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Relational Frame Theory, Acceptance and Commitment Therapy,
and a Functional Analytic Definition of Mindfulness

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RUNNING HEAD: RFT, ACT, AND MINDFULNESS

Abstract

The present article interprets mindfulness from the point of view of the effects of language and cognition on human action. Relational Frame Theory is described to show how human suffering is created by entanglement with the cognitive networks made possible by language. Mindfulness can be understood as a collection of related processes that function to undermine the dominance of verbal networks, especially involving temporal and evaluative relations. These processes include acceptance, defusion, contact with the present moment, and the transcendent sense of self. Each of these components of mindfulness are targeted in Acceptance and Commitment Therapy, and there is some evidence that these they underlie the therapeutic changes induced by this approach. The relation between the present approach to mindfulness and other approaches is discussed.

Relational Frame Theory, Acceptance and Commitment Therapy,
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The benefits of mindfulness practices have been recognized by nearly every religious tradition, dating back for thousands of years. Recently, scientists have become interested in the effects of mindfulness on mental health. Researchers in diverse fields, such as psychology, neuroscience, physics, and philosophy, in cooperation with major spiritual and religious leaders, such as the Dalai Lama, have begun researching the impact of mindfulness on psychological well-being and its neurobiological correlates (e.g., Davidson et al., 2003). Several recently developed psychotherapies have also begun to include mindfulness into their treatment protocols (Hayes, Follette, & Linehan, 2004).

A scientific approach to mindfulness is necessary to determine whether the processes used to alleviate suffering in ancient traditions have a place in modern psychology. It does not seem to be enough merely to examine the impact of such practices as mindfulness meditation; it is also necessary to understand that impact and its sources (Hayes & Shenk, 2004). In this paper, we will attempt to characterize mindfulness from the point of view of a modern behavioral approach to the study of language and cognition and its applied extensions.

The Third Wave of Behavior Therapy

A so-called “third wave” of behavioral and cognitive therapies has recently emerged that combines techniques from cognitive behavioral traditions with issues of acceptance and mindfulness. While traditional CBT deals with thoughts by aiming to dispute, change, and restructure their content, these new therapies take a different approach focused on the *relationship* between the person and their thoughts and feelings (Hayes, Follette, & Linehan, 2004).

Several of these approaches include mindfulness elements (for a review see Baer, 2003). Mindfulness-based stress reduction (MBSR; Kabat-Zinn, 1994) was among the first programs to integrate Eastern practices such as meditation and yoga into treatments for chronic pain and illness. MBSR is now offered at clinics around the world and has been demonstrated by controlled trials to be useful with a wide range of problems, including stress and psychosomatic complaints (for a recent meta-analysis see Grossman, Neimann, Schmidt, & Walach, 2004). Mindfulness-based cognitive therapy (MBCT) is an adaptation of MBSR for the treatment of chronic depression (Segal, Williams, & Teasdale, 2002). This treatment promotes a decentered view of one's thoughts, emotions, and body sensations and includes formal meditation practice as part of therapy. Dialectical Behavior Therapy (DBT) combines mindfulness techniques from Zen meditation with principles of CBT and is the first treatment with proven efficacy for symptoms of borderline personality disorder (Linehan et al., 1991; Linehan et al., 1993). Acceptance and Commitment Therapy (ACT – said as one word, not as initials; Hayes, Strosahl, & Wilson, 1999) also includes mindfulness elements, and will largely be the focus of the present paper.

Western scientific approaches have yet to come to an agreed upon definition of mindfulness. Bishop et al. (2004) define mindfulness in two parts: (1) “the self-regulation of attention so that it is maintained on immediate experience, thereby allowing for increased recognition of mental events in the present moment” and (2) “a particular orientation toward one's experiences in the present moment, an orientation that is characterized by curiosity, openness, and acceptance.” The DBT conceptualization of mindfulness includes a set of skills that are “the intentional process of observing, describing, and participating in reality nonjudgmentally, in the moment, and with effectiveness” (Dimidjian & Linehan, 2003). Other definitions include “paying attention in a particular way: on purpose, in the present moment, and

nonjudgmentally” (Kabat-Zinn, 1994, p.4) and “bringing one’s complete attention to the present experience on a moment-to-moment basis” (Marlatt & Kristeller, 1999, p. 68). The social psychologist Ellen Langer has written about mindfulness as “a flexible state of mind in which we are actively engaged in the present, noticing new things and sensitive to context”, which she distinguishes from mindlessness, when we “act according to the sense our behavior made in the past, rather than the present ... we are stuck in a single, rigid perspective and we are oblivious to alternative ways of knowing.” (Langer, 2000). Martin (1997) describes mindfulness as an form of attention and a core process in psychotherapy.

These conceptualizations describe mindfulness on many different levels: as a psychological process, an outcome, a specific technique, or as a general method or collection of techniques (Hayes & Wilson, 2003). A modern behavioral definition of mindfulness that is grounded in a testable theory might prove helpful in moving the field forward (Hayes, 2002).

Relational Frame Theory and Acceptance and Commitment Therapy

We will approach the topic of mindfulness from the point of view of Relational Frame Theory (RFT), a modern behavioral account of human language and cognition (for a book-length review see Hayes, Barnes-Holmes & Roche, 2001). The RFT research program is large and difficult and a detailed review of it here is not possible, but fortunately only its core needs to be described in order to describe its implications for mindfulness. The core claim of RFT is that humans learn to relate events mutually and in combination, without being limited by their form. A simple referential relation between a noun and object is bidirectional and mutual for normal human beings: when we see a cat, we think the word ‘cat’, and when we think the word ‘cat’, we picture an actual cat. RFT theorists have provided an increasingly large set of data showing that this process is learned and extends to every imaginable type of verbal relation: opposition,

difference, hierarchy, temporal, deictic, and evaluative and comparative relations among many others (Hayes et al., 2001).

These derived relations allow functions to be transformed. For example, a child old enough to apply comparative relations arbitrarily who has learned that a dime is worthwhile will be able to derive that the larger nickel is less so, and the even larger quarter is more so. No longer bound by physical comparisons, the functions of coinage are transformed based on the arbitrary relations among them. In an RFT perspective, derived relations and the transformation of functions they enable, are learned and under separable contextual control. Contextual features and history regulate how we relate events; and another set of contextual features and history regulated the functions of those very relations.

To understand how even this thumbnail version of RFT leads to a definition of mindfulness it is helpful to understand how it leads to a view of psychopathology. From an RFT perspective, psychopathology evolves in part because derived relations dominate over other sources of behavioral regulation due to an inability to detect the ongoing process of thinking as distinct from the products of thinking (i.e., thought). Thoughts are often experienced indirectly – in the form of the change in the functions of the world they produce – rather than as a process occurring in the moment. This is termed “cognitive fusion.” It has three important side effects relevant to the topic at hand. First, temporal and evaluative relations become attached to internal events, and people begin to predict, fear, and attempt to regulate and avoid their own thoughts, feelings, and bodily sensations even when that process is harmful. This is termed “experiential avoidance” (Hayes et al., 1996). Second, people become attached to their own self-descriptions and seek to maintain them and to be right about them. Third, the present moment disappears into a cacophony of human thinking and its reasons, explanations, and justifications for behavior. The

effect of these processes is “psychological inflexibility” which is the inability to persist or change behavior in the service of chosen values.

In broad terms, there is a growing body of evidence in support of this model of psychopathology (see Hayes, Luoma, Bond, Masuda, & Lillis, in press for a review) and it leads fairly directly both to ACT as a model of treatment and to an understanding of mindfulness in RFT terms.

An ACT / RFT Definition of Mindfulness

The goal of ACT is an increase in psychological flexibility, that is, the ability to fully contact the present moment and the psychological reactions it produces as a conscious person and to persist or change in behavior in the situation in the service of chosen values. The ACT model is shown in Figure 1. Psychological flexibility is fostered by six highly interrelated processes: defusion, acceptance, contact with the present moment, self-as-context, values, and committed action.

Acceptance. Acceptance is a moment by moment process of actively embracing the private events evoked in the moment without unnecessary attempts to change their frequency or form, especially when doing so would cause psychological harm. For example, an anxious patient would be taught how to feel anxiety more fully – to notice what their body does; what thoughts are evoked; what urges to action appear. This is not an end in itself, but is taught as a method of empowering greater life flexibility.

Defusion. Cognitive defusion techniques are designed to change the functions of private experiences, even when they have the same form, frequency or situational sensitivity. This is done by creating contexts that reduce the stimulus functions transformed by thought. For example, a person might give their thought a shape, color, and weight; watch it like watching TV; labels the ongoing processes of thinking itself (“I am having the thought that I will be

anxious”); repeat a word dozens of times (Masuda, Hayes, Sackett, & Twohig, 2004). These techniques reduce the literal believability of thought without ever getting rid of the thought or attacking its form logically.

Contact with the present moment. Contact with the present moment involves shifting attention to what is happening here and now. This means contacting both internal stimuli, such as bodily sensations, thoughts, and feelings, and external stimuli, such as sounds, sights, smells, and touch. ACT encourages dispassionate observation of the reactions that are going on occasioned by these events as continuously changing experiences. When in contact with the present moment, a sense of *self as process* is experienced as an ever changing series of awareness of psychological events: thoughts, emotions, and body sensations change continuously in an ongoing process of knowing oneself.

Self as context. As a result of large sets of exemplars of deictic relations (e.g., I-You, Now-Then, and Here-There) human language leads to a sense of self as a locus or perspective: I/Here/Now. This sense of perspective can itself not be fully experienced as a thing – that is its limits cannot be contacted consciously since it is at the core of consciousness itself (Hayes, 1984). Thus, based on direct, conscious experience it appears that the self as context has always been present, transcending roles, thoughts, emotions, and the experience of the body. Said in another way, this sense of self is experientially transcendent and formless (said in more Eastern terms, it is no-thing / everything) even though RFT provides a scientific account for how it emerges (an account that it has an increasing based of empirical support, e.g., see McHugh, Barnes-Holmes, & Barnes-Holmes, 2004). A *transcendent sense of self* encourages clients to experience their own thoughts and feelings and to shift from identifying with the conceptualized self (“I am a bad person”, “I am depressed”).

Values. Values are chosen life directions. Values differ from goals in that they are not objects to be attained, but rather are directions that integrate ongoing patterns of purposive action. In the case of values, language is useful in that it serves to link actions in the present into a coherent pattern of effective action. ACT exercises use the processes of acceptance, defusion, present moment awareness, and so on to clear the way for clients to identify valued domains of life (e.g., family, relationships, work). In choosing life directions that are meaningful, clients are able to disengage from the verbal processes that drive behaviors based on social compliance, avoidance, or fusion, and shift toward more appetitive forms of behavioral regulation.

Committed Action. Committed action involves behavioral changes that move the client toward value-consistent goals. While values can never be fully achieved but only instantiated, committed actions involve concrete short, medium, and long term goals that can be attained. For example, a value might be increasing intimacy, and committed action would be expressing one's emotions to loved ones or proposing marriage to one's partner.

From an RFT perspective, mindfulness can thus be defined as the defused, accepting, open contact with the present moment and the private events it contains as a conscious human being experientially distinct from the content being noticed. The psychological importance of mindfulness is that it empowers valuing and committed action, and thus is a key aspect of psychological flexibility. Thus, as is shown in Figure 1, from an ACT / RFT point of view mindfulness encompasses four key ACT processes, and permeates the entire model.

The Interrelated Nature of Mindfulness Processes

These various aspects of mindfulness processes are all interrelated and they all interact one with another. In order to appreciate how mindfulness processes permeate the ACT / RFT model of psychopathology and behavior change it seems worthwhile briefly to describe how

these four mindfulness processes relate to the all aspects of the model. In essence we will comment, in just a sentence or two, about each of the lines between nodes in Figure 1.

Defusion. Defusion undermines the excessive literal impact of language. This in turn makes acceptance more possible, because evaluations of “negative” feelings are taken less literally. It makes contact with the present moment more possible because the functional importance of the temporal and evaluative relations that move the focus away from “now” are diminished. It makes contact with a transcendent sense of self more possible because it undermines attachment to a conceptualized self (e.g., “I am depressed”, “I am a good/bad person”). It makes values more possible because it empowers choice, not merely rational decisions.

Acceptance. Acceptance undermines experiential avoidance. This in turn expands the scope of defusion as it permits previously avoided cognitive material to be evoked. It makes contact with the present moment more likely because the emergence of emotionally difficult material does not lead to avoidance linked to a future focus. Acceptance reduces the power of difficult private events, such as strong feelings and self-relevant thoughts, allowing for increased awareness of the transcendent self. Acceptance of things as they are leads to connecting with values in part because knowing what one really wants is itself often painful and evokes feelings of vulnerability.

Self as context. A transcendent “observer” self provides a safe place to experience previously avoided cognitions and emotions, and to approach them with acceptance and defusion. It enhances contact with the present moment and with chosen values as a result since from this perspective noticing what IS is natural and non-threatening..

Contact with the present moment. Contact with the present moment increases awareness of the here and now. It facilitates defusion and acceptance, as thoughts are observed as thoughts,

emotions as emotions, and so on. It allows for observation of self-relevant thoughts as they arise and fall away, thus promoting awareness of the transcendent sense of self. As in meditation, ACT teaches clients to repeatedly return to their experience in the present moment without judgment, and with acceptance. It makes values more possible by disengaging from the content of thoughts and connecting with what really matters as a quality of ongoing behavior.

In sum, ACT mindfulness processes work together to expand one's attention to provide more access to information in the present moment, thus increasing psychological flexibility.

Parallels Between an ACT / RFT Approach and Other Approaches

Definition of Mindfulness

The ACT definition includes the psychological processes of contact with the present moment, acceptance, defusion, and self as context that result in increased flexibility to behave according to values. Here we will briefly compare this definition to the other definitions of mindfulness described earlier.

Training in contact with the present moment is usually the starting point for mindfulness practice and is included in all other definitions of mindfulness. For example, many of the definitions speak about mindfulness as a method of directing one's attention to the present, as in "the self-regulation of attention" (Bishop et al., 2004), "paying attention in a particular way ..." (Kabat-Zinn, 1994), and "actively engaged in the present" (Langer, 2000). These definitions refer to present moment awareness primarily in language that is used to teach meditation practices. ACT's concept differs by virtue of its link to a basic theory of language and its link to the other components of mindfulness. For example, there is no reference to attention since attention is an internal way of speaking about an interactive process of contacting events in the present moment but doing so in a way that is defused, accepting, and conscious – and all of that in the service of values and effective action.

Defusion is also frequently discussed in other definitions as well. Dimidjian and Linehan (2003) refer to nonjudgmentally “observing, describing, and participating” and Kabat-Zinn (1994) includes the term nonjudgmental as one aspect of a “particular way” of paying attention. The emphasis on lack of judgment is similar to the RFT-based concern with undermining temporal and evaluative relational frames. The process of defusion from thoughts and the self-concept is alluded to by Segal, Williams & Teasdale (1999), who promote a decentered approach to present moment experiences. The difference is that defusion in RFT is a technical term with relatively well specified parameters and wide applicability. As a result there are a wide variety of techniques available with which to target these processes beyond meditation per se. Thus, defusion is broader, more specific, and more generative than the more common sense terms such as “nonjudgmental.”

Acceptance is also part of most definitions. Bishop et al. (2004) describe mindfulness as “an orientation that is characterized by curiosity, openness, and acceptance.” These conceptualize acceptance as a way of contacting present moment experiences that is similar to ACT. ACT refines the concept of acceptance, particularly by clarifying where acceptance is needed and where change is helpful, and provides a variety of techniques to establish it.

Langer’s mindfulness definition identifies “a flexible state of mind” as an outcome of mindful attention, which comports with the ACT concept of psychological flexibility as an outcome of the core mindfulness processes. Her definition stands out from the others in its emphasis on the value of mindfulness as it relates to learning. ACT broadens this conceptualization by including the client’s chosen values as part of the motivation for mindfulness. The DBT definition includes the concept of “effectiveness,” which seems similar (Dimidjian & Linehan, 2003)

A transcendent sense of self is implied in other definitions but rarely specified. MBCT discusses defusion from self-relevant narratives that promote a conceptualized self and emphasizes an ongoing awareness of the self as a continuously changing entity. This is a reference to what in ACT and RFT would be termed “self-as-process” – which is thought to be an aspect of conscious contact with the present moment (observing and describing). The DBT definition likewise emphasizes this aspect (Dimidjian & Linehan, 2003). The traditional Buddhist concerns with self can interfere with clarity about self-as-context, but Eastern traditions do speak of it in terms such as “big mind” or “one mind.” ACT adds targeted methods to contact this sense of self and to link it to processes of acceptance, defusion, and the present moment.

The most apparent differences between the ACT conceptualization of mindfulness compared to others is that a) none of the other definitions include all of these elements, b) in the ACT / RFT approach all of these elements are linked to specific core processes occurring based on the operation of literal language and cognition, and c) there is no explicit or even implicit linkage to particular methods or techniques in the ACT definition even though many are available – any method that moves the specified process is considered relevant. In contrast, other definitions tend to be somewhat narrower, written in more general or even common-sense language, and often seem implicitly linked to meditation per se.

ACT and Buddhism

The development of ACT was not based on a conscious link to Buddhism. The large overlap between ACT and Buddhism is remarkable considering that the former is based on principles of behavior therapy and the second is embedded in a spiritual and religious tradition that spans thousands of years. Here we will discuss two areas where these philosophies share similar principles: the ubiquitous nature of human suffering and values and committed action

(for a longer discussion of acceptance and self in ACT and Buddhism see Hayes, 2002, and Shenk et al., in press).

Language as the source of human suffering. ACT and Buddhism agree that suffering is a universal human phenomenon (Hayes, 2002). This principle resides in the First Noble Truth of Buddhism, which simply states that life is suffering. The nature of this suffering is the everyday experience of human beings as they are subjected to the activity of the mind. As the Dalai Lama explains,

[w]e all know from personal experience that what we deeply aspire to gain is happiness and what we try to avoid is suffering. Yet our actions and our behaviour only lead to more suffering and not to the lasting joy and happiness that we seek. This must surely mean that we are operating within the framework of ignorance. This is how we experience the fundamental confusion at the root of life (The Dalai Lama, 1997).

ACT theory attributes this ignorance and confusion to the relational networks created by language that keep us enmeshed in thoughts and experientially avoidant (Hayes et al., 1996). Spiritual traditions historically emphasize practices that escape the literal, evaluative functions of language, such as reciting mantras and refraining from talking during periods of silent retreat (Hayes, 1984). The Second Noble Truth identifies attachment and desire as the source of suffering and some Zen scholars recognize the function of language in setting up attachment. D. T. Suzuki (1997) argued that our linguistic practice is inevitably dualistic and categorical. Interacting with the world through the filter of language leads to comparison, evaluation, and explanation which generates suffering. This seems quite close to an RFT conceptualization.

Commitment and values. In ACT, values are defined as globally desired life directions. The identification of values and committed action are two processes that follow from the

mindfulness work. Without defusion from the web of language that keeps clients (and humans generally) entrenched in thought, it is difficult to contact the underlying experience of value-driven behavior. In Buddhism, valued living is described in the Fourth Noble Truth, or the practice of the eightfold path. Eight areas are identified in which to practice behaviors that move the practitioner in the direction of freedom; they are right view, right intention, right speech, right discipline, right livelihood, right effort, right mindfulness, and right concentration. The eightfold path is essentially the application of mindfulness practice to all aspects of one's life, which comports with the ACT practice of committed action.

Differences. There are also several differences between ACT and Buddhism. One is the relative importance given to informal practice. In Buddhism, sitting and walking formal meditation practice is considered essential to train the mind and transcend suffering. Some third wave therapies agree with this point of view, such as MBCT, and require formal mindfulness practice as part of treatment for both clients and therapists. ACT recognizes the benefits of formal practice but emphasizes informal practices, as will be illustrated later. Thus ACT is attempting to develop new mindfulness methods in hopes that the functional core of mindfulness will be able to reach as many people as possible, not merely through mindfulness practices that religion has promoted for thousands of years.

Mindfulness and ACT Techniques

The theoretical basis of ACT guides a treatment that is experiential in nature. Exercises and metaphors are used to transcend the limitations of words. Clients are taught to cultivate awareness of present moment experience by confronting previously avoided private events. Language is used to label emotions, thoughts, and the self as context, and to track these events as they unfold.

One example of an ACT metaphor that helps clients defuse from the language of thoughts is the Leaves in a Stream exercise: clients close their eyes and after orientation to the present moment (notice your body, your breath) are told to imagine leaves floating down a stream. Clients are guided in noticing their thoughts as they arise, imagining placing each thought on a leaf, and watching it float away. By using metaphor to model a nonjudgmental approach to thoughts, this exercise also taps into acceptance.

In another defusion exercise clients are asked to first think of a word, such as ‘milk’, and share what that word brings to mind. The client may report that milk is white, cold, and frothy. The therapist points out that these qualities arise even though there is no milk present, just making this sound, ‘milk’, brings many thoughts to mind as if actual milk were present. The client and therapist then together repeat the word rapidly out loud, and observe that the word becomes simply a funny sound without any meaning (Masuda et al., 2004).

In the “observer self” exercise the therapist asks the client, with eyes closed, to travel back in time and notice that there has always been a self that observes situations, thoughts, and emotions: “as a matter of experience and not of belief, you are not just your body ... your roles ... your emotions ... your thoughts. These things are the content of your life, whereas you are the arena ... the context ... the space in which they unfold” (Hayes, Strosahl & Wilson, 1999). The self that existed as a child is still present in some way today, and connecting with the self as context seems to be important when clients open to difficult private experiences. This exercise also results in defusion from self-relevant thoughts that fall away in the acknowledgment of a transcendent self.

An exercise commonly used in ACT to bring clients into contact with acceptance is the Tug of War metaphor. Clients are told to think about situations or experiences in their lives that are difficult to accept. Examples include difficult people, thoughts, emotions, and bodily

sensations. The client then imagines that they are in a tug-of-war with a monster, feeling the strain of pulling against something that will not let go of the other end of the rope. The client then imagines letting go of the rope and observes how it feels to let go of the struggle.

There are scores of such exercises and metaphors in ACT. Most of the exercises used in ACT can be considered to be, in broad terms, mindfulness exercises.

ACT Research and Mindfulness Processes

ACT outcomes. A small and growing literature is emerging showing that ACT is effective when used to treat a wide range of disorders (Hayes et al., 2004). Because of the heavy emphasis on mindfulness processes in ACT, these outcomes seem relevant in evaluating the possible benefits of mindfulness. Here we will briefly review randomized controlled studies of ACT.

The first ACT study (n=18) found that ACT and two version's of Beck cognitive therapy (CT) significantly reduced ratings on a depression inventory, with the ACT condition producing greater reductions in believability of depressogenic thoughts (the measure used to assess defusion) and superior results on the depression scale at 2-month follow-up (Zettle & Hayes, 1987). Another study (n=31) compared ACT, CT, and CT without cognitive distancing (Zettle & Raines, 1989). All groups had comparable reductions in depressive symptoms at posttreatment and 2-month follow-up. In a recent reanalysis of the data from this study (Hayes et al., in press) it was shown that defusion measured mid-way in treatment (before significant differences in outcomes were obtained) fully mediated these outcomes at follow-up. In other words, changes in this aspect of mindfulness was responsible for the superior outcomes found for ACT.

When used to treat psychotic patients in four 45-minute sessions, psychotic patients in the ACT condition, as opposed to treatment as usual, had 50% reductions in re-hospitalization over a four-month follow-up (Bach & Hayes, 2002). Interestingly, patients who reported the most symptoms were the least likely to be re-hospitalized, perhaps because they also reported that the

psychotic thoughts were less believable (the defusion measure used in this study). This study has been replicated recently (Guadiano and Herbert, in press a; in press b), with the addition of an enhanced treatment as usual (ETAU) condition to control for therapist contact time. At discharge from the hospital, participants in the ACT condition showed significantly greater improvement in affective symptoms, overall improvement, social impairment, and distress associated with hallucinations. Four month rehospitalization rates were 38% lower in the ACT group, although this difference did not reach statistical significance due to the small trial; only the ACT condition was found to result in lower believability ratings at post-intervention (the defusion measure used). Defusion was found to mediate the impact of ACT on the distress associated with hallucinations.

ACT has also been effective in treating substance abuse problems. In an additive treatment model, opiate addicted polysubstance abusing individuals on methadone maintenance were randomly assigned to methadone treatment only, or to include 16 weeks of individual and group ACT, or an Intensive Twelve Step Facilitation (ITSF) program (Hayes et al., 2002). At 6 month followup, the ACT group (but not ITSF) had significantly decreased their heroin use compared to the methadone maintenance group as measured by urinalysis. In a smoking cessation study, Gifford et al. (2002) compared ACT to nicotine replacement therapy (NRT), resulting in similar quit rates at posttreatment. However, one year later participants in the ACT group were more than twice as likely to have quit smoking and this outcome was mediated by improvements in acceptance-related skills.

Three recent studies tested the use of ACT in medical settings. Addition of a 9-hour ACT session to a diabetes education program resulted in better self management and lower blood glucose for the treatment group relative to the education only control (Gregg, 2004). ACT was compared to traditional CBT for distress related to end-stage cancer. By session 12 ACT

produced significantly greater reductions in distress, anxiety, and depression (Branstetter, Wilson, Hildebrant, & Mutch, 2004). McCracken, Vowles, & Eccleston (in press) treated chronic pain patients in an inpatient setting using a three to four week protocol based on ACT. Significant improvements in emotional, social, and physical functioning as well as lower health care utilization was found following treatment. In all of these studies changes in acceptance and defusion either mediated (Gregg, 2004; Branstetter et al., 2004) outcomes or were highly correlated with them (McCracken et al., in press).

ACT has also been tested in with several other populations. In the workplace, ACT was found to result in greater psychological health and reductions in stress than a behaviorally-oriented control (Bond & Bunce, 2000). Changes in acceptance mediated outcomes. ACT was more effective when compared to systematic desensitization for treatment of math anxiety (Zettle, 2003) and to cognitive behavioral group therapy for social phobia (Block, 2002). Blackledge (2004) delivered a two-day ACT workshop to parents/guardians of children diagnosed with autism in a within-subject design. Participants showed significant improvements on ratings of mental health (BDI, GHQ, GSI) from pre treatment to a 3 month follow up and changes in acceptance mediated outcomes.

ACT has been empirically tested for its usefulness in training therapists. A study looking at stigmatizing attitudes of therapists toward their substance abuse clients and compared ACT to a multicultural training (MT) and an education group. ACT outperformed MT for frequency of stigmatizing attitudes and burnout (Hayes et al., 2004). Changes in defusion mediated outcomes. In a quasi-experiment, Strosahl et al. (1998) found that therapists in a community mental health clinic who were trained in ACT were less likely to refer clients for medication. Clients of therapists in the ACT group also had with better coping skills and were more likely to complete treatment in a 5 month period.

Evidence that ACT outcomes involve mindfulness processes. ACT researchers are also conducting micro-studies on mindfulness ACT processes to see if each is psychologically active and works as predicted by the theory. The early published studies have focused largely on acceptance, defusion, and values, but targeted studies are underway or completed on all of the other elements. These studies are important for validating the use of mindfulness in third wave psychotherapies such as ACT.

A study examining defusion tested the effectiveness of a commonly used ACT exercise, rapidly repeating a word over and over (Masuda et al., 2004). It has been argued that this technique changes the context in which the literal impact of language occurs (Titchener, 1916, p.425). In the defusion condition, participants applied the technique to chosen self-relevant words. The defusion task resulted in greater reductions in discomfort and believability of self-relevant negative thoughts as compared to a distraction task and a thought control task. These results indicate that this particular defusion exercise is an active component of ACT.

Another study looked at the impact of a 90-minute ACT protocol focused on acceptance and defusion on pain tolerance using a cold pressor task (Hayes, Bissett, Korn, Zettle, Rosenfarb, Cooper, & Grundt, 1999). The ACT condition was compared to traditional CBT pain-management and to an attention placebo condition consisting of discussion of a behavioral approach to pain. Although there were no differences in the intensity of pain at post intervention, participants in the acceptance and defusion condition were able to keep their hand in the cold water significantly longer than the other conditions at post-test. Participants in the acceptance condition also reported lower believability of pain-oriented reasons for action than the other groups.

A subsequent study attempted to separate the effects of the acceptance and defusion exercises from the rationale itself (Takahashi, Muto, Tada, & Sugiyama, 2002). An acceptance

and defusion rationale was used in each of two active treatment conditions, but one also used two ACT exercises discussed earlier which are designed to undermine the literal impact of difficult private events: the Leaves on the Stream mindfulness exercise (Hayes et al., 1999, p. 158-161) and the Physicalizing defusion exercise (Hayes et al., 1999; p. 170-171). The other condition used exercises based on CBT designed to control pain. Participants were randomly assigned to these conditions or to an attention-placebo control. Only the experiential condition that included acceptance and defusion exercises showed positive changes in pain tolerance suggesting that the exercises were necessary to produce the effect.

Another pain tolerance study (Gutierrez, Luciano, & Fink, 2004) used a 20-minute ACT protocol focused on acceptance, defusion and values as compared to a cognitive and emotional change intervention. Pain levels were systematically raised throughout the study, and the randomly assigned participants were paid to persist as long as they could in each condition. ACT participants showed significantly higher tolerance of pain, and significantly greater willingness to persist even after they reported the pain levels had reached very high levels.

The effect of ACT acceptance techniques were examined with college students who scored high or low on the AAQ, a measure of experiential avoidance (Felder, Zvolensky, Eifert, & Spira, 2003) Participants were randomly assigned either to a computerized condition that taught acceptance of feelings during exposure to carbon dioxide (CO₂)-enriched air or a similar condition that instructed participants to suppress their feelings during the exposure. Participants with high experiential avoidance in comparison to those with low experiential avoidance reported greater levels of anxiety and affective distress, but not physiological arousal, in the exposure to the CO₂. Two other studies used similar procedures with highly anxious females (Eifert & Heffner, 2003) and individuals with panic disorder (Levitt, Brown, Orsillo, & Barlow,

2004). In both cases, those in the acceptance conditions reported lower levels of anxiety and greater willingness to return to the CO₂-inhalation study than the control groups.

Conclusion

ACT is a modern behavioral psychotherapy based on behavioral principles and RFT, that used mindfulness processes and behavior change processes to establish greater psychological flexibility. The data emerging from this research program seem to show that mindfulness -- defined as a combination of acceptance, defusion, the present moment, and a transcendent sense of self – is a powerful ally in producing therapeutic change.

The Western approach to science has proven helpful to human beings. Mindfulness has only recently been examined through this same lens. The present paper has attempted to show how a modern approach to language and cognition, and a therapy based on that approach, refines the concept of mindfulness and expands its applicability.

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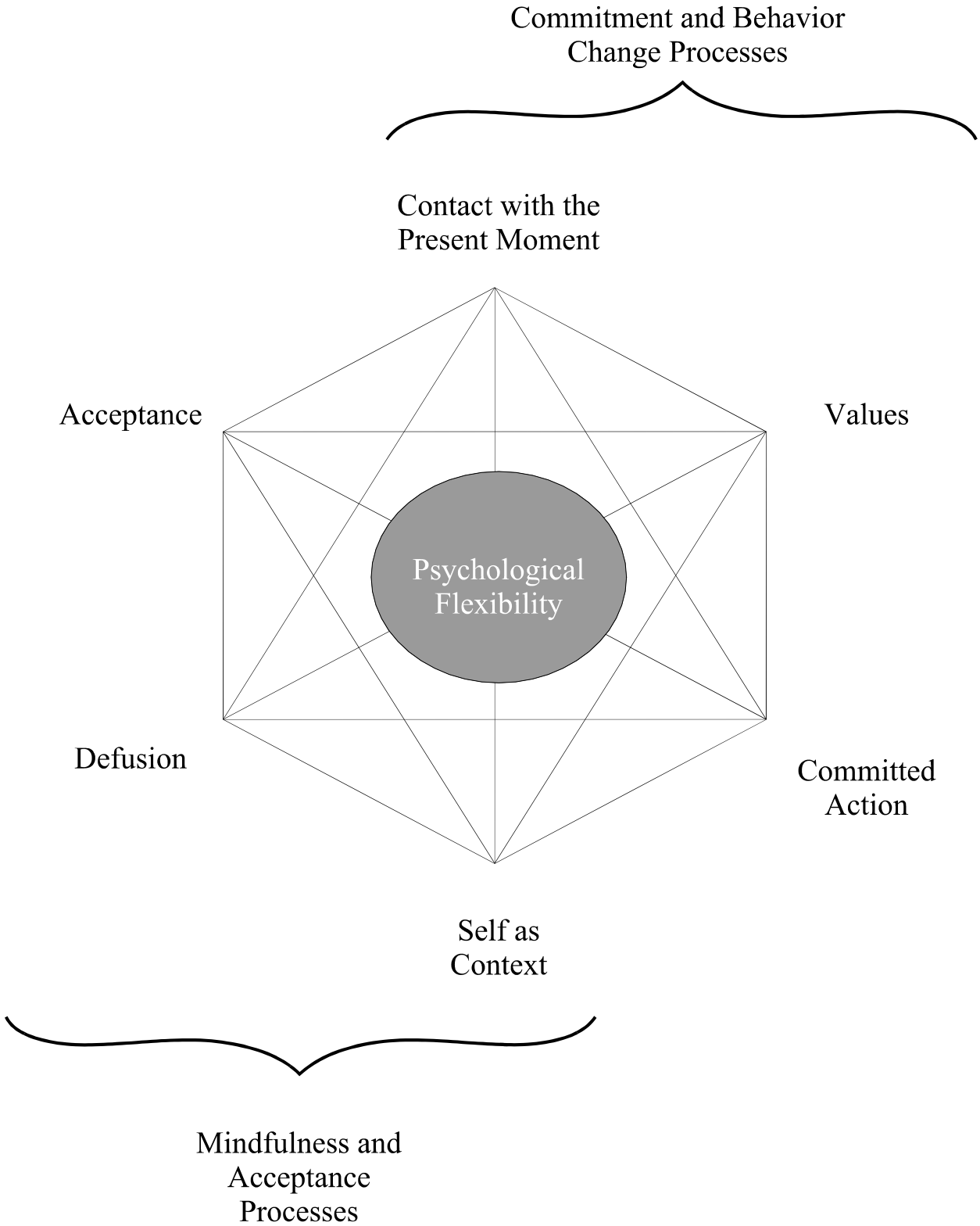


Figure 1. A model of psychological processes ACT seeks to strengthen.