 298–306.

Arkowitz, H., Westra, H. A., Miller, W. R., & Rollnick, S. (2008). *Motivational interviewing in the treatment of psychological problems*. New York: Guilford.

Barlow, D. H. (2001). *Clinical handbook of psychological disorders: A step-by-step treatment manual* (3rd ed.). New York: Guilford.

Barnes-Holmes, D., Barnes-Holmes, Y., Hayes, S. C., & McHugh, L. (2004). Relational frame theory: Some implications for understanding and treating human psychopathology. *International Journal of Psychology and Psychological Therapy*, *4*, 355–375.

Barnes-Holmes, D., Barnes-Holmes, Y., Power, P., Hayden, E., Milne, R., & Stewart, I. (2006). Do you really know what you believe? Developing the Implicit Relational Assessment Procedure (IRAP) as a direct measure of implicit beliefs. *The Irish Psychologist*, *32*, 169–177.

Barnes-Holmes, Y., Barnes-Holmes, D., Smeets, P. M., Strand, P., & Friman, P. (2004). Establishing relational responding in accordance with more-than and less-than as generalized operant behavior in young children. *International Journal of Psychology and Psychological Therapy*, *4*, 531–558.

Beck, A. T., Rush, A. J., Shaw, B. F., & Emery, G. (1979). *Cognitive therapy of depression*. New York: Guilford.

Berens, N., & Hayes, S. C. (2007). Arbitrarily applicable comparative relations: Experimental evidence for relational operants. *Journal of Applied Behavior Analysis*, *40*, 45–71.

Biglan, A., Hayes, S. C., & Pistorello, J. (2008). Acceptance and commitment: Implications for prevention science. *Prevention Science*, *9*(3), 139–152.

Biglan, A., & Hinds, E. (in press). Advancing the goals of clinical psychology by evolving prosocial and sustainable communities. *Annual Review of Clinical Psychology*.

Biglan, A., Sprague, J., & Moore, K. J. (2006). A functional contextualist framework for affecting peer influence practices. In K. A. Dodge, T. J. Dishion, & J. E. Lansford (Eds.), *Deviant peer influences in programs for youth* (pp. 342–365). New York: Guilford.

Blackledge, J. T., & Ciarrochi, J. (2006, July). *Initial validation of the Personal Values Questionnaire*. Paper presented at the second World Conference for ACT/RFT, London.

Bond, F. W. (2004). Acceptance and commitment therapy for stress. In S. C. Hayes & K. D. Strosahl (Eds.), *A practical guide to acceptance and commitment therapy* (pp. 275–293). New York: Springer-Verlag.

Bond, F. W., Flaxman, P. E., & Bunce, D. (2008). The influence of psychological flexibility on work redesign: Mediated moderation of a work reorganization intervention. *Journal of Applied Psychology*, *93*, 645–654.

Branstetter, A. D., Cushing, C., & Duleh, T. (in press). Personal values and pain tolerance: Does a values intervention add to acceptance? *Journal of Pain*.

Dahl, J. A., Plumb, J. C., Stewart, I., & Lundgren, T. (in press). *The art and science of valuing in psychotherapy: A therapist's guide to values work in acceptance and commitment therapy*. Oakland, CA: New Harbinger.

Diener, E., Emmons, R. A., & Larsen, R. J. (1985). The Satisfaction with Life scale. *Journal of Personality Assessment*, *49*, 71–75.

Dymond, S., & Barnes, D. (1994). A transfer of self-discrimination response functions through equivalence relations. *Journal of the Experimental Analysis of Behavior*, *62*, 251–267.

Dymond, S., & Barnes, D. (1995). A transformation of self-discrimination response functions in accordance with the arbitrarily applicable relations of sameness, more than, and less than. *Journal of the Experimental Analysis of Behavior*, *64*, 163–184.

Dymond, S., & Barnes, D. (1996). A transformation of self-discrimination response functions in accordance with the arbitrarily applicable relations of sameness, more than, and less than: Erratum. *Journal of the Experimental Analysis of Behavior*, *66*, 348–360.

Elliot, A. J., & Sheldon, K. M. (1997). Avoidance achievement motivation: A personal goals analysis. *Journal of Personality and Social Psychology*, *73*, 171–185.

Elliot, A. J., & Sheldon, K. M. (1998). Avoidance personal goals and the personality-illness relationship. *Journal of Personality and Social Psychology*, *75*, 1282–1299.

Frisch, M. B., Clark, M. P., & Rouse, S. V. (2005). Predictive and treatment validity of life satisfaction and the quality of life inventory. *Assessment*, *12*, 66–78.

Hayes, S. C., Barnes-Holmes, D., & Roche, B. (Eds.). (2001). *Relational frame theory: A post-Skinnerian account of human language and cognition*. New York: Kluwer Academic/Plenum.

Hayes, S. C., Bissett, R. T., Korn, Z., Rosenfarb, I. S., Cooper, L. D., & Grundt, A. M. (1999). The impact of acceptance versus control rationales on pain tolerance. *The Psychological Record*, *49*, 33–47.

Hayes, S. C., & Brownstein, A. J. (1986). Mentalism, behavior-behavior relations, and a behavior-analytic view of the purposes of science. *The Behavior Analyst*, *9*, 175–190.

Hayes, S. C., Hayes, L. J., & Reese, H. W. (1988). Finding the philosophical core: A review of Stephen C. Pepper's *World Hypotheses*. *Journal of the Experimental Analysis of Behavior*, *50*, 97–111.

Hayes, S. C., Kohlenberg, B. K., & Hayes, L. J. (1991). The transfer of specific and general consequential functions through simple and conditional equivalence classes. *Journal of the Experimental Analysis of Behavior*, *56*, 119–137.

Hayes, S. C., Levin, M., Plumb, J., Boulanger, J., & Pistorello, J. (in press). Acceptance and commitment therapy and contextual behavioral science: Examining the progress of a distinctive model of behavioral and cognitive therapy. *Behavior Therapy*.

Hayes, S. C., Luoma, J. B., Bond, F. W., Masuda, A., & Lillis, J. (2006). Acceptance and commitment therapy: Model, processes and outcomes. *Behavior Research and Therapy*, *44*, 1–25.

Hayes, S. C., & Wilson, K. G. (1993). Some applied implications of a contemporary behavior-analytic account of verbal events. *The Behavior Analyst*, *16*, 283–301.

Hildebrandt, M. J., Vilardaga, R., Levin, M., Hayes, S. C., Luoma, J. B., Kohlenberg, B., et al. (2008, May). Exploring the role of valuing in the workplace. In J. C. Plumb (Chair), *Assessment of ACT processes: Values and psychological flexibility*. Symposium conducted at the annual convention of the Association for Behavior Analysis, Chicago.

Ju, W. C., & Hayes, S. C. (2008). Verbal establishing stimuli: Testing the motivative effect of stimuli in a derived relation with consequences. *The Psychological Record*, *58*, 339–363.

Leigland, S. (2005). Variables of which values are a function. *The Behavior Analyst*, *28*, 133–142.

Lillis, J. (2007). *Acceptance and commitment therapy for the treatment of obesity-related stigma and weight control*. Unpublished doctoral dissertation, University of Nevada, Reno.

Lillis, J., Hayes, S. C., Bunting, K., & Masuda, A. (in press). Teaching acceptance and mindfulness to improve the lives of the obese: A preliminary test of a theoretical model. *Annals of Behavioral Medicine*.

Luciano, C., Gómez-Becerra, I., & Rodríguez-Valverde, M. (2007). The role of multiple-exemplar training and naming in establishing derived equivalence in an infant. *Journal of the Experimental Analysis of Behavior*, *87*, 349–365.

Lundgren, T., Dahl, J., & Hayes, S. (2008). Evaluation of mediators of change in the treatment of epilepsy with acceptance and commitment therapy. *Journal of Behavior Medicine*, *31*, 225–235.

Lundgren, T., Dahl, J., Kies, B., & Melin, L. (2006). Evaluation of acceptance and commitment therapy for drug refractory epilepsy: A randomized controlled trial in South Africa—A pilot study. *Epilepsia*, *47*, 2173–2179.

Lundgren, T., Dahl, J., Melin, L., & Strosahl, K. (2008). *Bull's-eye: Measuring valued living*. Manuscript submitted for publication.

Lundgren, T., Dahl, J., Yardi, N., & Melin, L. (2008). Acceptance and commitment therapy and yoga for drug refractory epilepsy: A randomized controlled trial. *Epilepsy and Behavior*, *13*, 102–108.

McCracken, L. M., & Vowles, K. E. (2008). A prospective analysis of acceptance of pain and values-based action in patients with chronic pain. *Health Psychology*, *27*, 215–220.

McCracken, L. M., & Yang, S. Y. (2006). The role of contextual cognitive-behavioral approach to chronic pain. *Pain*, *123*, 137–145.

Michael, J. (1982). Distinguishing between discriminative and motivating functions of stimuli. *Journal of the Experimental Analysis of Behavior*, *37*, 149–155.

Miller, W. R. (1983). Motivational interviewing with problem drinkers. *Behavioural Psychotherapy*, *11*, 147–172.

Miller, W. R., & Rollnick, S. (2002). *Motivational interviewing: Preparing people for change*. New York: Guilford.

Páez-Blarrina, M., Luciano, C., Gutiérrez-Martínez, O., Valdivia, S., Ortega, J., & Rodrígues-Valverde, M. (2008). The role of values with personal examples in altering the functions of pain: Comparison between acceptance-based and cognitive-control-based protocols. *Behaviour Research and Therapy*, *46*, 84–97.

Pepper, S. C. (1942). *World hypotheses: A study in evidence*. Berkeley: University of California Press.

Plumb, J. C., & Hayes, S. C. (2008). *An examination of personal values in depressed and non-depressed individuals*. Unpublished master's thesis, University of Nevada, Reno.

Reese, H. W. (1968). *The perception of stimulus relations: Discrimination learning and transposition*. New York: Academic Press.

Roche, B., & Barnes, D. (1996). Arbitrarily applicable relational responding and human sexual categorization: A critical test of the derived difference relation. *The Psychological Record*, *46*, 451–475.

Roche, B., & Barnes, D. (1997). A transformation of respondently conditioned stimulus function in accordance with arbitrarily applicable relations. *Journal of the Experimental Analysis of Behavior*, *67*, 275–300.

Rogers, C. R. (1964). Toward a modern approach to values: The valuing process in the mature person. *Journal of Abnormal and Social Psychology*, *68*(2), 160–167.

Rogers, C. R. (1989). *On becoming a person: A therapist's view of psychotherapy*. New York: Houghton Mifflin. (Original work published 1961)

Rogers, C. R., & Skinner, B. F. (1956). Some issues concerning the control of human behavior: A symposium. *Science*, *124*, 1057–1066.

Sheldon, K. M., Kasser, T., Smith, K., & Share, T. (2002). Personal goals and psychological growth: Testing an intervention to enhance goal attainment and personality integration. *Journal of Personality*, *70*, 5–31.

Skinner, B. F. (1945). The operational analysis of psychological terms. *Psychological Review*, *52*, 270–277.

Skinner, B. F. (1948). *Walden two*. New York: MacMillan.

Skinner, B. F. (1971). *Beyond freedom and dignity*. New York: Bantam Books.

Steele, D. L., & Hayes, S. C. (1991). Stimulus equivalence and arbitrarily applicable relational responding. *Journal of the Experimental Analysis of Behavior*, *56*, 519–555.

Vowles, K. E., & McCracken, L. M. (2008). Acceptance and values-based action in chronic pain: A study of treatment effectiveness and process. *Journal of Consulting and Clinical Psychology*, *76*, 397–407.

Whelan, R., & Barnes-Holmes, D. (2004). The transformation of consequential functions in accordance with the relational frames of same and opposite. *Journal of the Experimental Analysis of Behavior*, *82*, 177–195.

Whelan, R., Barnes-Holmes, D., & Dymond, S. (2006). The transformation of consequential functions in accordance with the relational frames of more-than and less-than. *Journal of the Experimental Analysis of Behavior*, *86*, 317–335.

Wicksell, R. K., Ahlqvist, J., Bring, A., Melin, L., & Olsson, G. L. (2008). Can exposure and acceptance strategies improve functioning and life satisfaction in people with chronic pain and whiplash-associated disorders (WAD)? A randomized controlled trial. *Cognitive Behaviour Therapy*, *34*, 1–14.

Wilson, K. G., & Dufrene, T. (2009). *Mindfulness for two: An acceptance and commitment therapy approach to mindfulness in psychotherapy*. Oakland, CA: New Harbinger.

Wilson, K. G., Sandoz, E. K., Kitchens, J., & Roberts, M. (2008). *The Valued Living Questionnaire: Defining and measuring valued action within a behavioral framework*. Manuscript submitted for publication.

World Health Organization. (1995). The World Health Organization quality of life assessment (WHOQOL): Position paper from the World Health Organization. *Social Science & Medicine*, *41*, 1403–1409.

Zettle, R. (2005). The evolution of a contextual approach to therapy: From comprehensive distancing to ACT. *International Journal of Behavioral and Consultation Therapy*, *1*, 77–89.

Zettle, R. D., & Hayes, S. C. (1982). Rule governed behavior: A potential theoretical framework for cognitive behavior therapy. In P. C. Kendall (Ed.), *Advances in cognitive behavioral research and therapy* (pp. 73–118). New York: Academic Press.