
Mechanisms of Change in Dialectical Behavior Therapy: Theoretical and Empirical Observations



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Dialectical behavior therapy (DBT) can be considered a well-established treatment for borderline personality disorder (BPD) as evidenced by seven well-controlled randomized clinical trials across four independent research teams. The primary purpose of this article is to address a variety of potential mechanisms of change that may be associated with those aspects of DBT that are unique to the treatment and its theoretical underpinnings. Based on the biosocial theory of BPD, many of these mechanisms can be distilled down to the following process: *the reduction of ineffective action tendencies linked with dysregulated emotions*. Specifically we address the following interventions and associated mechanisms of change: mindfulness, validation, targeting and chain analysis, and dialectics. Patient change in BPD is conceptualized primarily as helping the patient to engage in functional, life-enhancing behavior, even when intense emotions are present. Ultimately, our goal was to provide guidance for theoretically and empirically

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grounded research on the mechanisms of change in DBT. © 2006 Wiley Periodicals, Inc. J Clin Psychol 62: 459–480, 2006.

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Despite increased attention to treatment development for borderline personality disorder (BPD), very little research has examined the basic processes or mechanisms underlying patient change. Dialectical behavior therapy (DBT) has garnered considerable evidence for its efficacy in treating BPD, warranting its designation as “well established” according to criteria outlined by Chambless and Hollon (1998). DBT has been evaluated and found to be efficacious for the treatment of BPD in seven well-controlled randomized clinical trials (RCTs) conducted by four independent research teams (Koons et al., 2001; Linehan, Armstrong, Suarez, Allmon, & Heard, 1991; Linehan, Comtois, et al., 2002; Linehan, Dimeff, et al., 2002; Linehan et al., 1999; Turner, 2000; Verheul et al., 2003). In addition, it has demonstrated efficacy in RCTs for chronically depressed older adults (Lynch, Morse, Mendelson, & Robins, 2003) and eating disordered individuals (Telch, Agras, & Linehan, 2001) and has been examined for a variety of clinical problems in several uncontrolled or nonrandomized trials (i.e., Bohus et al., 2000; Comtois, Elwood, Holdcraft, & Simpson, 2002; Koons, Chapman, Betts, O’Rourke, & Robins, 2006; Rathus & Miller, 2002). Across studies DBT has resulted in reductions in several problems associated with BPD, including self-injurious behavior, suicide attempts, suicidal ideation, hopelessness, depression, and bulimic behavior. (See Robins & Chapman, 2004, for a review.)

Now that DBT has garnered empirical support in treating BPD, researchers have begun to turn their attention to the mechanisms of change associated with DBT. The essential question here concerns how and why the treatment works, or “the processes by which therapeutic change occurs” (Kazdin & Nock, 2003, p. 1117). Mechanisms of change are *mediators* (Baron & Kenny, 1986), or those variables that account for the relationship between the treatment intervention and the outcome. Delineating mechanisms of change is a critical step in the iterative process of treatment development and refinement and in the integration of basic science with clinical outcome research. Beyond functioning as mediators, researchers have suggested, proposed mechanisms of change also must be situated within and supported by a broader scientific knowledge base (Kazdin & Nock, 2003). Although several treatments have been thoroughly evaluated in efficacy studies, there has been substantially less emphasis on the processes by which treatments produce change (Kazdin & Nock, 2003), with the notable exception of studies on cognitive therapy for depression (Burns & Spangler, 2001; Whisman, 1993, 1999). As a result, there is a notable gap between the research and the theories of therapeutic change on which empirically supported treatments are based.

The primary purpose of this article is to outline potential mechanisms underlying changes in the patient that may mediate the effects of certain DBT interventions. The clear delineation of mechanisms of patient change can form the impetus for basic research on the process of behavior change in BPD, thus informing subsequent modifications of DBT. It is important to note that these mechanisms have not been empirically tested, and that studies designed to isolate mechanisms of change in DBT currently are under way and will be published in the coming years. Consequently, the ultimate aim of this article is to provide a framework that encourages and guides researchers in examining mechanisms of change in the context of clinical research on DBT. Given that this article cannot

Table 1
*Hypothesized Mechanisms of Dialectical Behavior Therapy:
 Common and Unique Interventions*

Interventions in Dialectical Behavior Therapy Common to All Behavior Therapies
Exposure and response prevention
Skills training (including stimulus control)
Reinforcement
Cognitive restructuring
Therapist reciprocal vulnerability
Irreverence
Interventions Unique to Dialectical Behavior Therapy
Targeting: primary (e.g., suicidal, therapy interfering) and secondary (e.g., inhibited grieving)
Mindfulness as a set of skills
Dialectical focus
Emotion regulation and opposite action skills
Distress tolerance skills
High degree of therapist self-disclosure
Microanalytic chain analysis
Commitment strategies
Validation as an explicit therapist skill set
Telephone consultation

capture all potential mechanisms of change in a treatment as comprehensive as DBT (see Table 1), the focus is on those interventions and mechanisms that are unique to DBT and most clearly linked with research on emotions and emotion dysregulation, and with the biosocial theory underlying the treatment.

From Theory to Practice: Dialectical Philosophy and the Biosocial Theory of Borderline Personality Disorder Philosophical Foundations

Dialectical Theory

In treating chronically suicidal patients who have BPD, Marsha Linehan discovered an important shortcoming in standard cognitive and behavioral treatments: They focused almost exclusively on helping patients *change* their thoughts, feelings, and behaviors. A treatment solely focused on change often was not palatable to these patients, who often felt invalidated and criticized and dropped out of treatment. On the flip side, a treatment focused entirely on acceptance invalidated the seriousness of the patients' suffering and the urgent need to produce change. As a result, Dr. Linehan anchored DBT in a dialectical philosophy that encourages the balance and synthesis of both acceptance and change.

As a worldview, dialectical philosophy provides a foundation for DBT. Dialectics is evidenced not only in the presence of specific interventions but also in the style and manner in which interventions are delivered. As a worldview, *dialectical philosophy* most often is associated with Marxist socioeconomic principles, but the philosophy of dialectics actually extends back thousands of years (Bopp & Weeks, 1984; Kaminstein, 1987). According to Hegel, the process by which a phenomenon, behavior, or argument is transformed is the dialectic, which involves three essential stages: (1) the beginning, in which an initial proposition or statement (thesis) occurs; (2) the negation of the beginning phenomenon, which involves a contradiction or "antithesis"; and (3) the negation of the negation, or the synthesis of thesis and antithesis. Essentially, tension develops between thesis and antithesis, the synthesis between the two constitutes the next thesis, and the

process is repeated ad infinitum. Dialectical philosophy also posits that reality is composed of interrelated parts that cannot be defined without reference to the system as a whole. Similarly, a whole system is composed of parts and cannot be defined without reference to its parts. The system and its parts constantly are in a state of change or flux, and changes in one influence changes in the other. When applied to the understanding of human suffering, this ontological principle of interrelatedness and wholeness leads to a systemic and contextual conceptualization of behavior. DBT treats the whole patient, rather than a discrete disease or disorder. Similarly, the whole emotion system is targeted in treatment, with the recognition that all elements of the system are interrelated, influencing both the patient's behavior and the environmental context external to the patient.

The Biosocial Theory of BPD

The biosocial theory of BPD is dialectical, in that the theory proposes that the transaction between a biological tendency toward emotional vulnerability and an invalidating rearing environment produces a dysregulation of the patient's emotional system. In the context of biosocial theory, invalidation is the critical socially mediated etiological process, whereas emotional vulnerability is the key biological factor. Emotional vulnerability refers to a biologically mediated predisposition for heightened sensitivity and reactivity (i.e., quick and strong reactions) to emotionally evocative stimuli, as well as a delayed return to baseline emotional arousal. The invalidating environment is characterized by punishing, ignoring, or trivializing the individual's communication of thoughts and emotions as well as self-initiated behaviors and may involve sexual, physical, and emotional abuse (Wagner & Linehan, 1997). The borderline individual's intense emotional reactions elicit invalidating behavior of caregivers, which then elicits further emotional dysregulation, and vice versa. This transaction between an emotionally vulnerable individual and an invalidating rearing environment leads to dysregulation across the individual's emotional system, characterized broadly by difficulty in up- and down-regulating physiological arousal as well as difficulty in turning attention away from emotional stimuli. As a result, individuals who have BPD often experience considerable disruption of their cognitive, emotional, and behavioral systems when emotionally aroused. In this way, many of the behaviors associated with BPD are conceptualized as the inevitable sequelae of dysregulated emotions, or as maladaptive methods of altering emotional experiences. For example, impulsive or self-destructive behaviors such as self-injury, suicide attempts, or disordered eating may occur in direct response to or function to regulate dysregulated emotional responding.

The biosocial theory has led to a treatment package largely focused on modifying various aspects of the patient's emotion system. Reductions in emotion dysregulation and increases in behavioral skills are framed as the primary controlling variables underlying or mediating treatment change. Within the following sections, we discuss several specific and unique interventions in DBT that target these central processes (mindfulness and mindfulness skills, validation, behavioral targeting and chain analysis, opposite action, and dialectics), outlining potential mechanisms of change associated with each class of intervention.

The Central Dialectic in DBT: Acceptance and Change

Beyond the dialectic between the emotionally vulnerable borderline individual and the invalidating environment there exists an acute tension or dialectic between *acceptance* and *change* in DBT. The severity of dysregulation seen among BPD individuals often pulls for efforts by the therapist and others to change the patient's behavior or emotions. However, Linehan (1993a) found that a purely change-based approach was not palatable

to BPD patients, who often missed sessions or dropped out of treatment in response to feeling invalidated. Indeed, an excessive focus on change may actually mirror the invalidating environment seen as pathogenic to the disorder. The thesis (behavior change) brought forth the antithesis (the need for acceptance), and both acceptance and change-based strategies were integrated into the treatment package. Dialectical theory provides the theoretical undercurrent needed to balance and synthesize these strategies. Core acceptance-based strategies derive from client-centered approaches and Zen practice and involve mindfulness skills, validation, and radical acceptance.

Enhancing Acceptance Through Mindfulness and Mindfulness Skills

Although mindful practice has been incorporated into a variety of other treatment approaches (Hayes, Strosahl, & Wilson, 1999; Kabat-Zinn, 1990; Marlatt & Gordon, 1985; Segal, Williams, & Teasdale, 2002) and already has garnered empirical support (for a review, see Baer, 2003), the manner in which mindfulness is conceptualized and implemented in DBT distinguishes it from other approaches. Mindfulness is primarily related to the quality of awareness that an individual contributes to the present experience. Mindfulness in DBT was derived from Christian contemplative practices and Zen practice and can be thought of as a state or quality of awareness that involves “keeping one’s consciousness alive to the present reality” (Hanh, 1976). Influenced by Zen, mindfulness practice often involves letting go of attachments and becoming “one” with current experience, without judgment or any effort to change “what is.” At the same time, mindfulness involves the use of skillful means and the finding of a middle path between extremes or polarities. For instance, in DBT the therapist teaches the patient that one goal of mindfulness skills is to achieve a wise state of mind (i.e., “wise mind”), involving a synthesis of reason or logic (reasonable mind) and emotions and intuition (emotion mind) (Linehan, 1993b). The essence of mindful practice involves being fully awake to “what is” right now in the present. Mindfulness in DBT differs from that of other approaches (i.e., Hayes et al., 1999; Kabat-Zinn, 1990; Segal et al., 2002) in that the ultimate goal is not to achieve an objective “distance” from one’s experience, but rather to enter into, participate in, and become “one with” experience (Chapman & Linehan, 2005; Linehan, 1993a). Also uniquely to DBT, Linehan (1993a) has distilled the *practice* of mindfulness into several discrete behavioral skills: observing, describing, and participating fully in one’s actions and experiences, in a nonjudgmental and one-mindful manner (i.e., attending to one thing at a time), with a focus on effective behavior. Mindful practice also involves *radically accepting* a current situation, thought, emotion, or experience and maintaining a stance of *willingness* to enter into life with awakeness and effectiveness. Although these skills constitute mindful *practice* in DBT, mindfulness itself is a state of awareness and awakeness given to each moment. The ultimate goals of mindfulness skills are to help patients (1) increase their conscious control over attentional processes, (2) achieve a “wise” integration of emotional and rational thinking, and (3) experience a sense of unity or oneness with themselves, others, and the universe. The following section discusses some of the specific mechanisms of change that may be linked with mindfulness, including behavioral exposure, emotion regulation, attentional control, and reducing the patient’s literal belief in rules.

Mechanisms of Change in Mindfulness

Behavioral Exposure and Learning New Responses

As an acceptance-based strategy, mindfulness partly involves reducing the patient’s attempts to control his or her private experiences (e.g., emotions, cognitions, bodily states). In this

way, mindfulness involves learning to *control the focus of attention*, not the object being attended to (e.g., observing a thought as a thought or an emotion as emotion, without an attempt to change the thought or emotion). In contrast to behavioral change strategies, mindfulness entails acceptance of experience, without attempts to fix, alter, suppress, or otherwise avoid the experience. Indeed, an emerging body of empirical data suggests that chronic attempts to control private experience through inhibition, suppression, or avoidance are associated with BPD-related features (e.g., Bijttebier & Vertommen, 1999; Cheavens et al., 2005; Kruegelbach, McCormick, Schulz, & Grueneich, 1993; Lynch, Robins, Morse, & Krause, 2001), suggesting that acceptance may be an effective alternative approach.

Given that mindfulness involves acceptance and observation of painful internal experiences, mindfulness may work through nonreinforced exposure to previously avoided emotions, thoughts, and sensations. Whereas it has traditionally been discussed as exposure to observable stimuli, mindfulness in the present conceptualization is consistent with the notion of interoceptive exposure (Craske, Barlow, & Meadows, 2000). Nonjudgmental awareness of distressing thoughts, emotions, or sensations in the absence of any dire consequences and without escape or avoidance essentially constitutes nonreinforced exposure.

Contrary to previous suggestions, recent learning theorists have proposed that repeated nonreinforced exposure to conditioned stimuli (CS) does not weaken the initial association formed by the pairing of the unconditioned stimulus (US) and the CS. Instead, exposure *masks* the CS-US relationship, and extinction training involves the learning of new CS associations (Robbins, 1990). In this framework, behavioral exposure entails the active learning of alternative responses to stimuli that elicit unwanted internal experiences (e.g., relative safety in the presence of conditioned fear cues). Further, some recent research has indicated that extinction may be considerably influenced by context (Bouton, 1993, 2002; Bouton & Brooks, 1993). For instance, Bouton (1993) has suggested that a previously extinguished internal response may reemerge after a change in context because of a failure to retrieve the memory of extinction in the new context.

On the basis of these findings, mindfulness may establish an internal context that maintains the extinction of unwanted responses and promotes the acquisition of new responses. Contexts may constitute environmental, temporal, or internal states (e.g., drug or emotional states). Recent research suggests that medication might function as an *internal context*; when the medicated state is withdrawn, the learned experience of safety terminates (see Otto, Smits, & Reese, 2004). Similarly, a fear learned in a subway and extinguished in a therapist's office may reappear if the person enters the same subway in which the fear was learned or a new context that is similar to the subway but not the therapist's office (e.g., a tunnel). By allowing emotions to be experienced (exposure) without judgment, new associations are acquired (the emotion "just is," the thought "just is," the memory "just is"). With repeated practice, associations between emotionally evocative stimuli and mindful behavior may become increasingly dominant. Because the context is internal, these associations are always available.

Emotion Regulation

If mindfulness functions as an internal context for the acquisition of different emotional and behavioral responses, mindfulness may influence the experience of emotions. A growing body of literature has indicated that individuals who have BPD experience considerable affective instability, including heightened emotional intensity and reactivity (Skodol

et al., 2002; Westen, 1991). By teaching mindfulness during emotionally distressing periods in the patient's life, DBT provides an opportunity to learn new associations with stimuli that elicit intense emotional pain. Although few studies have examined the influence of mindfulness on emotional responding, research by Davidson and associates (2003) examined the impact of an 8-week mindfulness meditation program on neural activity. Compared to a wait-list control group, subjects who received the mindfulness intervention had significant increases in activation of the left-sided anterior, an area of the brain, which is associated with positive affect. Such findings suggest that mindfulness may influence emotional experience.

More specifically, mindfulness may reverse emotion-linked response tendencies and associated cognitive appraisals. Many theoretical accounts of emotion have described emotions as being linked with behavioral *response tendencies* (e.g., Gross, 1998) that have evolved over millennia to serve humans in their quest for survival (LeDoux, 2002). Some theorists also have emphasized the importance of analyses of meaning, or appraisals as mediators of these emotional response tendencies (Lazarus, 1991). Indeed, research has long demonstrated that different appraisal strategies can consistently affect the physiological, experiential, and expressive aspects of emotional responding (Gross, 1998); however, the reverse may also be true: Changing the emotion-linked response tendency may change the emotion and the cognitive appraisals. In particular, mindfulness may change *automatic response tendencies* when the patient observes, describes, and participates in emotional experiences without acting on them. In this way, mindfulness may change not only the behavioral response to emotions, but also the associated thoughts, images, and/or memories (see Figure 1). By changing the response tendency (i.e., observe only), mindfulness automatically alters the meaning of the event (i.e., from bad or good

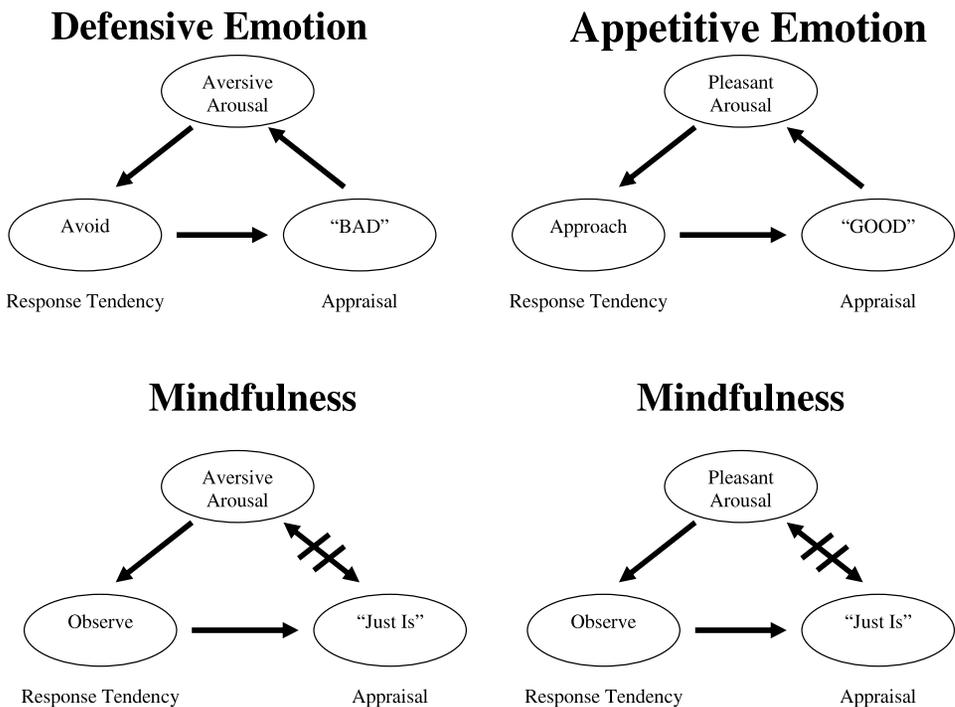


Figure 1. The influence of mindfulness on defensive and appetitive emotional responses.

to “just is”) without the need to restructure, reframe, or modify the appraisal itself directly. Mindfulness may not necessarily reduce the overall intensity of the primary emotional response (nor should this be the “goal”); rather, mindfulness is likely to reduce or eliminate secondary emotional responses, behavioral response tendencies, or cognitive appraisals that normally would lead to additional suffering.

Reducing Literal Belief in Rules

Along with changes in emotion-linked action tendencies and cognitive appraisals, mindfulness may be associated with a breakdown in the predominance of rule-governed behavior with respect to private experiences. Rule-governed behavior essentially involves behavior that occurs in response to a verbal rule that specifies a relationship between behavior (i.e., giving a public speech) and a consequence (being laughed at and humiliated). Some research has suggested that rule-governed behavior reduces the individual’s sensitivity to actual contingencies operating in the environment (Hayes, Kohlenberg, & Melancon, 1989). For instance, the socially anxious individual who avoids giving speeches in response to a verbal rule (“If I publicly speak, I will be humiliated”) may fail to learn that public speaking is nonthreatening, even if he or she gives a successful speech. Literal belief in these types of verbal rules leads the individual to experience thoughts, feelings, and situations as dangerous (i.e., “If I think X, a very bad thing will happen”) and to evaluate certain thoughts as “bad” and/or equivalent to an unwanted action (e.g., Rachman, 1997). In turn, it becomes important on the way to control or get rid of these thoughts. Instead, mindfulness teaches individuals to observe a “thought as a thought” without believing it is literally true. Indeed, some researchers have suggested that cognitive therapy for depression does not work by altering underlying beliefs or schemas; rather, it encourages the development of *metacognitive* awareness (i.e., seeing thoughts as thoughts, not literally true; Teasdale, Segal, & Williams, 1995), which is a core component of mindfulness. Therefore, mindfulness would not be expected to reduce the frequency of distressing thoughts. Instead, mindfulness breaks down literal belief in rules, maximizing sensitivity to current contingencies in the environment. In addition, reducing literality of thought and judgment may engender a benign sense of self, allowing for the experience of self, others, and the world as not “good” or “bad” but instead just as “it is.” Indeed, BPD patients frequently describe a negative, shameful, or otherwise aversive sense of self, which is likely maintained by literal belief in negative self-judgments. Mindfulness may function to create a new sense of self by deliteralizing such harsh judgmental observations and imperatives.

Attentional Control

Mindfulness also constitutes one way to reduce the difficulty individuals who have BPD have in disengaging attention from emotional stimuli—a key component of emotion dysregulation in BPD (Linehan, 1993a). Along these lines, some recent research has suggested that controlling attentional focus may improve emotion regulation. For instance, a recent study demonstrated that focusing on nonemotional contextual details of an emotional memory resulted in decreases in emotional intensity (Philippot, Schaefer, & Herbette, 2003). Attentional control also may reduce the chronic worry or rumination characteristic of generalized anxiety disorder (Borkovec & Costello, 1993). In addition, Teasdale and colleagues postulated that mindfulness should be particularly effective in interrupting streams of thought unrelated to the current moment (Teasdale et al., 1995).

From this perspective, mindfulness would be expected to increase individuals' ability to turn their attention to what they would like to focus on and let go of that which they do not. Specifically, learning to observe, describe, participate, and decrease attachment to emotional stimuli and sensations may result in shorter, more tolerable emotional reactions.

Finding the Grain of Truth: Validation Strategies in DBT

As one of the core acceptance strategies in DBT, *validation* involves being awake to, accurately reflecting, and conveying acceptance of the patient's behavior, thoughts, or feelings. Validation also involves interacting with the patient in a genuine manner (Linehan, 1993a). Validation in DBT is used to balance the change-based strategies rooted in behavior therapy, strengthen or reinforce clinical progress, model self-validation, provide feedback, and enhance the therapeutic alliance. Although most validation strategies in DBT are similar to other therapy approaches, DBT operationally defines the specific behaviors involved in validation in a unique manner. As such, DBT involves six *levels* of validation: (1) active listening, and awakesness to and interest in the patient; (2) accurate reflecting of the patient's feelings, thoughts, or behaviors; (3) articulating unverbilized feelings or thoughts, or "mind reading"; (4) expressing that the patient's dysfunctional behavior is logical in view of past learning history or biological factors; (5) expressing that the patient's behavior is normative, wise, or expected given the current context; and (6) acting in a manner that is genuine, or "radical genuineness."

Mechanisms of Change in Validation

Increasing the Stability of Self-Views

One mechanism associated with validation involves enhancing the stability of the patient's sense of self. Swann's self-verification theory (Swann, 1983) posits that stable self-views provide people with a crucial source of coherence and serve to help people define and organize experiences, predict future events, and navigate social interactions. According to this theory, individuals maintain stable self-views as long as they receive steady, self-verifying feedback from others. Further, Swann and his colleagues have suggested that self-verification serves as a general reinforcer for most individuals: "Feelings of coherence are so alluring that people will fight to maintain them even if it means enduring pain and discomfort" (Swann, Rentfrow, & Guinn, 2003, p. 367). As reflected in the *Diagnostic and Statistical Manual of Mental Disorders*, fourth edition (DSM-IV), criteria, BPD individuals often suffer from identity disturbance, involving persistent and markedly disturbed, distorted, or unstable self-image or sense of self (American Psychiatric Association, 1994; Koenigsberg et al., 2001). Therefore, the ability to organize experiences, predict future events, and engage in effective social interactions may be compromised as well. Within this framework, validation targets this process and increases the development of a coherent sense of self.

Reducing Emotional Arousal and Enhancing Learning

A second mechanism involves the reduction of the patient's emotional arousal, and the related facilitation of learning in session. When their goals are blocked or their self-constructs disconfirmed, people tend to experience negative emotional arousal (Gellatly & Meyer, 1992). In turn, heightened arousal interferes with cognition and task performance (Gellatly & Meyer, 1992). Validating the patient's self-views may "undo" this

process and thereby decrease the patient's emotional arousal. Reducing arousal to a lower, more optimal level is likely to enhance the learning of new behaviors in session.

Increasing Motivation

Validation may enhance the patient's motivation to remain in therapy. According to Swann, people tend to "gravitate toward and stay in environments that are compatible with their self-conceptions" (Swann, 1983, p. 39). Indeed, Swann and colleagues found that when subjects were told that two evaluators had evaluated them on various performance dimensions (one of whom had a favorable evaluation; the other, an unfavorable evaluation), subjects preferred to interact with the evaluator who expressed views congruent with their own self-evaluation (Swann, Pelham, & Krull, 1989). These findings have been corroborated by other studies (Swann, Stein-Seroussi, & Giesler, 1992; Hixon & Swann, 1993), suggesting that people prefer interaction partners who see them as they see themselves. Thus, validation may provide a self-confirmatory environment (McCall & Simmons, 1966; Wachtel, 1977) that keeps patients in treatment.

Behavioral Processes in Validation: Modeling and Contingency Management

When used skillfully, validation strategies also influence the contingencies operating within the therapy session. For instance, the therapist might increase his or her level of validation and genuineness when the patient exhibits particularly skillful behavior in session, thereby reinforcing behavioral progress. Indeed, some researchers (Kohlenberg & Tsai, 1991) have indicated that nonarbitrary, natural, socially mediated in session reinforcement is critical to the therapeutic process. The therapist might also withdraw or decrease validation when the patient's behavior in session is dysfunctional. In addition, validation might be used to reinforce more distal behavior, such as effective coping with suicidal urges or intense emotional reactions, or skillful interpersonal behavior outside the session. Finally, effective use of validation also provides a modeling experience (i.e., Bandura, 1986), whereby the patient learns by example various ways in which to validate his or her own reactions or behaviors.

Dialectics and Behavior Change: Targeting Emotion Dysregulation in DBT

Based in the biosocial theory, DBT has a unique approach to targeting behavioral dysfunction that is not typically seen among other cognitive-behavioral treatments; one key difference is the emphasis placed on emotions and emotion dysregulation. The biosocial theory describes emotion dysregulation as the controlling variable for psychopathology in BPD. The treatment ultimately is designed to help the patient reduce emotion dysregulation in the service of building a life worth living. In this framework, improvement in emotion regulation constitutes the mediator or mechanism of action in DBT. Emotion dysregulation includes a set of specific behaviors that are directly targeted in treatment.

In individual therapy, behavioral targets are organized in the following hierarchy: life-threatening behaviors, therapy-interfering behaviors, and quality of life-interfering behaviors. The patient self-monitors these behaviors via weekly diary cards and the therapist highlights and targets the highest-priority behaviors that have occurred since the last session. A detailed *chain analysis* is conducted in order to determine, in minute detail, the antecedent events that increased the likelihood that the behavior would occur (vulnerability factors or establishing operations), the proximal discriminative stimuli or prompting events

for the behavior, and the consequences of the behavior. Although the chain analysis appears similar to a *behavioral analysis* (Bandura & Goldman, 1995; Cone & Hawkins, 1997), it actually is much more specific, focusing on moment-to-moment changes in external conditions, emotions, thoughts, behaviors, and consequences. Whereas a behavioral analysis is broad, focusing on delineating patterns of behavior and their controlling variables, a chain analysis is a detailed evaluation of a *single* chain of behavior (Linehan, 1993a). The four primary mechanisms of change associated with chain analysis are exposure, aversive contingencies, autobiographical memory specificity, and practice in and learning of new skills.

Mechanisms of Change in Targeting and Chain Analysis

Aversive Contingencies

The specificity and thoroughness with which DBT evaluates dysfunctional behavior are key factors in patient change. For instance, many BPD patients engage in various behaviors (i.e., self-injury) that they are rather averse to disclose and discuss, let alone in an excruciatingly detailed chain analysis. Therefore, the chain analysis may function as a punisher for engaging in target behaviors. Over time, the patient learns that if he or she engages in self-injury, the next therapy session will involve a lengthy discussion of the behavior and the surrounding context.

Exposure and Response Prevention

Compared to other behavioral and cognitive-behavioral approaches, DBT more strongly emphasizes the role of the emotion system in behavioral dysfunction. For instance, behaviors such as suicide attempts or nonsuicidal self-injury may be conceptualized as attempts to regulate intense, unwanted emotions. Therefore, the focus of the chain analysis is on those components of emotion dysregulation that support or maintain these behaviors, and interventions target such factors as events that increase emotion vulnerability, emotional arousal, emotional expressive behavior, modification of the stimuli that gave rise to intense emotions, and inhibition of mood-dependent action urges. The DBT therapist pays considerable attention to all aspects of emotional responses that occur within the chain of events leading up to the target behavior. Discussing these emotional responses and their eliciting stimuli promotes nonreinforced exposure to emotions in session. Indeed, research has suggested that patients often respond emotionally to recalled events, particularly when the events are associated with imagery (Lang, Levin, Miller, & Kozak, 1983).

Exposure that occurs during the chain analysis also may reduce shame and enhance problem solving in BPD patients. Many of the dysfunctional behaviors in which BPD patients engage are nonnormative (e.g., self-injury, suicide attempts) and associated with considerable shame. Shame has been described as a painful state that disrupts ongoing behavior and cognition (Lewis, Alessandrini, & Sullivan, 1992). The action tendencies associated with shame include the urge to hide, withdraw, disappear, or avoid thinking about aspects of the shameful behavior. Essentially, these behaviors curtail meaningful thought or problem solving and often cancel important clinical problems from the therapist. Requiring the patient to talk in detail about shameful events or behaviors may work very similarly to mindfulness or opposite action (Rizvi & Linehan, in press), in that the patient experiences nonreinforced exposure that weakens the association between the behavior or event and the emotional response of shame, thereby facilitating engagement in problem solving.

Enhancing Episodic Memory

The detail with which the chain analysis is conducted may also be associated with the enhancement of stimulus discrimination and/or episodic memory. Indeed, some research has suggested that BPD is associated with a tendency to overly generalized (as opposed to specific) memory for personally relevant events (Jones et al., 1999). Discussing the chain of events that led to dysfunctional behavior may increase the likelihood that the patient will recognize future patterns and implement skillful behavior as needed. For instance, consider a patient who recently was rejected by her partner. Feeling sad and ashamed, she isolated herself in her apartment, where she happened to have several unused razor blades. She then cut herself and experienced short-term relief from the shame and sadness. The chain analysis essentially would involve a detailed recounting of all of the events that led up to the cutting, as well as the consequences of cutting. Given research demonstrating an important link between rehearsal and episodic memory for sequences of information (Tan & Ward, 2000), this rehearsal of events may enhance the patient's episodic memory for the pattern of events that precipitates self-cutting. The next time this pattern occurs, the patient is able to recognize the warning signs of impending difficulties. Upon noticing that a significant other has just rejected her, she may remember the last time this happened, as well as the related therapy discussion. When the patient has developed associations between the patterns of events associated with self-harm and useful solutions or skills to prevent self-cutting, the typical, automatic response to these events is interrupted, and effective behavior is more likely to emerge. The patient implements emotion regulation skills to attenuate feelings of sadness and shame, discards her razor blades, and seeks social contact and support or advice from the therapist or others in her social network.

In Vivo Learning of Skillful Behavior

The dialectical synthesis of assessment and intervention during the chain analysis may promote in vivo learning. The chain analysis in DBT is dynamic, moving fluidly back and forth between analysis of the behavior and core treatment interventions. Essentially, the therapist weaves validation as well as the core DBT behavior-change interventions (problem solving, solution generation, didactic information, contingency management, and behavioral skills) directly into the chain analysis. Consequently, not only is the patient exposed to emotion cues, but he or she also is provided with interventions geared toward changing the emotional response or the behaviors associated with the emotional response. This quick interweaving of assessment and treatment may increase the likelihood that the cues or prompting events will become classically conditioned to problem solving and solution generation. Over time, stimuli that previously elicited overwhelming emotional responding and related problem behaviors (e.g., cutting) become conditioned stimuli for skillful behavior. Therapist reinforcement of skillful responses (discussed in other sections of this article) further strengthens these behaviors.

Generalization of Behavior Change: Telephone Consultation

The primary intervention used to generalize behavioral skills from the therapy session to the client's natural environment is *telephone consultation*. The telephone is used on an ad hoc basis to generalize previously learned behavior from skills group and individual therapy sessions into the client's natural environment. Clients are encouraged to contact therapists via telephone throughout treatment as a means of reducing suicidal crises,

increasing problem solving, learning how to ask for help from others appropriately, and facilitating repair to recent ruptures in the therapeutic relationship. Although examples of generalization strategies abound in the child and adolescent literature (e.g., Henggeler, Schoenwald, & Pickrel, 1995; Serna, Schumaker, Sherman, & Sheldon, 1991), and relapse-prevention based adult treatments emphasize generalization (e.g., Marlatt & Gordon, 1985; Witkiewitz & Marlatt, 2004), DBT is the only empirically supported treatment that explicitly incorporates telephone consultation as a generalization strategy.

DBT telephone consultation capitalizes on many of the operant principles of generalization delineated by Skinner (1953) and others (Stokes & Baer, 1977; Stokes & Osnes, 1989). According to Skinner, generalization occurs when “the control acquired by a stimulus is shared by other stimuli with common properties” (Skinner, 1953, p. 134). In DBT, telephone consultation may enhance generalization through a variety of means, perhaps most notably including the application of contingencies and the coaching and shaping of coping behavior in the moment. In addition, telephone consultation may reduce the reemergence of problem behavior. For instance, in many ways, the therapeutic setting constitutes an *extinction-training context* for problem behaviors. Urges to engage in dysfunctional behaviors during the session are not reinforced, and the behaviors extinguish over time. On the basis of the theory that the reemergence of extinguished responses (*renewal effects*) may occur in new contexts because of a failure to retrieve the *memory of extinction*, Bouton and Brooks (Bouton, 1993; Bouton & Brooks, 1993) have used an *extinction reminder* in animal studies by pairing a novel cue with extinction. When this novel cue is presented again upon return to the original conditioning environment, renewal effects are reduced. Similarly, telephone calls may serve as cues for the retrieval of extinction memories from therapy sessions. In addition, the therapist may constitute a stimulus linked with effective behavior learned in treatment. Therefore, the therapist’s presence in the patient’s natural environment (through the telephone) not only prevents the renewal of dysfunctional behavior, but also elicits skillful behavior.

Reducing Emotion Dysregulation and Building Skills: Emotion Regulation Skills and Opposite Action

Emotion regulation skills constitute a core intervention in DBT and are closely linked to the biosocial theory that BPD is fundamentally a disorder of pervasive emotion dysregulation (Linehan, 1993a). The inclusion of didactic instruction in a wide range of emotion regulation skills is a unique aspect of DBT. One of the most central emotion regulation skills is *opposite action*, which essentially involves (1) determining that an emotion either is not warranted by the situation (i.e., “unjustified”) or interferes with effective behavior, (2) being exposed to emotionally evocative cue or stimuli, (3) blocking the behavior prompted by the emotion’s action urge, and (4) substituting a behavior that is inconsistent with the action tendency compelled by the emotion. Given that emotion dysregulation occurs across multiple emotions (both positive and negative) in BPD, opposite action in DBT targets a broad range of emotions (e.g., shame, guilt, unjustified love, sadness, fear, anger).

Mechanisms of Change in Opposite Action

Exposure and Response Prevention

Although historically associated with the behavioral principle of *reciprocal inhibition* (Wolpe, 1954), opposite action is more closely linked with exposure-based treatments for

anxiety disorders, such as posttraumatic stress disorder (Foa & Kozak, 1986), obsessive-compulsive disorder (Franklin, Abramowitz, Kozak, Levitt, & Foa, 2000), and panic disorder (Barlow, 1988). Opposite action involves exposure to the emotionally evocative stimulus while engaging in behavior that is incompatible with the *behavior or action tendency* prompted by the emotions; it is based on the theory that acting in a manner consistent with the action compelled by an emotion increases the likelihood that the emotion will recur under similar conditions in the future. For instance, when the emotion is anxiety, the action urge is to escape or avoid the situation; that is functional when the situation involves threat of harm (e.g., leaving one's home when there is a gas leak). However, when there is little or no threat of harm (e.g., public speaking), escaping the situation reinforces the anxiety and prevents the individual from learning that the situation is not threatening. In contrast, approach behavior is opposite to escape. Repeatedly approaching the feared situation in the absence of any fearful event, along with blocking the escape response, weakens the link between the situation and the anxiety. Therefore, a key mechanism of action in opposite action may be the masking or weakening of the association between a stimulus (CS) and an unjustified emotional response (unconditioned response [UCR]), accomplished through exposing the patient to the CS and blocking or reversing the UCR.

Broadening the Patient's Repertoire and Learning of New Responses

The nature of opposite action in DBT may lead to the learning of new behavioral responses to emotions. Emotional responses include not only the subjective negative arousal (anger), but also expressive tendencies and facial, muscle, and postural changes. Each of these responses contributes to the experience of the emotion. Therefore, in DBT, opposite action may involve opposite facial expressions, body postures, or movements or even opposite thoughts. Engaging in opposite behavior that captures all aspects of the action tendencies linked with the emotion response in DBT is called *all-the-way opposite action*. For instance, all-the-way opposite action for a social phobic might involve purposely signing up to give a speech; standing up straight and making eye contact with the audience; slowing his or her breathing or speaking; talking in a clear, direct, confident voice tone; and making hand or arm gestures to emphasize certain points made during his or her speech. When the patient gives a successful speech and/or is reinforced for speech-giving behavior, alternative responses to anxiety are strengthened, and the patient's repertoire of behavioral responses to anxiety broadens. The emotion begins to elicit a variety of action tendencies, as opposed to the narrow subset (i.e., avoiding public speaking) of actions originally elicited.

Cognitive Modification

Opposite action may also directly broaden the patient's cognitive responses to emotional experiences. By behaving oppositely of the automatic response or action tendency (e.g., for shame the response tendency is to hide, whereas opposite action involves exposing oneself), the emotional response and associated thoughts, images, and/or memories attached to the emotion may automatically change. Based on *self-perception theory*, self-perception of expressive behavior and interpretations of proprioceptive sensations influence subjective emotional experience (Laird, 1974, 1984); thus, opposite action may further alter the experience of the emotion partly by changing the patient's perception of his or her emotional experience. Essentially, the patient infers that he or she is feeling

competent because he or she is acting competent. Additionally, opposite action may create sensory feedback from facial muscles and skin that can be transformed directly into emotional experience without cognitive mediation (Izard, 1971; Tomkins, 1962). For instance, neurobiological research has suggested that certain subcortical neural pathways lead directly to the emotional areas of the brain (e.g., amygdala), bypassing areas associated with cognition (e.g., LeDoux, 1996). In addition, research on the facial feedback hypothesis (FFH) has found that changes in facial expression can be sufficient (but not necessary) to elicit an emotional experience, and that the intensity of facial expression is associated with subjective emotional experience (e.g., Hess et al., 1992; Matsumoto, 1987; Soussignan, 2002; Strack, Martin, & Stepper, 1988; Tourangeau & Ellsworth, 1979). On the basis of Soussignan's (2002) research indicating that changes in facial expression trigger positive feelings and an autonomic response in the absence of cognitive processes, these findings suggest that opposite action influences emotion by directly activating subcortical neural pathways that access emotional areas of the brain.

Dialectical Strategies

In addition to sustaining the balance and integration of acceptance and change in DBT, dialectics has spawned several specific therapeutic strategies. In terms of *style*, these strategies involve balancing irreverent and reciprocal communication and acceptance-based and change-based interventions. Dialectical *strategies* also involve magnifying tension through the devil's advocate or other such strategies (i.e., *entering the paradox, extending*), working for a synthesis of opposite opinions, feelings, or thoughts; using metaphor; oscillating speed and intensity in interacting with the patient; and using movement fluidly in session to keep the patient awake and slightly "off balance." Each dialectical strategy essentially involves balancing or synthesizing dialectics that occur in session.

Mechanisms of Change Associated With Dialectical Strategies

Enhanced Orienting Responses

The often unexpected or "off the wall" nature of dialectical strategies compels the patient to remain awake and attentive to what is happening in the session, as predicting the therapist's behavior is not always easy; consequently, dialectical strategies may influence the patient's *orienting response*. The orienting reflex or the "What is it?" reflex (Pavlov, 1927) is the first response of the body to any type of novel stimulus, the function of which is to tune the neural systems for sensory analysis in order to facilitate central processing of stimuli (Cook & Turpin, 1997; Graham, 1979; Sokolov, 1963). Essentially, the orienting response (OR) *opens* the organism to the environment. Along these lines, research has demonstrated that increased cerebral blood flow follows novel stimuli (Tulving, Markowitsch, Kapur, Habib, & Houle, 1994). In addition, stimuli that are surprising (yet do not imply a biological threat) have been shown to elicit large ORs and to command extra processing resources, as indicated by slowing of reaction time (Siddle & Packer, 1987). Similarly, individuals tend to process information that is inconsistent with their preferences in a more effortful fashion than preference-consistent information, suggesting that individuals process information they do not want to believe more deeply than information they want to believe (Ditto, Scepansky, Munro, Apanovitch, Lockhart, 1998). Consequently, dialectical strategies designed to keep the patient "off balance," increase therapist unpredictability, and/or provide preference-inconsistent information may increase attention, cognitive processing, and learning.

In Vivo Learning and Modeling

Dialectical interventions may provide in vivo learning experiences that directly prompt the patient to practice new behaviors. For instance, the devil's advocate strategy is used to strengthen a patient's commitment to treatment by providing a somewhat outlandish argument against committing, leading the patient to argue *for* commitment. When the patient argues for commitment, he or she essentially gains in vivo practice at flexibly moving to adopt a different position. In addition, self-stated motivation to commit or change behavior might enhance the likelihood that such changes will be made (Rollnick & Miller, 1995). Dialectical interventions also might provide modeling of the skillful movement between and synthesis of polar opposites. When the therapist actively models dialectical statements or thinking, the patient may begin to integrate into his or her own repertoire a less rigid, more flexible way of thinking or behaving; consequently, the patient may learn how to become unstuck from rigid emotional, cognitive, or behavioral patterns.

Maintaining a Dialectical Treatment Frame: Mechanisms of Change Associated With the Client-Therapist System

In DBT, dialectical philosophy contributes to the conceptualization of the treatment network as a holistic system, involving a dynamic interplay or transaction among the therapist, the patient, and other treatment providers. Behaviorally, the therapist is just as prone to the influence of behavioral principles of reinforcement and punishment as is the patient. With challenging patients, the patient and therapist may transact in such a manner that the patient punishes effective treatment and reinforces iatrogenic behavior or behaves in a way that directly elicits defensiveness or hostility in the therapist. This problem may be likely when the therapist and patient express polarized positions on an aspect of treatment.

Reducing Polarization

One way in which dialectics curtails the process of polarization relates to the style of thinking espoused by dialectical philosophy. Based in dialectical thinking, DBT involves a synthesis of *formalistic universalistic thinking* (there is absolute Truth) and *relativistic thinking* (there are many truths; Basseches, 1984)—there is both absolute truth and truth is contextual and always evolving. In this way, dialectics reduces polarization between therapist and patient and allows the therapist to give up being *right* without losing his or her perspective. The therapist strives for a synthesis of opposites in treatment and weaves in both validation and change when polarization occurs. For instance, the dialectical perspective allows the therapist both to validate (“I can totally see why you’re saying that I’m a demanding therapist”) and to change (“At the same time, I can’t see how you are going to stop trying to kill yourself and build a life worth living if I become less demanding”) simultaneously. At other times, dialectics encourages the therapist to engage in opposite action or radically accept his or her thoughts or feelings about the patient, while focusing on providing effective treatment. Similarly to Zen practice, dialectics sometimes requires the therapist to “give up ego” or flexibly move back and forth between opposing positions, taking each position wholeheartedly, with complete willingness to give up attachment to any idea or goal.

Maintaining Therapist Efficacy

The challenges in applying a comprehensive, multifaceted treatment with patients who often exhibit high-risk behaviors can make it difficult for therapists to maintain moti-

vated and skillful treatment. In order to address this issue, DBT involves a specific treatment mode that monitors and enhances therapist effectiveness and motivation—the *therapist consultation team*. Functioning as a microlevel “community” of providers (Chapman & Linehan, 2005) who agree to adopt a dialectical philosophy, the consultation team essentially involves applying DBT principles to therapists who treat patients who have BPD. As such, the focus of team discussions centers on the therapist’s behavior, and less on the patient’s difficulties. In a dialectical fashion, the team creates a system, whereby the patient-therapist transactions are discussed and modified; consequently, the patient influences the team, and the team influences the patient’s treatment. Changes in any element of this system (i.e., patient/therapist; therapist/team) influence the treatment as a whole. Team members support and train the therapist and maintain a dialectical framework to sustain and balance effective treatment. In addition, the consultation team highlights and targets certain therapist behaviors that occur within or outside the team that are likely to influence the patient’s treatment (i.e., lateness; lack of preparation or participation during meetings; judgmental or derogatory manner of speaking; self-invalidation; defensiveness; unmindful behavior). Therefore, the therapist’s behavior is targeted and shaped in a manner similar to the way in which the therapist targets the patient’s behavior. Essentially, the key mechanisms of change are the shaping and reinforcing of effective therapist behavior and the maintenance of therapist motivation; both factors directly translate into more skillful treatment.

Summary and Conclusions

In summary, several potential mechanisms of change may be associated with aspects of DBT that are central and unique to the treatment and its theoretical underpinnings. The present discussion focused primarily on those strategies, based on the biosocial theory that BPD represents a pervasive dysfunction of the emotion regulation system, that influence the patient’s emotion system or reduce emotion dysregulation. Taken together, we propose that mindfulness, opposite action, behavioral targeting and chain analysis, and dialectics work through the following mechanisms of change: (1) exposure, response prevention, and extinction or masking of ineffective or unjustified emotional responses (mindfulness, opposite action, and chain analysis); (2) enhanced learning of new skillful responses to emotionally evocative stimuli (mindfulness, validation, opposite action, chain analysis, dialectics); (3) enhanced attentional control, orienting, and stimulus discrimination or memory (mindfulness, chain analysis, dialectics), and (4) balancing and sustaining of effective treatment (dialectics).

On the basis of the biosocial theory, many of these mechanisms can be further distilled down to the following process: *the reduction of ineffective action tendencies linked with dysregulated emotions* (Chapman & Linehan, 2005). Indeed, the core deficit in BPD is not an excessive intensity of emotional responses, but rather, the fact that BPD individuals experience a breakdown of their cognitive, behavioral, and emotional systems when they experience intense emotions (Linehan, 1993a). Therefore, patient change in BPD is conceptualized primarily as helping of the patient to engage in functional, life-enhancing behavior, even when intense emotions are present. For instance, *mindfulness skills* and *opposite action* work, in part, by encouraging nonreinforced exposure to emotionally evocative stimuli, while blocking dysfunctional escape or avoidance behaviors or other unhelpful responses to intense emotions. Both *validation* and *dialectical strategies* facilitate the learning of more functional responses to intense emotions, albeit through somewhat different mechanisms. Whereas dialectical strategies help to keep the patient awake, attentive, and receptive to new learning, validation helps to reduce strong emo-

tional arousal that may serve as a barrier to such learning. In addition, it is quite likely that these mechanisms transact in a dynamic manner and are synergistic in enhancing treatment effects.

The primary purpose of this article is to serve as an impetus for future research on mechanisms of change in DBT. Using the criteria for manualized treatments established by Chambless and Hollon (1998), the current literature quickly reveals that DBT is the only treatment for borderline personality disorder (BPD) considered "well-established" or "efficacious and specific." Once it is known that a treatment is efficacious, the next task is to improve the treatment further by enhancing its efficiency and efficacy (Linehan, 1999). This stage IIB phase of treatment development includes component and process-analytic studies, dismantling studies, and studies designed to analyze response predictors. At this time, research on predictors of treatment response in DBT has been sparse. Consequently, this article focuses on hypothesized mechanisms of change that we consider both unique to DBT and supported by clinical or basic science research. We hope that this article will provide guidance for a new frontier of theoretically and empirically grounded research on the mechanisms of change in DBT. Ultimately, such research should prove to be invaluable to the patients this treatment is designed to help.

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