

2 Cognitive and behavioral therapies

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Introduction

Cognitive-behavioral therapies represent a class of pragmatic approaches to understanding and treating psychiatric disorders and problems. Although there is much diversity among these treatments, interventions are characteristically problem focused, goal directed, future oriented, time limited, and empirically based. Cognitive-behavioral theories assume that cognitive and emotional processes mediate the acquisition and maintenance of psychopathology. Accordingly, interventions effect change in symptoms, behavior, and functioning via changes in cognition (Dobson and Dozois, 2001). An impressive array of techniques has been developed to help patients learn enduring, portable skills that reduce current distress, improve current functioning, and prevent relapse. An equally impressive research literature supports the application of manual-based, cognitive-behavioral packages to a wide range of disorders.

Behavior therapies are the historical ancestors of cognitive-behavioral therapies. Theoretically allied to Charles Darwin and behaviorists such as Thorndike, Pavlov, Watson, and Skinner, behavior therapies were pioneered in the 1950s by Wolpe and Rachman, among others (Hawton *et al.*, 1989; Craighead *et al.*, 1995). Behavior therapies conceptualize psychopathology in terms of the elementary learning processes of classical and instrumental conditioning (Hawton *et al.*, 1989; Mueser and Leiberman, 1995). Accordingly, the behavior therapist identifies objectively specifiable antecedents and consequences that maintain the maladaptive behavior. Therapy consists in altering environmental contingencies, which leads to change in behavior. Behavioral formulations and interventions are devoid of reference to mediational factors such as thought and cognition, which are inherently unobservable and unreliable (Skinner, 1953; Mueser and Leiberman, 1995).

By the 1970s behavioral therapies had become widely accepted efficacious treatments for a variety of psychological problems (Craighead *et al.*, 1995). However, at this same time, several currents within the field emphasized the role of cognitive factors as mediators of behavioral outcomes: (1) covert behavior such as obsessional thought or observational learning could not be directly addressed by behavioral methods alone; (2) data emanating from the cognitive sciences posed challenges to strictly behavioral models; (3) theorist practitioners such as A. T. Beck, Ellis, and Meichenbaum began calling themselves cognitive-behavioral; and (4) research studies were published demonstrating cognitive-behavioral methods to be equivalent or better than behavioral methods for particular disorders or problems (Dobson and Dozois, 2001; Ingram and Siegle, 2001).

Cognitive-behavioral therapies can be thought to sit on a continuum in terms of how much cognition is included in the formulation: (1) on the one end are behavior therapies that focus upon behavior and environmental determinants in terms of elementary learning theory, and (2) at the other end of the continuum are therapies that formulate therapy purely in cognitive terms, allowing no behavioral intervention at all. Most cognitive-behavioral approaches fall somewhere in between, emphasizing the behavioral and cognitive interventions to differing extents.

Treatment principles

Though the various versions or 'brands' of cognitive-behavioral therapy (CBT) can be distinguished in terms of certain aspects of the client-therapist relationship, the cognitive target for change, the assessment of change, the degree of emphasis placed on the client's self-control, and the degree to which cognitive or behavioral change is the focus (Kendall and Kriss, 1983), treatment principles common to all cognitive-behavioral therapies can be identified.

Cognitive-behavioral interventions are designed to treat specific disorders or problems

The patient's difficulties are operationalized in reliably measurable terms. By making the patient's problems quantifiable in this manner, the therapist introduces objectivity into the therapeutic process (J. S. Beck, 1995). Cognitive-behavioral assessment of a problem can include questionnaires, physiological tests, and behavioral tests that are administered continuously throughout treatment (Blankstein and Segal, 2001). The patient's progress in therapy can then be tracked by objective data that informs treatment decisions. The interventions that cognitive-behavioral therapies deploy are derived theoretically and are consistent with existing models of human learning and cognition (Ingram and Siegle, 2001). The techniques are validated experimentally via group and single-case experimental designs occurring within research and community settings. The utilization of cognitive-behavioral techniques to address problems associated with specific disorders is a direct legacy of behavior therapy (Dobson and Dozois, 2001).

The overarching goal of cognitive-behavioral therapy is to help patients effect desired changes in their lives

Change is conceptualized as a cognitive process, in that thoughts and beliefs mediate changes in behavior (J. S. Beck, 1995). From the patient's perspective, cognitive-behavioral treatment provides an adaptive learning experience that will produce concrete change in domains quite apart from the clinical setting. Importantly, improvement is not contingent on the interpersonal dynamics of the therapeutic relationship, nor does it require insight from the patient as the mechanism of change (Meichenbaum, 1995). Rather, improvement stems directly from change in maladaptive sequences of cognition and behavior.

Cognitive-behavioral therapies are goal oriented

The patient and therapist set explicit goals for the therapy at the outset of treatment. Typically, the patient will desire a reduction in distressing symptoms. The treatment is tailored to the patient's specific set of circumstances, such that any number of problems could be targeted for intervention. Goals such as increasing positive experiences, building coping strategies for

future problems, and prevention of relapse are within the purview of cognitive-behavioral therapies. Goal setting focuses the patient's thinking upon gains she can achieve through therapy, and can prompt a discussion of the realistic limits of therapy. For example, the goal of 'never having anxiety again' is unrealistic, as is the goal of 'never being sad again.' Throughout the course of therapy, the patient and therapist can revisit the goals to assess the progress of therapy, revising the goals, if need be, in the face of changing life circumstances.

Cognitive-behavioral intervention occurs over the short term in a time-limited manner

Every attempt is made to effect change rapidly. Many treatment manuals recommend that therapeutic goals be achieved within 12–16 sessions (Chambless *et al.*, 1996). Treatment is based in the present: the therapist and client address current patterns of thinking and behavior with an eye to enabling the patient to anticipate and navigate similar problems in the future. This emphasis upon contemporary problems does not prevent the therapist from taking a detailed client history, nor does it disallow using the past to help conceptualize the patient's problems. However, the action of the therapy resides in current problems and situations (J. S. Beck, 1995).

Cognitive-behavioral therapy is educational

It is axiomatic within cognitive-behavioral approaches that patients are seen as capable of controlling their own thoughts and actions. Therapy, under this assumption, becomes an educative process aimed at helping the patient acquire skills and knowledge that will enable her to function more adaptively. The therapist may instruct the patient throughout treatment: for example, regarding the nature and course of the disorder, as well as the rationale behind specific interventions. Ultimately, the cognitive-behavioral therapist expects the patient to learn which aspects of the process of therapy were most beneficial. And, in the event of an impending recurrence, the patient can use the skills learned in order to limit the severity and duration of symptoms, without needing to reinstate formal therapy. The educative interaction between the therapist and patient is another factor that sets cognitive-behavioral therapies apart from other schools of therapy (D'Zurilla and Goldfried, 1971; Mahoney, 1974; A. T. Beck *et al.*, 1979; DeRubeis *et al.*, 2001).

Cognitive-behavior therapies attempt to impart to the patient skills that enable more adaptive problem solving

As skill acquisition requires practice, the patient is encouraged to work on a variety of therapeutic tasks outside of the session. The therapist frames these tasks, or homework assignments, as a vital component of treatment that is crucial to its success (J. S. Beck, 1995). The therapist and patient formulate the homework assignments together, customizing each task to the patient's problems and skill set. The therapist clarifies the rationale for each homework assignment and gives specific instructions, allowing the patient to express objections. Whenever possible, the therapist and patient anticipate problems that might hinder completion of the homework task. As homework tasks reinforce and supplement the educational aspects of the therapy, it is important that the patient experience each assignment as a relative success (A. T. Beck *et al.*, 1979; J. S. Beck, 1995).

Cognitive-behavioral therapies emphasize a collaborative relationship between the patient and therapist

The therapist and patient assume an equal share of the responsibility for solving the patient's problems across all therapeutic activity: from setting goals to planning homework assignments to challenging negative cognitions to devising a relapse prevention strategy. The more the therapist and

the patient work together, the greater the learning experience for both. Joint effort not only engenders a cooperative spirit, but also creates a sense of exploration and discovery. These factors enhance motivation and help overcome the many obstacles inherent in psychotherapy (A. T. Beck *et al.*, 1979; J. S. Beck, 1995; DeRubeis *et al.*, 2001).

Cognitive-behavioral therapies require both patient and therapist to take an active role in the moment-by-moment progress of the treatment

Both parties contribute to the therapy in terms of identifying problems and challenging the negative cognitions that mediate negative emotional states and maladaptive behavior (J. S. Beck, 1995). The therapist is active across a variety of tasks: questioning negative thoughts, teaching new skills, educating about the psychological disorder, modeling new behaviors, and planning homework assignments. In a similar vein, the patient is active: monitoring behavior and thought, completing homework assignments, challenging negative thoughts, practicing skills, etc. The active therapist role is one factor that distinguishes cognitive-behavioral treatments from more traditional forms of psychodynamic and psychoanalytic psychotherapy, which prescribe the therapist to follow the patient's lead in session (Meichenbaum, 1995).

Cognitive-behavioral techniques

Goal setting

Collaboratively setting concrete goals with the patient is an important early step that confers several advantages upon the therapeutic process of CBT (Kirk, 1989). First, goal setting helps to clarify the patient's expectations for therapy. Areas of miscommunication or misunderstanding between therapist and patient can be pinpointed and resolved at an early stage within the therapeutic interaction. Additionally, a discussion of goals may enable the patient to formulate a basis for deciding when to continue with and when to discontinue therapy. Goal setting, also, frames the patient's difficulties in terms of change and possibility, which is more hopeful than a framework that emphasizes symptoms, problems, and pain. The process of goal setting can, moreover, serve to reinforce the patient's active role within the therapeutic relationship. CBT is not a passive experience. If the client is going to benefit from treatment, full involvement in the process of therapy is required. Another advantage goal setting bestows upon the therapeutic process is structure. The patient's problems are addressed in a systematic way, and the risk that therapy will become a chaotic series of crisis interventions is reduced. Ultimately, goal setting prepares the patient for discharge, as it explicitly defines the end of therapy as the point when all of the goals are achieved. Therapy can also be terminated if little progress is made towards the goals within an agreed upon timeframe. Thus, goal setting provides a natural means to evaluate the outcome of therapy in terms of the patient's presenting problems.

Cognitive-behavioral assessment

Although most assessment takes place in the initial sessions, the process of assessment continues throughout treatment. Cognitive-behavioral assessment strategies take many forms across four domains: cognition, behavior, emotion, and physiology (Blankstein and Segal, 2001). Each assessment procedure yields specific information about a particular response system. Assessing a problem with multiple techniques produces a more comprehensive identification of the problem, and gives the therapist a better picture of how well the treatment addresses the problem (Kirk, 1989).

Cognitive-behavioral assessment often begins with an initial interview (J. S. Beck, 1995; Blankstein and Segal, 2001). During this interview, the therapist clarifies the patient's problems, formulating the difficulties in manageable units that will encourage the patient to believe that change is possible. Additionally, the assessment process helps the patient learn that

variations in the intensity and distress of symptoms are predictable and potentially controllable. The assessment interview also highlights problems that should be prioritized, such as child abuse, suicidality, or problems with serious physical consequences.

The initial interview may be supplemented by a variety of other assessment techniques, including self-report questionnaires, direct observation of behavior, behavioral tests, physiological measures, and self-monitoring. Self-report questionnaires such as the Beck Depression Inventory (BDI-II; A. T. Beck *et al.*, 1996) are easily administered and can be collected periodically throughout the therapy process. Moreover, normative data exist for many self-report questionnaires, which can help to contextualize a patient's score.

A particularly useful assessment technique involves the direct observation of behavior. This can be accomplished through frequency counts, duration of symptoms or behaviors, or observations made during role-plays with the patient. Direct observation of the problem behavior can be repeated during the course of treatment to assess change. Specific behavioral tests also provide direct observation of a wide range of problem behaviors.

Behavioral by-products (e.g., the number of cigarette butts in an ashtray, or the number of hairs pulled out by patients with trichotillomania) are indirect, objective measures that are relatively free from observer bias. While such by-products do not focus on the problem behavior itself, they do provide reliable physical evidence that the behavior has occurred. Patients are easily trained to monitor these by-products as an indication of positive or negative change. While there is accumulating support for the use of physiological measures (Kirk, 1989), they are not routinely used in clinical practice due to the prohibitive cost and availability of measuring equipment. However, less technical measurements can be used effectively, such as self-monitoring of headaches or gastric distress.

Self-monitoring

Self-monitoring is an important assessment tool. The therapist instructs the patient to observe and record her own behavioral and emotional reactions. As these reactions are distributed throughout the patient's daily life, self-monitoring tends to be employed as a homework assignment. The therapist and patient collaboratively select the target of monitoring (e.g., a symptom, behavior, or reaction) based upon the patient's goals and presenting problem list. Self-monitoring serves at least three purposes within a course of CBT: (1) it encourages and effectively trains the patient to observe her own reactions in a more scientific manner; (2) it renders a concrete record of the target symptoms and problems; and (3) new problems can become apparent and targeted for future intervention. Self-monitoring is especially useful in early sessions as a means of assessing the severity or frequency of a particular problem or symptom. However, self-monitoring is equally useful in later sessions as a means of tracking the patient's progress. Examples of self-monitoring include a record of daily activities and corresponding mood; a frequency count of the number of panic attacks per day; a record of the frequency and content of auditory hallucinations; and a food diary in which time, quantity, and type of food eaten are recorded (J. S. Beck, 1995).

Cognitive restructuring

Within the cognitive-behavioral framework, maladaptive thinking is both a symptom and a critical maintenance factor (Meichenbaum, 1995; J. S. Beck, 1995; DeRubeis *et al.*, 2001). Negative automatic thoughts increase negative affect, which in turn increases the likelihood of further negative thought, producing a vicious cycle that tends to maintain dysphoria. It follows from this formulation that patients can overcome their problems by identifying and modifying their negative thoughts.

Within A. T. Beck's formulation (1967; A. T. Beck *et al.*, 1979, 1985), cognitive change depends upon the patient noticing and remembering her own cognition as it occurs. Thus, the patient learns to attend to her own cognitive content as a vehicle for understanding the nature of an emotional episode or disturbance. The heuristic and therapeutic value of the cognitive model lies in its emphasis on the relatively easily accessed mental events that patient can be trained to report (DeRubeis *et al.*, 2001). Once the

patient has attended to the content of his or her cognitive reaction, she is then encouraged to view it as a hypothesis, rather than as a manifest fact. Through careful scrutiny and consideration of the belief-hypothesis, the patient gradually alters her perspective. By virtue of changing the relevant belief, change in the emotional reaction and behavior follows. The therapist will characteristically induce cognitive restructuring by asking leading questions that guide the patient to question and alter her faulty cognition (A. T. Beck *et al.*, 1979; Overholser, 1993a,b; J. S. Beck, 1996). This dialogue between patient and therapist is called 'guided discovery' or 'Socratic questioning' (DeRubeis *et al.*, 2001).

Over the course of therapy, the patient will become familiar with the process of evaluating her own thinking, applying it whenever she is confronted with new difficulties. Thus, the ultimate goal of cognitive restructuring is prophylactic: the patient acquires or refines a skill (e.g., to attend to and question her thinking), which she can apply in all domains of her life (Meichenbaum, 1995; J. S. Beck, 1995; DeRubeis *et al.*, 2001). Cognitive restructuring is a central component of specific treatment programs for emotional disorders, personality disorders, eating disorders, and psychotic disorders.

Problem solving

Problem solving is a self-directed process by which a person attempts to identify or discover effective or adaptive solutions for specific problems encountered in everyday life. Initially, the therapist helps the patient identify and define the problems she faces. For each problem, therapist and patient brainstorm potential solutions, evaluate the quality of each solution, and test out the best ones. Problem solving also entails helping the patient identify and overcome difficulties (practical and cognitive) that she might encounter while carrying out the plan. Where testing and evaluation of possible solutions indicates that they are inappropriate, patient and therapist develop either modified or new solutions (D'Zurilla and Goldfried, 1971; D'Zurilla and Nezu, 1980; Hawton and Kirk, 1989).

Problem solving is easily learned and has been applied to a wide range of situations commonly encountered in psychiatric practice: example applications include difficulties associated with mood, anxiety, stress, substance abuse, psychotic symptoms, cancer, and other health problems (D'Zurilla and Nezu, 2001).

Behavioral activation/activity scheduling

The use of activity schedules serves to counteract the patient's loss of motivation, inactivity, and preoccupation with depressive ideas (Lewinsohn, 1974). As inactivity is associated with negative emotional states, the therapist may provide the patient with a schedule to plan activities in advance. By planning the day with the therapist, patients are often able to set meaningful goals. Comparison of the patient's record of the actual activities (compared with what was planned for the day) provides the therapist and patient with objective feedback about his achievements (A. T. Beck *et al.*, 1979). Activities that are scheduled can come from several domains: those that were associated with mastery, pleasure, or good mood, as well as new activities that may be rewarding or informative.

Another tool that the therapist may introduce is 'chunking.' As the patient is likely to perceive some tasks as insurmountably large, the therapist can help the patient to break (i.e., 'chunk') these larger tasks into smaller, more manageable ones (DeRubeis *et al.*, 2001). The use of 'graded tasks' is a related technique that the therapist may call upon in activity scheduling. Here, the patient first begins to schedule the easier or simpler aspects of larger tasks, before moving on to larger, more difficult tasks (A. T. Beck *et al.*, 1979; J. S. Beck, 1995). Activity scheduling is used to overcome the lethargy and anhedonia of depressed patients, bipolar patients, schizophrenic patients, and eating-disordered patients.

Relapse prevention

Many disorders are characterized by waxing and waning symptomatology. Preparing clients for the possibility that the problem symptoms will return

is, accordingly, an important phase of therapy. Central to the relapse prevention model is the distinction between a lapse and a relapse: a lapse is defined as a single isolated emergence of a symptom (e.g., a violation of abstinence), while a relapse is defined as a full-blown return of the pretreatment symptom levels (e.g., addictive behavior) (Marlatt and Gordon, 1995). As a lapse does not inexorably lead to relapse, the therapist and patient can work together to develop skills and strategies to neutralize the lapses that will undoubtedly occur following successful CBT treatment. An equally important application of relapse prevention techniques is to help patients test out whether they have developed realistic expectations of their own ability to cope outside therapy (Young *et al.*, 2003), as unrealistic optimism may be a risk factor for relapse (Alvarez-Conrad *et al.*, 2002).

Relapse prevention consists of four components: (1) identifying high-risk situations; (2) learning coping skills; (3) practicing coping skills; and (4) creating life-style balance. Following the ethos of relapse prevention, the therapist encourages the patient to frame inevitable setbacks as learning experiences within the therapeutic process rather than as personal failures or treatment failures. Therapist and patient anticipate and identify high-risk situations—those which are most likely to trigger relapse—and rehearse coping strategies that can be used in the event that such circumstances occur. Imaginal techniques, importantly, can be employed: the patient vividly imagines a situation that could trigger relapse, applying the coping strategies to see if they effectively neutralize the advancing dysphoria (Ellis and Newman, 1996).

Stress inoculation training within addictions is a specialized application of relapse prevention techniques. Relapse prevention, more generally, has been modified and included as a component of treatments for mood disorders, anxiety disorders, eating disorders, psychotic disorders, and suicidality.

Exposure therapy

Exposure techniques are used to treat fear, anxiety, or other intense negative emotional reactions. The therapist encourages the patient to confront situations that give rise to negative emotion. Typically, the patient will erroneously believe that these circumstances are personally quite dire, and she will actively avoid and escape cues that signal them. Exposure to these feared or avoided situations allows the patient to gather data that are inconsistent with such beliefs. That is to say, she comes to realize that the feared situation is actually safer than she has previously thought. She also learns that avoidance and maladaptive anxiety-neutralizing or ‘safety’ behaviors, such as ritualizing in obsessive-compulsive disorder (OCD) or taking antianxiety medication, are not required to cope with the anxiety. Exposure can be implemented *in vivo* or in imaginal mode. *In vivo* exposure involves actually encountering the feared situation or event, whereas imaginal exposure involves vividly imagining the event as if it were happening in the moment. The newest exposure method is virtual reality, which effectively produces vivid images and sensations of feared objects such as spiders (Garcia-Palacios *et al.*, 2002), as well as feared situations such as airplane flight (Maltby *et al.*, 2002), public speaking (Harris *et al.*, 2002), or the Vietnam War experience (Rothbaum *et al.*, 1999).

When planning exposure therapy, the therapist and patient identify a list of situations that are typically feared or avoided by the patient. The hierarchy should contain representative situations that are important to the treatment goals and the patient’s functioning. The situations are then ranked in order of difficulty for the patient. The therapy begins with exposure to one of the easier items on the list, then, in a careful and concerted fashion, the patient and therapist move through the hierarchy until the patient has been exposed to the most difficult item on the list. Cognitive-behavioral applications include exposure to bodily symptoms in panic disorder and OCD, exposure to feared situations in posttraumatic stress disorder (PTSD) and social phobia, exposure to feared objects in specific phobia, exposure to traumatic memories in PTSD, and exposure to worry in generalized anxiety disorder (GAD).

A behavioral experiment (J. S. Beck, 1995) is a therapeutic technique much in the spirit of exposure methods for anxiety; however, it is a more versatile intervention, applying across a range of problems and areas of

functioning. The main goal of a behavioral experiment, as with exposure, is to have the patient test out a specific, typically erroneous, belief or thought within a particular situation. When well-designed and carefully executed, such experiments play a pivotal role in the process of cognitive change (Newman *et al.*, 2001). Thus, the depressed patient can, for example, discover the inaccuracy of her belief that exercise is useless or the belief that she won’t enjoy a date (J. S. Beck, 1995). Likewise, a patient experiencing command hallucinations can discover the inaccuracy of his belief that the ‘voice’ is all-powerful or all-knowing (Chadwick *et al.*, 1996).

Effective cognitive-behavioral treatments by disorder

Cognitive and behavioral therapies were pioneered in the late 1950s and 1960s to treat mood and anxiety disorders (Kendall and Kriss, 1983; Meichenbaum, 1995; Dobson and Dozois, 2001). Accordingly, extensive efficacy literature exists that support the success of cognitive-behavioral treatments for major depressive disorder, panic disorder, OCD, social phobia, PTSD, and GAD. Cognitive-behavioral interventions have also been applied successfully to eating disorders, insomnia, substance abuse, paraphilias, and personality disorders. More recently, evidence has accrued indicating cognitive-behavioral treatments are efficacious, in conjunction with medication, for bipolar disorder and schizophrenia.

An exhaustive review is beyond the scope of the present chapter. In the discussion that follows, we briefly sketch the specifics of the effective cognitive-behavioral interventions for each disorder. Readers looking for a more extensive account of the empirical literature supporting the treatments are directed to any one of the publications that have arisen in the context of the empirically validated treatments movement (Roth and Fonagy, 1996; DeRubeis and Crits-Cristoph, 1998; Chambless and Hollon, 1998; Nathan and Gorman, 2002).

Mood disorders

Major depression

More behaviorally oriented approaches theorize that a person becomes depressed when she ceases producing behavior that elicits positive reinforcement (Lewinsohn and Gotlib, 1995). Behavioral interventions, therefore, primarily target daily activities, encouraging the patient to monitor and increase activity frequency. Additional techniques employed include improving social and communication skills, increasing adaptive behaviors, and decreasing negative life events (Craighead *et al.*, 2002b). While less studied than Beck’s cognitive therapy, the research that does exist, notably by Jacobson and colleagues, suggests that depressed patients treated with behavior-focused therapy show as much acute improvement as patients treated with a behavior-focused therapy that includes cognitive elements (Jacobson *et al.*, 1996). The equivalence between these treatments was still present at a 2-year follow-up (Gortner *et al.*, 1998).

Beck’s CBT (A. T. Beck *et al.*, 1979) conceptualizes depression in terms of cognitive processes (e.g., biases) and products (e.g., thoughts and beliefs) that produce and maintain depression. The therapy is directive and short term, focused upon changing the depressed patient’s negative thoughts regarding her self, world, and future. Behavioral methods (e.g., self-monitoring and behavioral activation) dominate early sessions. A shift to cognitively oriented techniques (e.g., cognitive assessment and restructuring) characterizes the mid-treatment sessions. Relapse prevention, finally, is the focal point of late session activity. In the acute reduction of depressive symptoms, CBT is better than a pill-placebo and equivalent to antidepressant medications (Rush *et al.*, 1977; Murphy *et al.*, 1986; Elkin *et al.*, 1989; Hollon *et al.*, 1992). On average, 50–70% of the patients who completed a course of CBT within these trials no longer met *Diagnostic and statistical manual of mental disorders* (DSM; American Psychiatric Association, 1994) criteria for major depressive disorder (Craighead *et al.*, 2002b). The effectiveness of CBT extends across a wide range of patient severity, including the most severely

depressed outpatients (DeRubeis *et al.*, 1999; in press). CBT also appears to prevent depressive relapses at least as effectively as continuous medication (Hollon *et al.*, in press).

McCullough's (2000) cognitive-behavioral analysis system of psychotherapy (CBASP) identifies the root of depression in the impact of behavior and thought upon interpersonal functioning. The patient is encouraged to consider the consequences of her behavior and to utilize social problem solving, among other techniques, to address interpersonal difficulties. In a large outcome study, 12 weeks of CBASP combined with antidepressant medication produces an acute reduction of depressive symptoms in chronically depressed patients that exceeded the reduction that either treatment achieved alone (Keller *et al.*, 2000).

Bipolar disorder

A significant proportion of bipolar patients experience frequent relapses despite adequate medication dosage and compliance. To address this, several manualized cognitive-behavioral treatments have been developed as an adjunct to medications for the treatment of bipolar disorder (Basco and Rush, 1996; Lam *et al.*, 1999; Newman *et al.*, 2002; Scott, 2002). All of these treatments are designed to be administered in conjunction with mood-stabilizing agents. Cognitive aspects of these treatments emphasize negative thinking patterns (e.g., self-statements and dysfunctional beliefs) in the genesis of mood swings. Behavioral aspects focus upon mood fluctuations and vegetative routines (e.g., sleep-wake cycles). The interventions aim to enhance the patient's engagement with the environment via a combination of psychoeducation about the disorder and medication, mood monitoring for episode cues and triggers, as well as the more standard techniques of behavioral activation and cognitive restructuring (Lam *et al.*, 1999; Newman *et al.*, 2002).

When compared with patients treated with mood stabilizers alone, patients treated with combined CBT and mood-stabilizing agents may experience longer latencies between manic episodes (Perry *et al.*, 1999), have fewer hospitalizations (Cochran, 1984), and demonstrate better medication compliance (Lam *et al.*, 2000). In a recent study (Lam *et al.*, 2003), medicated bipolar patients treated with 14 sessions of CBT experience fewer bipolar episodes, fewer days in a bipolar episode, and fewer episode-related admissions across a 12-month period, relative to patients treated with medication alone. The CBT-treated patients also showed higher social functioning, fewer mood symptoms, and less fluctuation in manic symptoms (Lam *et al.*, 2003).

Anxiety disorders

Panic disorder (with and without agoraphobia)

Clark (1996) postulates that panic attacks have a stereotypical phenomenology: first, the patient notices a somatic sensation that is unpleasant (e.g., rapid heart rate); she then begins focusing her attention on internal sensations and potential catastrophic misinterpretation of the sensations (e.g., 'I am going to die'); a vicious cycle ensues in which the patient experiences an escalation of the sense of danger as she interprets her symptoms as pathological, which spurs on the symptoms (e.g., heart races faster, breathing becomes more rapid); finally, despite the patient's every effort, the panic attack intensifies such that the patient believes that it will continue until disaster occurs. Clark's treatment (Clark, 1996) features two behavioral methods: (1) the patient is encouraged to induce the sensations (e.g., hyperventilation) and discover that these sensations do not presage a catastrophe, and (2) patients are encouraged to expose themselves to feared situations that they would otherwise avoid, situations that might lead to panic. However, the cognitive techniques play a more important therapeutic role within the treatment program: (1) developing an idiosyncratic model of panic in terms of the vicious cycle; (2) eliciting and testing maladaptive beliefs with regard to bodily sensations; (3) identifying more adaptive beliefs and evaluating them; and (4) modifying images (e.g., seeing one's own funeral) that spontaneously occur during panic. Craske and colleagues have developed a rather similar treatment that places more emphasis upon the behavioral aspects of the intervention (Craske *et al.*, 2000).

Clark (1996) reports that across five studies between 74% and 95% of patients assigned to cognitive therapy became panic free and maintained this status through the respective follow-up periods (6–15 months). In these trials, CBT outperformed wait-list control, applied relaxation, pharmacotherapy, and exposure therapy. Additionally, Barlow *et al.* (2000) report evidence that combining medicines with CBT undermines the efficacy of the CBT for panic, as CBT alone produces a more enduring effect (assessed at 12 months) than imipramine or imipramine + CBT.

Obsessive-compulsive disorder

Following the pioneering work of Victor Meyer in 1966, most behavioral and cognitive-behavioral treatments for OCD induce change via exposure and ritual prevention (Franklin and Foa, 2002). Within this behavioral framework, compulsions are conceptualized as safety behaviors (either overt or covert) that reduce the anxiety induced by obsessive ideation. Thus, repeated exposure to obsessional cues when combined with suspension of compulsive rituals should both habituate the anxiety response to obsessional thinking and extinguish the use of the safety behaviors. Treatments for OCD that feature exposure and ritual prevention may also include a cognitive component focused upon preventing relapse. Empirically, treatments that feature exposure and ritual prevention produce better symptom reduction in OCD patients than pill-placebo and anxiety management conditions, and symptom reductions that are equivalent to medication treatments (Franklin and Foa, 2002). The addition of cognitive techniques to exposure and response prevention appears to reduce relapse rates (Hiss *et al.*, 1994).

More cognitively based cognitive-behavioral approaches to OCD theorize that distorted thinking and beliefs support the OCD behavior (Frost and Steketee, 2002). Via Socratic questioning, among other techniques, the therapist helps the patient identify, evaluate, and alter problematic beliefs (Steketee and Barlow, 2002). Whether delivered in 12 sessions or 20 sessions, cognitively focused CBT produces reductions in OCD symptoms that are equivalent—both during active treatment (Van Oppen *et al.*, 1995) and at 1-year follow-up (Cottraux *et al.*, 2001)—to behaviorally focused CBT that emphasizes exposure and ritual prevention. Belief-focused CBT for OCD appears to be especially useful for patients with mental obsessions, and works better as an individualized (i.e., as opposed to group) intervention (Steketee and Barlow, 2002).

Social phobia

Behaviorally oriented models of social phobia emphasize social learning (Hoffman and Barlow, 2002). The socially phobic individual, according to this behavioral formulation, becomes hyperaroused at the prospect of social situations. She learns, moreover, that avoiding and escaping social situations brings a palpable relief in anxiety. However, avoidance and escape behavior have the unintended consequence of maintaining the phobia. Cognitive-behavioral therapists, accordingly, employ exposure methods to habituate anxiety and, thereby, enable the patient to function in the presence of other people (Hoffman and Barlow, 2002). If the patient is deficient in verbal and nonverbal social skills, a social skills training intervention can be included in the treatment (Heimberg and Juster, 1995; Barlow *et al.*, 2002).

Cognitively oriented theorists (Clark and Wells, 1995) propose that social phobia is mediated by maladaptive beliefs about social performance. Specifically, the patient believes that she is apt to behave inappropriately in social situations and that this hapless performance will lead to rejection, loss of status, etc. Preoccupied with negative thoughts about herself and overly concerned with the perceptions others have of her, the social phobic finds social situations noxious and difficult to manage. Cognitive interventions target the negative beliefs about self, attempting to help the patient construct a more accurate image of herself as a social actor (Hoffman and Barlow, 2002).

While exposure and cognitive restructuring produce more improvement in symptoms than a wait-list control group, the combination is better still (Barlow *et al.*, 2002). The combined treatment, delivered in a group context over 12 weeks, also beats a nonspecific therapy and pill-placebo, while demonstrating equal effectiveness with medication that is still present at a 6-month follow-up (Heimberg *et al.*, 1998).

Posttraumatic stress disorder

Behaviorally oriented models propose that avoidance and escape behavior maintain the traumatic response. Exposure—imaginal and/or *in vivo*—is the principal behavioral intervention for PTSD. If imaginal exposure is employed, the patient relives the trauma in imagery, focusing upon key behavioral, emotional, sensory, and cognitive aspects of the experience. For *in-vivo* exposure, patient and therapist construct a hierarchy of feared/avoided situations to be exposed one by one. The goal of exposure is to help the patient master and stop avoiding the cues associated with the traumatic event (Keane and Barlow, 2002). Several studies have shown the efficacy of exposure interventions for PTSD. Foa *et al.* (1991), for example, have demonstrated that rape victims with PTSD treated with exposure—relative to anxiety management, supportive counseling wait-list patients—evidence the fewest PTSD symptoms at a 3.5-month follow-up.

Thrasher *et al.* (1996) postulate that PTSD is maintained by beliefs the patient holds regarding self, the world, the trauma, and the future. Thought identifying, evidence gathering, Socratic questioning, and other standard cognitive therapy techniques are employed in the treatment (A. T. Beck *et al.*, 1979, 1985; J. S. Beck, 1995). Marks *et al.* (1998) report an advantage for PTSD patients treated with 10 sessions of either prolonged exposure or cognitive therapy or the combination of exposure and cognitive restructuring: all three groups demonstrated a greater reduction in symptoms than patients treated with relaxation training; these group differences were still evident at a 6-month follow-up (Marks *et al.*, 1998; Lovell *et al.*, 2001). Thus, while exposure is clearly efficacious, it is not necessary to achieve lasting reduction of PTSD symptoms.

Generalized anxiety disorder

Behavioral approaches propose that anxiety is maintained by avoidance of anxiety producing situations, personal reactions to anxiety, and loss of self-confidence. The interventions often include psychoeducation, applied relaxation, imaginal and *in vivo* exposure, and behavioral activation (Roemer *et al.*, 2002). A. T. Beck *et al.* (1985), on the other hand, argue that anxiety is perpetuated by anxious thoughts and a lack of self-confidence, which can be controlled by helping the patient to recognize anxious thoughts, seeking helpful alternatives, and taking action to test these alternatives. Empirically, several studies find that behavioral and cognitive-behavioral treatments reduce anxiety equally well, as both achieve superior results to wait-list and nonspecific control groups (Barlow *et al.*, 2002). A notable study by Butler *et al.* (1991) found that patients treated with CBT showed less anxiety than patients treated with an exposure-based treatment. CBT has also been found to produce better outcomes for patients with GAD than psychodynamic therapy and benzodiazepines (Roemer *et al.*, 2002).

Specific phobia

The theoretical account of specific phobias is formulated in terms of the elementary learning processes of classical and instrumental conditioning (c.f. for a discussion of this model and further elaborations see Bouton *et al.*, 2001). The phobic stimulus is characterized as a conditioned stimulus (CS) that predicts the coming of an undesirable unconditioned stimulus (US). As situations that are likely to elicit the phobic CS are avoided, and as chance encounters with the phobic stimulus are readily escaped, the CS-US relationship is not allowed to extinguish. Moreover, avoidant and escape behaviors are maintained instrumentally via negative reinforcement (i.e., by avoiding or escaping the situation, the feared undesirable stimulus is not experienced, which increases the likelihood of avoiding and escaping in the future). Behavior treatment for specific phobia entails imaginal and/or *in vivo* exposure to the phobic stimulus (Antony and Barlow, 2002). Barlow *et al.* (2002) report that exposure-based treatments are the treatment of choice, having shown efficacy for animal phobias, fear of heights, fear of flying, and blood-injury phobias. Adding cognitive restructuring to exposure appears to produce better results than exposure alone for patients with dental phobias and patients with claustrophobia (Antony and Barlow, 2002).

Bulimia nervosa (BN)

The cognitive-behavioral model of bulimia centers upon a complex of behavioral and cognitive factors (Fairburn *et al.*, 1993; Fairburn, 1997; Wilson *et al.*, 1997). Both cognitive and behavioral techniques are employed to replace extreme dietary restraint with a normal pattern of eating. Dysfunctional attitudes about body shape, weight, and self are also addressed. Wilson and Fairburn (2002) assert that CBT is the treatment of choice for BN, as it has been found to be more effective than control and nonspecific therapies, equally good or better than other psychotherapies (e.g., interpersonal psychotherapy, supportive therapy, stress management therapy), and equally good or better than pharmacotherapy. A typical result: 50% of the CBT-treated patients stop bingeing and purging, effects that are maintained across 6-month and 1-year follow-up periods (Wilson and Fairburn, 2002). Moreover, the combination of the behavioral and cognitive components of the treatment produces better outcomes than the behavioral components alone.

Binge-eating disorder (BED)

Cognitive-behavioral and strict behavioral weight loss programs have been developed to treat BED. The CBT is based upon the Wilson and Fairburn model for bulimia. Behavioral weight loss introduces caloric restriction, improved nutrition, and increasing physical activity as the method of intervention. Empirically, across medication and psychotherapy trials, a very high placebo response rate is seen in studies. Additionally, CBT and interpersonal therapy appear the same, and only modestly efficacious. Behavioral weight loss program has been less effectively evaluated, though there is evidence that it produces more weight-loss than CBT (Wilson and Fairburn, 2002).

Anorexia nervosa (AN)

Interventions featuring operant conditioning have been implemented with anorexia in inpatient settings. Individualized reinforcers are provided for each 0.5 kg of weight gained. Such programs result in 80% of the AN patients reaching their target weight (Wilson and Fairburn, 2002). Fairburn's (1997) effective cognitive-behavioral model for BN has also been applied to patients with AN. Results thus far are modest: CBT patients are better off than control-treated patients, but still significantly underweight (Channon *et al.*, 1989; Serfaty *et al.*, 1999). Vitousek (2002) discusses current ideas about the application of CBT to anorexia nervosa.

Schizophrenia/schizoaffective disorder

Since the 1960s, several hundred studies have been conducted investigating the impact of behavioral methods (e.g., reinforcement schedules, stimulus control, social modeling, shaping, and fading) upon the full gamut of symptoms and behavior associated with the disorder. Most of these studies utilize A-B-A designs, in which the subject serves as her own control and the active treatment is introduced, and then taken away (Kopelowicz *et al.*, 2002). There is also quite a degree of empirical support for token economy based social learning programs on inpatient wards (Craig *et al.*, 2003). Paul and Lentz (1977), for example, found that a token economy produced changes in symptoms, daily activities, social behavior, and discharge, among other outcomes, as compared with a standard ward.

Social skills training is another behavioral intervention that has an extensive literature. The primary goal of a social skills intervention is to enable individuals with severe mental illness to gain skills that will help them function within their communities (Craig *et al.*, 2003). Typically the intervention is conducted in a group format, with outpatients who are stabilized on medication. The intervention targets the following skills: complying with the use of antipsychotic medication, communicating with mental health professionals, recognizing prodromal signs of relapse, developing a relapse prevention plan, coping with persistent psychotic symptoms, avoiding street drugs and alcohol, and developing leisure skills and conversational skills (Kopelowicz *et al.*, 2002). Empirical evidence supports the idea that social skills programs train skills that are detectable 1-year after the end

of treatment. Relapse rates have also been reduced by social skills training relative to medication alone (Hogarty *et al.*, 1986; Craig *et al.*, 2003).

In the UK, several research groups have devised cognitive-behavioral treatment programs to treat the positive symptoms of schizophrenia (Kingdon and Turkington, 1994; Fowler *et al.*, 1995; Chadwick *et al.*, 1996). Delusions, within the cognitive formulation, are beliefs that can be identified, subjected to evidence gathering, and modified. Likewise, distressing auditory hallucinations are percepts about which the patient manifests dysfunctional beliefs (e.g., the voice is omnipotent and powerful) and behavior patterns (e.g., doing what the voice says). Modifications to traditional cognitive-behavioral approaches include a more extensive use of techniques to keep the patient engaged in therapy, flexible use of session structuring (e.g., more or less structure), and a minimally confrontational approach to belief modification (Nelson, 1997).

CBT has demonstrated efficacy for chronic medication-resistant positive symptoms of schizophrenia and schizoaffective disorder (Martindale *et al.*, 2003). Patients receiving CBT adjunctive to medication and case management show a larger reduction in psychotic symptoms than do patients receiving medication and case management alone (Tarrrier *et al.*, 1993, 1998, 1999, 2000; Kuipers *et al.*, 1997, 1998; Rector *et al.*, 2003) or patients receiving an active control treatment (Tarrrier *et al.*, 1998, 1999, 2000; Pinto *et al.*, 1999; Sensky *et al.*, 2000). Rector *et al.* (2003) have also found that, relative to routine care, CBT reduces chronic negative symptoms.

CBT has also shown efficacy for the acute symptoms of psychosis. Patients within an acute psychotic episode treated with CBT and routine care improve more rapidly than patients treated with routine care alone or routine care plus active control treatment (Drury *et al.*, 1996a,b; Lewis *et al.*, 2002). CBT also has demonstrated efficacy in the prevention of future psychotic episodes (Drury *et al.*, 1996b; Gumley *et al.*, 2003). Additionally, there is emerging evidence that CBT can delay the onset of the first episode of psychosis, either in conjunction with medicines (McGorry *et al.*, 2002) or without medicines (Morrison *et al.*, 2002). Citing the growing evidence for an effective role of CBT in psychosis (cf., Rector and Beck, 2001), the National Health Service in the UK has recently mandated service providers to include CBT as an option for all individuals being treated for schizophrenia (National Institute of Clinical Excellence, 2002).

Substance abuse

Behavioral approaches for managing substance abuse theorize either from a base of classical or operant conditioning. Cue exposure postulates, in a classical vein, that conditions (e.g., neutral stimuli or CSs) antecedent to drug or alcohol use come, through repeated pairings with drugs or alcohol, to produce conditioned responses that encourage further drinking. The intervention is exposure: the patient experiences the cues without drinking or taking drugs, which, theoretically, extinguishes the Pavlovian spur to use the substances. Within the alcohol abuse literature, cue exposure has been shown to modestly reduce drinking frequency when compared with standard treatments, but has not produced abstinence (Kaddan, 2001).

In contrast to cue exposure, contingency management (CM) is a strict Skinnerian enterprise. Consequences of use (e.g., the feelings that the substance imparts or social factors) are theorized to maintain or reinforce abuse. CM promotes abstinence by introducing a new reinforcement schedule. In methadone clinics, doses of methadone can serve as reinforcers for heroin abstinence. However, for cocaine abusers, vouchers exchangeable for valuable goods and services serve to reinforce abstinence behavior. Typically, an escalating schedule of reinforcement is set up such that each specimen of cocaine-free urine is reinforced with a larger reward. CM produces rapid results (e.g., 2 days of abstinence for \$100 voucher in 40 of 50 addicts), which are not maintained after CM is stopped (Epstein *et al.*, 2003). CM proves more problematic to apply to alcohol abuse, as it is difficult to verify objectively whether patients have had a drink within the last 24 hours (Kadden, 2001).

Cognitive interventions for substance abuse target beliefs and thoughts as the factors that maintain substance abuse (A. T. Beck *et al.*, 1993). Interventions encourage the abusing patient, first, to identify thoughts,

feelings and events that precede and follow each instance of alcohol or drug use. Next, the patient practices resisting and avoiding specific cues associated with using. Additionally, the patient practices alternative strategies for dealing with negative affect and attempts to fill the role of the drug with alternative reinforcers (A. T. Beck *et al.*, 1993).

Within the alcohol abuse literature, CBT is called coping skills training. A large number of studies support the efficacy of coping skills training for alcohol abuse (Finney and Moos, 2002). For drug abuse, Carroll and colleagues found that CBT does not reduce acute cocaine abuse at a level that is distinguishable from a clinical management control condition. However, over 6-month and 12-month follow-up periods, CBT-treated cocaine abusers fared substantially better than control subjects, suggesting that the skills imparted by CBT take time to be introduced into daily behavior (Carroll *et al.*, 1994). A recent study finds that adding CBT to CM for cocaine abuse is a promising treatment package: although CBT and CM together perform less well than either treatment alone, at the 12-month follow-up, the patients who received the combined treatment are abstaining from cocaine the most (Epstein *et al.*, 2003).

Somatoform/factitious disorders

For patients suffering hypochondriasis, Clark *et al.* (1998) have devised a cognitive-behavioral treatment that reduces attention to distressing bodily sensations, corrects misinformation and exaggerated beliefs, and addresses cognitive processes (e.g., selective attention, misattribution, etc.) that maintain disease fears. This CBT package produces better outcomes than no treatment or nonspecific treatments such as relaxation (Clark *et al.*, 1998; Fava *et al.*, 2000). For body dysmorphic disorder, cognitive-behavioral approaches employ an eclectic collection of cognitive and behavioral techniques: patients identify and modify distorted body perceptions, interrupt critical self-thoughts, expose themselves to anxiety provoking situations, and practice response prevention. Group or individual CBT for body dysmorphic disorder is better than no treatment, producing response rates of 50–75% (Simon, 2002). Finally, cognitive-behavioral interventions for somatoform pain include validation that the pain is real, relaxation training, activity scheduling, reinforcement for nonpain behaviors, and cognitive restructuring. Whether implemented as a group or individual intervention, about 30–60% of patients treated with CBT report significant reductions in pain (Simon, 2002).

Personality disorders

Several sophisticated cognitive-behavioral approaches have been developed to address the problems and challenges of personality disorders (A. T. Beck *et al.*, 1990; Linehan, 1993; Young, 1994). It is currently difficult, however, to determine the efficacy of many of these treatments for specific personality disorders, due to a lack of published empirical research (Crits-Cristoph and Barber, 2002). Avoidant personality disorder is one exception to this general trend. In a 10-week study of behaviorally oriented group interventions, Alden (1989) discovered that graded exposure, social skills training, and intimacy focused social skills training conditions all produce better outcomes in patients with avoidant personality disorder than a wait-list group. While improvement was clinically significant, the avoidant patients still tended to fall short of normal functioning. In a further analysis of the data, Alden and colleagues discovered that patient presenting issues moderates the effectiveness of the behavioral treatments; that is, graded exposure worked best for the distrustful and angry patients, while intimacy focused social skills training appeared more effective for the patients who feel beholden to others (Crits-Cristoph and Barber, 2002).

Another empirically supported treatment is Linehan's (1993) dialectical behavior therapy (DBT): a complex cognitive-behavioral treatment for borderline personality disorder that includes group and individual sessions. Group sessions are primarily psychoeducational: teaching interpersonal skills, distress tolerance/reality acceptance, and emotional regulation skills. Individual sessions involve directive problem-solving and supportive techniques. Empirically, DBT produces lower rates of attrition, less parasuicidal

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behavior, and fewer hospitalizations than treatment as usual (Linehan *et al.*, 1991). DBT also appears to be effective in both outpatient and inpatient settings, and has been found to be superior to a community control group (Koerner and Linehan, 2002).

Limitations and contraindications

It is safe to say that CBT has proved quite versatile, having been successfully applied to a wide spectrum of psychological difficulty. The limits of cognitive therapy have yet to be empirically established. However, several factors may make the cognitive-behavioral approach less effective—in fact, these factors may interfere with the efficacy of *any* psychotherapeutic approach. Low patient motivation, unless appropriately addressed, can impede progress, especially among patients who hold beliefs that they will suffer significant adverse consequences if they comply with treatment. Patients who have positive beliefs about dysfunctional aspects of their disorder likewise need special intervention. Examples include the schizophrenic patient's grandiose delusion (e.g., one who believes he is being persecuted because he is a great deity) and the anorexic patient's social beliefs (e.g., she is superior to others).

Even when motivation is present, the success of cognitive-behavioral methods can be hampered by mental facility. Severely retarded individuals, for example, might not be capable of the reasoning entailed in cognitive restructuring. Self-monitoring might also prove to be too demanding a task for a person with severe intellectual impairment. Behavioral methods may be more appropriate for these individuals than cognitive strategies. Psychopaths (Lykken, 1995) might also have difficulty with certain cognitive interventions; when performing a goal-directed task, they may be less able to attend to peripheral information or to self-regulate, especially under conditions of neutral motivation (Newman *et al.*, 1997).

Finally, cultural differences may impact efficacy if therapists do not tailor the therapy appropriately. Therapists must understand, for example, how these differences may affect the building of a therapeutic alliance and how patients' cultural beliefs affect their thinking and reactions. Different thinking styles and stylistic preferences must often be accommodated for patients to progress.

Future directions

The last 20 years have seen incredible growth in cognitive-behavioral therapies as treatments for psychiatric disorders. What does the future hold? Much current research aims to improve the effectiveness of existing cognitive-behavioral interventions. There is an ongoing attempt, for example, to make cognitive-behavioral interventions more useful in the community (Stirman *et al.*, 2003). Thus, investigators are focusing upon issues of comorbidity and dissemination. Much of the empirical literature that supports cognitive-behavioral interventions for specific disorders has involved screening out a variety of patients with comorbid psychopathology. Newer studies are investigating cognitive-behavioral applications specifically designed for individuals with comorbid diagnoses. An example of this is a current trial being undertaken by Edna Foa and her colleagues that aims to co-jointly treat social phobia and depression (J. D. Huppert, personal communication 2003). Yet another trend involves combining differing treatment modalities. Borkovec, for example, has been piloting a treatment for GAD that combines the best of cognitive-behavioral and interpersonal methods (Roemer *et al.*, 2002). A further example of cross-modality therapeutic synthesis involves the methods of mindfulness meditation, which are being applied to relapse prevention after recovery for depression (Segal *et al.*, 2002) and schizophrenia (D. G. Kingdon, personal communication 2003).

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