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# 2

## Cognitive-Behavioral Theory

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Cognitive-behavioral therapy (CBT) approaches are rooted in the fundamental principle that an individual's cognitions play a significant and primary role in the development and maintenance of emotional and behavioral responses to life situations. In CBT models, cognitive processes, in the form of meanings, judgments, appraisals, and assumptions associated with specific life events, are the primary determinants of one's feelings and actions in response to life events and thus either facilitate or hinder the process of adaptation. CBT includes a range of approaches that have been shown to be efficacious in treating posttraumatic stress disorder (PTSD). In this chapter, we present an overview of leading cognitive-behavioral approaches used in the treatment of PTSD. The treatment approaches discussed here include cognitive therapy/reframing, exposure therapies (prolonged exposure [PE] and virtual reality exposure [VRE]), stress inoculation training (SIT), eye movement desensitization and reprocessing (EMDR), and Briere's self-trauma model (1992, 1996, 2002). In our discussion of each of these approaches, we include a description of the key assumptions that frame the particular approach and the main strategies associated with the treatment. In the final section of this chapter, we review the growing body of research that has evaluated the effectiveness of cognitive-behavioral treatments for PTSD.

### CBT

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Three fundamental assumptions underscore cognitive-behavioral models of treatment (D. Dobson & Dobson, 2009; K. Dobson & Dozois, 2001). The first assumption is that cognitive processes and content are accessible and can be known. Although in many instances specific thoughts or beliefs may

not be in one's immediate awareness, with proper training and practice individuals can become aware of them. The second key assumption is that our thinking mediates the way that we respond to environmental cues. From this perspective, people do not just react emotionally or behaviorally to life events. Instead, CBT holds that the way we think about our reality is central to how we react to that reality. The third fundamental assumption of CBT is that such cognitions can be intentionally targeted, modified, and changed. Consequently, when such cognitions are changed in the direction of more rational, realistic, and balanced thinking, the individual's symptoms will be relieved, and the person will have increased adaptability and functionality. This change can occur as a result of the individual's working alone, perhaps with the use of self-help material, or through engagement with a trained practitioner in one of the various CBT approaches.

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## CBT and PTSD

Traditionally, CBT approaches to treatment of PTSD have been driven by two broad theoretical orientations that aim to explain the way fear is developed and processed. These orientations are learning theory (Mowrer, 1960; Wolpe, 1990) and emotional-processing theory (Clark & Ehlers, 2004; Ehlers & Clark, 2000; Foa & Kozak, 1986; Foa, Steketee, & Rothbaum, 1989; Hembree & Foa, 2004; Rachman, 1980).

### Learning Theories

Learning theories are most often associated with behavioral approaches that focus on modifying behavior by manipulating environmental cues (i.e., antecedents or reinforcers). Learning theories have focused on explaining how the mechanisms of fear and avoidance of the traumatic memory associated with PTSD are conditioned, activated, and reinforced. From this perspective, unhealthy fears may develop from a single traumatic episode or from exposure to a series of unpleasant events (Wolpe, 1990). Fears can be acquired on the basis of association through classical conditioning, or they can be learned vicariously through the process of observation (Bandura, 1977, 1986). That is, a person may learn to react with fear by observing others' fearful reactions to specific objects or events.

Mowrer's (1956) two-factor theory represents one of the first attempts to provide a behavioral explanation for the acquisition and maintenance of fear associated with PTSD (Cahill, Rothbaum, Resick, & Follette, 2009; Hembree & Foa, 2004). Mowrer suggested that emotions are learned through a two-part process that includes both classical and operant conditioning. Anticipatory fear is acquired through the process of classical conditioning, and relief from this fear takes place when the danger signal is terminated through active

avoidance of the feared object or situation, thus creating a secondary reinforcement of the avoidance behavior (i.e., operant conditioning) (Feather, 1963). In the classical conditioning model, unhealthy fear may develop when an otherwise neutral condition (e.g., being in an elevator) is associated with an unpleasant or dangerous outcome (e.g., an assault). In this case the person may find himself or herself reacting to the neutral condition with the same level of fear associated with the dangerous event. Furthermore, it is possible that through the process of generalization the fear and avoidance may then expand to other places or situations that remind the individual of the trauma. These reminders or thoughts may trigger the same anticipatory fear response and engender the same avoidance behaviors associated with the original stimulus. Moreover, the avoidant behavior becomes operantly conditioned as it provides the person with relief from the unpleasant experience of fear and anxiety.

Although traditional learning theories explain the acquisition of fear and the process of avoidance seen in PTSD, these theories are criticized for falling short of explaining the full spectrum of PTSD symptoms (see Foa et al., 1989; Hembree & Foa, 2004). Of particular note is the inability to account for generalization of fear across dissimilar situations and the failure to include thoughts, appraisals, and meaning concepts (i.e., dangerousness) associated with the traumatic memory.

## Emotional-Processing Theory

Emotional-processing theory (Foa & Kozak, 1986; Foa & Riggs, 1993; Rachman, 1980) provides an integrated framework to analyze and explain the onset and maintenance of PTSD. This theoretical approach combines insight from learning, cognitive, and behavioral theories of PTSD and builds on the idea that it is not unusual for emotional experiences to continue to affect one's behaviors long after the event originally associated with the emotion has passed. This emotional reexperiencing can engender a pattern of avoidance of the trauma memory and sustain the presence of PTSD (Foa et al., 1989; Foa & Jaycox, 1999). Foa and Kozak suggest that emotions are represented by information structures in memory. In the case of fear, the associated memory includes information specific to the feared stimulus, overt responses (i.e., verbal, physiological, and behavioral) to the stimulus, and the meaning that the individual has attached to that stimulus. The overall function of this information structure is to help the individual escape or avoid the perceived threat or danger (Foa & Kozak, 1986). Therefore, it is the meaning attached to the memory, usually in the form of a feeling of dangerousness or some catastrophic outcome (e.g., "I will die"; "I will lose control"; "I will faint") that prevents the individual from confronting the traumatic memory and effectively processing the information, emotionally and cognitively, underlying the memory. Thus, the individual reacts to the memory with the

same cognitive, affective, and behavioral responses associated with the original trauma. In effect, the individual fear structure is virtually stuck in a moment in time that has now passed but that has not been processed or digested in an effective and healthy manner.

Foa and Kozak (1986) defined emotional processing as the activation and modification of the memory structure that underlies the fear. This process includes, first, creating access to the complete memory of the event to reactivate the fear structure through the process of exposure (i.e., imaginal, in vivo, virtual reality) and, second, helping the individual access new information incompatible with the existing maladaptive information to modify the fear structure to engender a healthier response to the memory.

## Cognitive Conceptualization of PTSD

Evidence suggests that the way individuals emotionally and cognitively process a traumatic experience contributes to the development and maintenance of PTSD (Clark & Ehlers, 2004; Ehlers & Clark, 2000; Foa & Kozak, 1986; Smucker, 1997). Persistent PTSD occurs when an individual processes a traumatic event in a manner that leads the person to recall the event with the same sense of seriousness and danger felt at the time of the original trauma (Clark & Ehlers, 2004; Ehlers & Clark, 2000). It is the individual's interpretation and appraisal of the trauma and the ensuing memory that contribute to persistent PTSD. Therefore, cognitive therapy for PTSD focuses on teaching clients how to identify, evaluate, and reframe the dysfunctional cognitions related to the specific trauma and its sequelae that contribute to the intense negative emotions and behavioral reactions (Ehlers & Clark, 2000; Hembree & Foa, 2004). Yet not all individuals who experience trauma develop PTSD (Foa, Ehlers, Clark, Tolin, & Orsillo, 1999). Why is that?

Foa and Riggs (1993) and Foa and Rothbaum (1998) suggested that persons with PTSD are characterized by two flawed central beliefs that relate to how these individuals evaluate themselves and the world. The first belief is that the self is incompetent. The second belief, reflecting the individual's worldview, is that the world is a threatening and dangerous place. For these individuals, the traumatic event often serves as confirmation of their beliefs antedating the trauma. This interpretation is supported by Dunmore, Clark, and Ehlers (1999), who studied cognitive factors that contributed to the onset and maintenance of PTSD in 92 assault victims and compared those who developed PTSD with those who did not. They reported that cognitive factors associated with the onset and persistence of PTSD included beliefs relative to devaluation of the personality (e.g., "I am a loser"; "I am disgusting"), one's safety (e.g., "There is no safe place"; "People have bad intentions"), and the world (e.g., "The world is dark"; "There is no justice in this world"). Individuals who possess these beliefs would then tend to feel a more persistent and intense sense of apprehension and uncertainty and would be more

likely to interpret traumatic events as being characteristic of a dangerous world. Such interpretation may result in fear and avoidance of what is perceived as a dangerous place. Second, the view of the self as incompetent diminishes the person's ability to cope with adversity. An individual who sees the self in this way is less likely to feel capable of coping with the pain of the actual trauma or the unpleasantness of the memory and would instead feel overwhelmed and crushed by the weight of the trauma memory.

A central theme contributing to the onset and persistence of PTSD is a perception of ongoing threat, even when the trauma occurred in the distant past (Dunmore et al., 1999). Furthermore, the expectation of a threat activates and maintains the disabling anxiety associated with PTSD. Other individuals are able to frame a traumatic event as a unique and isolated occurrence that does not alter their broader views of the world or self (Clark & Ehlers, 2004). These individuals are more likely to process the trauma emotionally and cognitively in a way that leads to healing and successful recovery.

The cognitive conceptualization of PTSD acknowledges the presence of overly active danger schemas (A. T. Beck, Emery, & Greenberger, 1985; Ehlers & Clark, 2000; Hembree & Foa, 2004). A person with PTSD is likely to have recurrent false alarms brought on by an exaggerated sense of danger. As we have already noted, this can happen even if the trauma happened long ago. Researchers have advanced several explanations of why some individuals experience this persistent, exaggerated sense of threat. One explanation is the process of avoidance and "seeking safety" (Dunmore et al., 1999; Najavits, Weiss, Shaw, & Muentz, 1998). Retreating to a safe place represents a less threatening alternative than facing the situations, places, or experiences that activate fears, vulnerabilities, and negative beliefs about oneself and one's environment. As Foa et al. (1989) have argued, this process may work for some anxieties (e.g., phobias). However, the varying and unstable nature of situations that engender fear in the person with PTSD makes the attainment of a safe place, which lessens the anxiety through the avoidance of feared situations, more difficult. Nonetheless, avoidance of situations that the person associates with the original trauma does not allow the person with PTSD opportunities to evaluate the validity of erroneous beliefs or to gain corrective emotional experiences.

## Cognitive Therapy for PTSD

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The goal of cognitive therapy for PTSD is to teach clients cognitive-reframing strategies. Such techniques help clients to identify and restructure trauma-related, irrational beliefs that engender unhealthy negative emotions and lead to dysfunctional behaviors, typically in response to memories of, or situations associated with, the trauma (Hembree & Foa, 2004). Cognitive therapy for

PTSD may also include some form of exposure to the trauma memory in the form of either repeated exposure to related images (Foa, Rothbaum, Riggs, & Murdock, 1991) or a written narrative of the trauma (Resick & Schnicke, 1992). The process described by Hembree and Foa and rooted in Beck's cognitive therapy model (A. T. Beck, 1976; A. T. Beck et al., 1985) includes identifying the irrational and dysfunctional cognitions that fuel the negative emotional and behavioral responses, systematically evaluating the validity and functionality of such cognitions by assessing evidence that both supports and contradicts their validity and functionality, and summarizing and synthesizing the uncovered evidence and using it to reframe the irrational thoughts into more realistic, balanced, rational, and functional perceptions of self, the world, and the future. In cognitive therapy there are two mechanisms that are central to the therapeutic process: collaborative empiricism and the Socratic method (A. T. Beck et al., 1985; J. S. Beck, 1995). Collaborative empiricism, or collaborative hypothesis testing (Scott & Freeman, 2010), refers to the formation of a therapeutic alliance in which the client and therapist work together, using Socratic questioning to uncover and evaluate supporting or contradictory evidence of the targeted belief. The Socratic method, also called Socratic questioning, employs the posing of open-ended questions to help the client recover information/knowledge that he or she already possesses and that is relevant to the targeted problem. The objective is a reevaluation of a previously held erroneous conclusion and the construction of a new perspective (Scott & Freeman, 2010). Cognitive therapy models to treat PTSD are similar in that they are trauma focused and include education as well as cognitive and exposure strategies (Clark & Ehlers, 2004; Ehlers & Clark, 2000; Resick & Schnicke, 1992).

## Ehlers and Clark Model

In their CBT model for the treatment of PTSD, Clark and Ehlers (2004) and Ehlers and Clark (2000) specified three therapy goals for the treatment of PTSD: (a) reduce intrusions and reexperiencing of the traumatic memory, (b) modify excessive negative appraisals, and (c) eliminate dysfunctional cognitive and behavioral strategies. Ehlers and Clark proposed a treatment model that incorporates the following elements:

- *Detailed assessment interview.* The objectives of this process are to identify possible problematic cognitive themes that need to be addressed in treatment, specify the worst aspects and most painful moment associated with the trauma, underscore predominant emotions associated with the event, illuminate problematic appraisals of the trauma sequelae, identify specifics of the problematic and dysfunctional cognitive and behavioral attempts to cope (i.e., how has the client tried to put the trauma behind him or her, how does the client deal with intrusions, and what does the client fear

will happen if he or she allows him- or herself to dwell on the trauma?), and identify the characteristics of the trauma memory and intrusions.

- *Rationale for treatment.* A key aspect of cognitive therapy is to ensure that the client understands the rationale behind the therapeutic strategies employed. This rationale should include an explanation of the nature of PTSD and its symptoms; of how the client's attempts to cope with the trauma, most likely through avoidance, may produce temporary relief from anxiety but can indeed contribute to maintaining the symptoms of the disorder; and that to counteract this process of avoidance and fully process the trauma, it will be necessary to confront the unpleasant memory.

- *Thought-suppression experiment.* This strategy allows the client to understand how attempts to suppress intrusive memories by pushing them away from the consciousness paradoxically reinforces and increases the impact of such memories. Instead, a client is encouraged to use an alternative approach and not to try to push the memory from consciousness but rather to accept it, observe it, and allow it to come and go, as if the client were watching a twig floating, bobbing up and down, and passing along in a stream of water.

- *Education.* Ehlers and Clark (2000) suggested educating and providing the client with access to information that may help rectify mistaken assumptions about possible physical damage associated with the trauma.

- *Reclaiming one's life.* This strategy aims to help the client reclaim aspects (e.g., activities and other pursuits) of his or her life that were given up as a result of the trauma. As Ehlers and Clark (2000) suggested, this process helps the client become "unstuck" from that moment in the past when he or she experienced the trauma. Instead, the client attempts to reclaim the former self by reconnecting with lost interests and social contacts.

- *Reliving with cognitive restructuring.* Cognitive behavioral approaches to the treatment of PTSD generally include some form of reliving or revisiting the trauma. A key aspect of this step is to make sure that the client fully understands the rationale behind this strategy. The client is then asked to revisit the trauma, recounting the original event with as much detail and as vividly as possible. This helps the client construct a detailed account of the trauma, while at the same time connecting with the feelings and cognitions associated with it. This process is discussed in more detail in the Exposure Therapies section.

- *In-vivo exposure.* The process of in-vivo exposure revolves around revisiting reminders of the original trauma that have been systematically avoided in the past. This may include exposure to the site, smells, sounds, activities, and other powerful reminders of the trauma. This process helps the client to discriminate between the harmless reminders of the trauma and the danger of the actual trauma, to challenge patterns of overgeneralization

that have led the client to avoid elements unrelated to the original trauma, and to challenge the various irrational appraisals attached to the sequelae of the trauma.

- *Identifying triggers of intrusive memories or emotions.* This procedure aims to enhance the process of discriminating between past stimuli at the time of the trauma and present stimuli. The client is encouraged to monitor carefully the context within which the intrusions occur and the triggers (e.g., sensations, feelings, situations, cognitions) associated with these intrusions. This is followed by a detailed discussion of similarities and differences of the past and present context of the triggers, facilitating a higher level of stimulus discrimination.

- *Imagery techniques.* Ehlers and Clark (2000) suggested the use of imagery to help the client elaborate and change the meaning of the trauma memory. In a way, imagery may help the client tie loose ends (e.g., saying good-bye to a friend or relative) and help bring closure to aspects of the trauma.

## Cognitive Processing Therapy (CPT)

CPT was developed to help rape victims address the symptoms of PTSD (Resick & Schnicke, 1992). At the core of CPT's conceptual framework of PTSD is the conflict that may exist between old information stored by the individual in various schemata and new information derived from the trauma. In cases in which a person acquires new information that does not conform to existing schemata, either the new information is assimilated into the existing schemata or the existing schemata are altered to accommodate the new information. Resick and Schnicke (1992) proposed that the symptoms of PTSD are indeed the result of conflict between new information (e.g., "I have just been raped") and existing schemata (e.g., "Nice women do not experience rape"). The authors went on to point out that these conflicts may be concerned not only with themes of danger and safety (e.g., "The world is dangerous"; "My home is not a safe place") but also with other themes reflecting self-esteem, competence, and/or intimacy. Thus, the focus of CPT is on helping clients resolve "stuck points" that represent conflicts between prior schemata and new information derived from the traumatic experience.

As described by Resick and Schnicke (1992), the process of CPT flows through several components. Treatment typically takes place during 12 sessions of group therapy consisting of 1½ hours per session. Initially clients are educated in information processing, specifically related to their rape. A written assignment helps clients explore the personal meaning they ascribe to the traumatic event. Clients are also taught to differentiate feelings from thoughts, as well as to recognize the connection between cognitions (i.e., self-statements) and feelings. The exposure component of CPT asks clients to

revisit their traumatic event by writing a detailed account of their rape, which is then read back in therapy and at home. Emphasis is placed on helping clients have a full experience of their emotions both during the writing process and during the later reading of the account. In this manner CPT encourages clients to experience their emotions more fully. According to Resick and Schnicke the rationale behind this exercise is to counteract the tendency of rape victims to suppress or avoid the overwhelming emotions experienced in association with the assault and to identify stuck points that may represent areas of incomplete processing. The cognitive therapy component of CPT involves teaching clients how to identify, challenge, and reframe maladaptive beliefs and recognize faulty thinking patterns. During this portion of treatment, there is a sequential presentation of five domains of beliefs affected by the trauma: safety, trust, power, esteem, and intimacy. These beliefs form the core of a model about psychological responses to trauma and the relationship between traumatic experiences and cognitive schemas, described by McCann, Sakheim, and Abrahamsom (1988). Homework assignments and group discussion are part of treatment, along with suggestions for adaptive self-statements that help clients resolve conflict and get past stuck points.

In the next-to-last session of CPT, the participants are again asked to write an account of the meaning of the event, without referring to the earlier writing. The last session focuses on a final analysis of their beliefs about intimacy, a discussion of the writing assignment, and a review of goals and plans for the future. Resick and Schnicke (1992) added that throughout the length of treatment, participants should be reminded that the central goal of therapy is to equip them with necessary skills for managing their own individual idiosyncratic thinking patterns and maladaptive beliefs.

### **Exposure Therapies (PE and VRE)**

In light of the fact that avoidance is held to be a central mechanism in the maintenance of anxiety disorders including PTSD, it follows that some form of exposure to the feared objects, situations, images, and memories is an essential and central component for overcoming such fear. This applies to the successful treatment of anxiety disorders in general and PTSD in particular. Exposure therapies focus on the activation of affective and cognitive processes associated with the trauma to facilitate the healthy processing of the trauma. Exposure approaches vary in the degree of contact and the level of intensity of the exposure to the feared object. Some approaches use graduated exposure, a series of hierarchical steps from least to most anxiety provoking that the individual confronts in the course of treatment. Other techniques use a flooding approach in which there is a more abrupt confrontation with the object of avoidance. Exposure therapy can also take the form of imaginal exposure, with the person imaginally revisiting the feared situation, or in-vivo exposure, in which the person confronts the feared object face-to-face. The

length of the exposure exercise may be brief or prolonged. Some exposure approaches such as systematic desensitization (Wolpe, 1990) combine graduated exposure with relaxation strategies, whereas others, such as PE (Foa & Kozak, 1986), do not pair the exposure with relaxation.

### *PE*

PE, also referred to as imaginal exposure, consists of repeated imaginal reliving of the traumatic memory along with in-vivo exposure exercises to confront trauma-related situations, that is, objects or other environmental cues that trigger pathological anxiety and fear (Hembree & Foa, 2004). In 1986, Foa and Kozak argued that some form of exposure leading to confrontation with a feared object is an effective form of treatment for anxiety and an essential aspect for the corrective emotional processing of pathological fear. The authors further argued that to reduce pathological fear, the fear structure must be activated through some form of exposure, and then information incompatible with the fear structure must be introduced. The goal of the exposure is twofold: to provide an opportunity for the emotional processing of the trauma and to facilitate new learning, in the form of cognitive restructuring of maladaptive beliefs associated with the trauma.

Cahill et al. (2009) and Hembree and Foa (2004) discussed several mechanisms by which exposure to the trauma memory (and associated cues) leads to improvement in PTSD. First, habituation is facilitated by repeated exposure, imaginal and in vivo, to the trauma memory and associated cues. As clients revisit the memory and retell the story, they begin to feel less anxious and learn that they do not have to use avoidance to decrease anxiety. However, the experience of exposure goes beyond habituation as it also provides a corrective cognitive experience (i.e., new learning), underscoring the fact that avoidance is not necessary to reduce the level of anxiety. Second, actively confronting the memory, in essence, blocks the process of avoidance. Third, the process of exposure, facilitated by supportive and empathic therapists, helps clients debunk the notion that thinking about the trauma is dangerous. This process helps to undermine the unhealthy idea often held by individuals with PTSD that thinking about the trauma is as dangerous as the trauma itself. Fourth, through repeated exposures to the trauma memory, clients begin to differentiate aspects associated with the past original trauma from present situations to which they have generalized the fear and anxiety. As a result, the trauma is framed as a unique event rather than culminating in an overgeneralization that the world is dangerous or that one is incompetent. By decreasing generalization, the anxiety and fear projected onto nontrauma-related situations begin to dissipate. Fifth, repeated imaginal exposures allow clients to reevaluate and reframe the negative meanings that they attach to themselves. Sixth, as individuals gradually and repeatedly successfully engage in the confrontation of the trauma memory and its associated cues, they begin to feel more in control of their lives, with an increasing

sense of competence and mastery. Effective exposure therapy not only has the effect of habituation but also helps clients to challenge and reframe their original view of self as incompetent and weak (Cahill et al., 2009; Hembree & Foa, 2004).

The process of exposure therapy generally ranges from 9 to 12 individual sessions, of approximately 90 minutes in length, offered weekly or biweekly (Foa et al., 1991; Foa et al., 2005; Hembree & Foa, 2004). According to Hembree and Foa (2004), there are four integral components to PE treatment: education, breathing retraining, imaginal exposure to the trauma memory, and in-vivo exposure between sessions to factors or cues associated with the trauma. The first two sessions are normally devoted to gathering background information, explaining the treatment rationale, educating the client about PTSD and its sequelae, breathing retraining, and planning treatment. In Session 3, the process of imaginal exposure begins. The client is asked to sit comfortably, close his or her eyes, and imagine as vividly as possible the actual trauma. Then the client is asked to recount aloud the details of the trauma, using the present tense as if it were happening now, and to use the pronoun *I* as he or she retells the story. As the client recounts the trauma, he or she is encouraged to verbalize the emotions, cognitions, and sensations experienced. This process goes on for approximately 60 minutes, during which time the client is asked to recount that trauma several times. The therapist remains nonintrusive, except for brief interjections to ask for more detail, elicit emotional reactions, or assess the level of the client's anxiety. With each retelling of the trauma, the client is encouraged to provide more vivid details about the event, while at the same time engaging in a deeper level of emotional connection to the trauma. Exposure sessions are tape-recorded and serve as homework assignments, to which the client is instructed to listen daily. Additional homework assignments include in-vivo exposure to environmental cues, along with feared and avoided situations that have been deemed by the client and therapist to be safe (Foa et al., 1991). The following sessions (Sessions 4 to 9 or 12) continue in a similar fashion, with repeated imaginal exposure, tape recording of the session, and homework assignments. In the final session, the client is asked to summarize what was learned in treatment and discuss his or her progress.

### *VRE*

VRE is a relatively new form of graduated exposure therapy for the treatment of PTSD. VRE integrates real-time computer-generated simulation, body-tracking devices that respond to the user's head and body motions, other sensory input (e.g., odors and sounds), and visual displays to create a virtual reality environment that allows the client to immerse him- or herself in the feared and avoided situation (Parsons & Rizzo, 2008; Rothbaum, Ruef, Litz, Han, & Hodges, 2003). VRE for PTSD was initially developed for the treatment of veterans of the Vietnam War (Rothbaum et al., 1999;

Rothbaum, Hodges, Ready, Graap, & Alarcon, 2001). A participant in VRE wears a head-mounted display and headphones into which images and sounds are conveyed. The clinician administering the treatment can follow the virtual environment on a computer screen and simultaneously trigger stimulus delivery to tailor the experience to the participant (Rizzo et al., 2006). One benefit of the VRE approach is that it can overcome certain disadvantages that some clients may experience with traditional imaginal exposure: difficulty visualizing or evoking the trauma memory, reluctance to repeatedly narrate the trauma, and failure to engage emotionally or sense the trauma (Cukor, Spitalnick, Difede, Rizzo, & Rothbaum, 2009; Rizzo et al., 2006). Emotional processing and engagement are key aspects of imaginal exposure, and without those elements, the chances for therapeutic success are diminished (Cahill et al., 2009; Jaycox, Foa, & Morral, 1998). Because VRE has the ability to deliver multiple sensory cues and engage the client's attention with eyes open, it is hypothesized that the obstacles can be more effectively overcome through its administration. This is because the client is able to become more deeply immersed in the traumatic experience (Cukor et al., 2009). Similarly, Alsina-Jurnet, Carvallo-Beciu, and Gutierrez-Maldonado (2007) suggested that VRE offers advantages over in-vivo exposure, for which the logistics of the exposure can be complex and limiting.

In addition to Vietnam War scenarios, virtual environments depict situations of rural and urban combat associated with the Iraq War (e.g., Virtual Iraq) (Rizzo et al., 2006) and the World Trade Center attack of 9/11/01 (Difede & Hoffman, 2002). Most recently, Baños et al. (2009) have reported the development of a versatile virtual reality system, EMMA's World, which can recreate a large spectrum of situations. EMMA's World provides an alternative to current virtual reality systems that target very specific populations with very specific traumas (e.g., Vietnam, Iraq, World Trade Center) by allowing for individualized environments that can be applied to different problems with different populations, such as veterans as well as victims of sexual assault, childhood abuse, disasters, and automobile accidents, among others (Baños et al., 2009).

Although there is some variability in the application of VRE, a review of various studies reveals that a typical pattern entails weekly or biweekly individual therapy sessions. These sessions typically last 90 minutes and include preexposure preparation, exposure to the computer-generated audio and visual stimuli, and debriefing (Alsina-Jurnet et al., 2007; Difede & Hoffman, 2002; Gerardi, Rothbaum, Ressler, Heekin, & Rizzo, 2008; North, North, & Coble, 1998; Reger & Gahm, 2008; Rothbaum et al., 2003). The length of treatment ranges from 4 to 12 weeks. Pretreatment preparation involves an assessment through a clinical interview and the use of self-report, identification of most traumatic memories and a subjective rating of the intensity of the distress associated with each memory using Subjective Units of Distress, and baseline data for psychometric measures and physiological responses (i.e., heart rate and skin conductance). Rothbaum et al. (2003) suggested that

including psychophysiological measures provides a more accurate and objective evaluation than self-reporting as to whether negative emotional arousal is alleviated within a session.

Session 1 of VRE generally entails familiarization of the client with treatment procedures and the equipment to be used, an explanation of treatment rationale, psychoeducation about trauma and its sequelae, breathing retraining, and a review of traumatic memories to elicit specific details. Exposure begins during the second session, and the participant generally progresses at his or her own pace. The therapist has access to the virtual environment using a computer screen and is able to gradually introduce sensory stimuli to meet the specific needs of the client while encouraging the client to concentrate on the traumatic memory and associated negative emotions. During the exposure sessions, the therapist asks for a Subjective Units of Distress rating of the client's anxiety every 5 minutes (Rothbaum et al., 2003), and the participant may be exposed to one or more of the virtual environments. Following the exposure scenarios, the participant undergoes a 15-minute debriefing session and breathing retraining. The debriefing sessions focus on the client's reactions to the virtual environment and emotional processing of the experience.

The additional exposure sessions follow a similar pattern, with some variations. In the Difede and Hoffman (2002) study, the authors indicated that each scenario in the virtual reality menu was repeated until there was at least a 50% decrease in Subjective Units of Distress associated with each exposure. In the Rothbaum et al. (2003) study, psychophysiological reactions were measured, to evaluate change within and between sessions.

## EMDR

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EMDR was initially developed by Francine Shapiro (1989a, 1989b) to reduce the distress of traumatic memories. After initial reports of high success rates in treating PTSD within a short period of time, EMDR quickly became the focus of much debate and research (Devilley & Spence, 1999). The process involves a three-pronged approach that addresses the etiology of a traumatic event (the past), the triggers of the PTSD symptoms (the present), and the development of templates to cope with upsetting events (the future) (Shapiro, 2007). With EMDR, the therapist uses directive questioning to desensitize the client through a brief imagined exposure to the traumatic memory (Shapiro, 2001). The client is asked to provide a negative or dysfunctional cognition of the trauma and identify places in the body where the physical sensations are felt. After focusing on the traumatic memory and negative cognition, emotion, and physical sensations, the client receives bilateral stimulation. The alternating stimulation is a unique though controversial aspect of EMDR. Most commonly, it involves therapist-directed saccadic eye movements, with the therapist moving his or her fingers back and

forth in front of the client's face after instructing the client to follow the movement with his or her eyes (Shapiro, 2001). Other dual-attention tasks, such as finger tapping on alternating sides and presenting sounds or light on alternating sides, have also been used (Davidson & Parker, 2001). This sequence is repeated until the accompanying level of disturbance has subsided and the dysfunctional cognitions about the trauma have been ameliorated (Shapiro, 2007).

Although EMDR has been widely adopted (e.g., Veterans Health Administration and Department of Defense, 2004) and thousands of clinicians have been trained in EMDR (Cahill, Carrigan, & Frueh, 1999), it has been the subject of intense controversy. The effectiveness of the eye movement component of EMDR has been questioned because several studies have found that EMDR outcomes are not enhanced by eye movements (e.g., Cahill et al., 1999; Devilly & Spence, 1999; Pitman et al., 1991; Renfrey & Spates, 1994). Rather notably, EMDR has also been critiqued for the absence of an empirically validated model explaining its effectiveness (Gunter & Bodner, 2008; Perkins & Rouanzoin, 2002; Rodenburg, Benjamin, de Roos, Meijer, & Stams, 2009). Several hypotheses have been proposed to explain the treatment mechanism underlying EMDR. Stickgold (2007), for example, has suggested that EMDR may activate a neurobiological state similar to REM sleep. Others have suggested a working-memory account of EMDR that posits that unpleasant memories become less vivid and less emotional when eye movements use up the brain's resources for processing visuospatial information (Gunter & Bodner, 2008; Kavanagh, Freese, Andrade, & May, 2001). Because an understanding of EMDR's treatment mechanism is lacking, additional research is needed.

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## SIT

SIT is designed to help bolster clients' coping skills as well as their confidence in using their skills effectively in anxiety-provoking situations (Meichenbaum, 1993, 1996). It has been used as a treatment model to assist individuals facing the aftermath of trauma and, on a preventive basis, as a means of self-inoculation against future stressors (Meichenbaum, 1996). SIT utilizes a three-phase, overlapping approach: conceptualization, development of strategies rehearsal, and application/follow-through. The approach to implementing these phases will vary depending on the nature of the trauma (i.e., acute time-limited stressors vs. prolonged ongoing repetitive stressors) and the resources and coping abilities of the client (Meichenbaum, 2007).

During the initial conceptualization phase the goal is to establish a collaborative relationship with the client while enhancing the client's understanding and awareness of the nature of PTSD and the response to the trauma. After the client has developed an understanding of PTSD and the dynamics behind the symptoms, treatment moves to the skills acquisition

and rehearsal phase. The goal of this phase is to provide the client with cognitive and behavioral skills to manage and reduce the anxiety associated with the trauma. These skills include cognitive restructuring, relaxation and breathing techniques, thought stopping, covert modeling, problem solving, interpersonal communication skills, attention diversion, and self-instructional training. These are tailored to the specific stressors faced by the client and are rehearsed in session, employing role-play, during which the therapist teaches and models the specific skills. During the application and follow-through phase, the client is expected to apply the learned skills to memories related to the trauma and to increasing levels of stressful cues outside the therapy session. Techniques such as modeling, role-playing, and graduated in-vivo exposure continue to be used through this phase. During this phase of treatment the therapist focuses on reinforcing the client's successful application of the skills learned in therapy to events in his or her life outside therapy as well as troubleshooting any problems or setbacks that may arise in that process.

Relapse prevention strategies and attributional procedures are used throughout SIT to ensure that the client can identify triggers and high-risk situations and also give him- or herself proper credit for gains made and the successful application of coping skills (Meichenbaum, 1996). In most cases SIT will consist of 8 to 15 one-hour sessions, weekly or biweekly, with follow-up booster sessions scheduled 3 to 12 months after therapy (Meichenbaum, 2007).

## The Self-Trauma Model

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The self-trauma model developed by Briere (1996, 1997, 2002) integrates aspects of humanistic, psychodynamic, and cognitive-behavioral theories. The model was initially developed to assist adults who were victims of child abuse and views PTSD as a self-healing mechanism in which painful events are blocked or avoided (Briere, 2002). These blockers, such as substance abuse and dissociative disorders, can impede emotional processing and recovery. In the self-trauma model, cognitive and behavioral avoidance are ameliorated by enhancing affect-regulation skills before proceeding to exposure therapy. These skills frequently include relaxation, breath training, identification and discernment of emotions, and anticipation and countering of intrusive thoughts (Briere & Scott, 2006). Consistent with other exposure methods, the aim of the self-trauma model is to alter a client's conditioned emotional response to a traumatic memory through exposure and activation of feelings the client had at the time of the trauma (Briere, 2002). If this process is carried out in a safe and therapeutic environment, tailored to the client's individual characteristics and concerns, traumatic responses will be eliminated. Drawing on psychodynamic models, and given that abuse affects relationships and development, the therapeutic relationship is a critical

aspect of the process that can countercondition relational trauma and facilitate the client's ability to develop positive relationships (Briere, 2002).

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## Empirical Evaluations of CBT Treatments for PTSD

When evaluated from a broad perspective, there is substantial evidence supporting the efficacy of several CBTs for the treatment of PTSD, including exposure therapy, EMDR, and SIT (Benish, Imel, & Wampold, 2008; Bisson & Andrew, 2007; Bisson et al., 2007; Bradley, Greene, Russ, Dutra, & Westen, 2005; Foa, Dancu, et al., 1999; Foa, Davidson, & Frances, 1999; Foa et al., 1991; Ponniah & Hollon, 2009; Seidler & Wagner, 2006). At the same time, however, consensus does not exist with regard to the relative efficacy of these treatments (Benish et al., 2008), and no specific treatment has yet proven to be the gold standard in the treatment of PTSD (Lee, Taylor, & Drummond, 2006; McFarlane & Yehuda, 2000).

In a meta-analysis of randomized studies published in the English language ( $N = 38$ ), Bisson et al. (2007) concluded that trauma-focused CBT (TFCBT) and EMDR are effective in treating PTSD on an individual basis. There was also limited support for the use of stress management and group CBT to alleviate symptoms of PTSD. The results of the analysis also indicated that nontrauma-focused therapies did not have clinically significant effects on PTSD. The authors explain that this is a possible result of the limited number of studies available and not necessarily as a sign of ineffectiveness. Another study conducted by Bisson and Andrew (2007) further supports the notion that TFCBT is more effective than wait-list controls or treatment as usual to reduce symptoms of PTSD and associated levels of depression and anxiety. TFCBT ( $d = 1.36$ ) and stress management ( $d = 1.14$ ) were also found to be more effective than other therapies.

Bradley et al. (2005) conducted a multidimensional, meta-analytic review of studies published between 1989 and 2003 on psychotherapies for PTSD ( $N = 26$ ) that included 44 treatment conditions. The treatment conditions studied included 13 exposure treatments, 5 cognitive therapy, 9 cognitive therapy plus exposure, 10 EMDR, and 7 *other*. The authors concluded that the results support the use of treatments that include exposure, cognitive therapy, and EMDR to treat PTSD. Effect sizes were largest in pre-post comparisons ( $d = 1.43$ ), in contrast to wait-list controls ( $d = 1.11$ ) or supportive controls ( $d = 0.83$ ). Consistent with previous studies, treatments for combat-related PTSD had the lowest effect size (Bradley et al., 2005). A large effect size ( $d = 1.52$ ) was found between measures taken right after completion of treatment and follow-up measures taken at least 6 months after treatment (two studies provided follow-up measures at the 12-month posttreatment point). The authors concluded that based on the results of

their meta-analysis, treatments including exposure, cognitive therapy, and EMDR are effective for the treatment of PTSD.

In another meta-analytic study, Ponniah and Hollon (2009) reviewed randomized studies ( $N = 57$ ) published up until the end of 2008, irrespective of trauma, and concluded that TFCBT is efficacious in the treatment of PTSD. Exposure, with or without cognitive restructuring, was found to produce greater reductions in PTSD symptoms when compared with no treatment or minimal interventions, relaxation training, and supportive counseling. That study also found that cognitive restructuring alone, without exposure, was more efficacious than treatment as usual and relaxation training. The authors also concluded that EMDR is efficacious to treat PTSD, although they tempered their support of EMDR, citing that fewer studies have been conducted with this condition and many of the studies included a mixed trauma sample. SIT was found to be “possibly efficacious” for the treatment of PTSD.

A meta-analytic study ( $N = 7$ ) directly comparing EMDR treatment adhering to Shapiro’s (1995) protocol against TFCBT with exposure as the main form of intervention concluded that both conditions are equally efficacious (Seidler & Wagner, 2006). Prior meta-analyses (Bradley et al., 2005) had supported the efficacy of both treatments. Nonetheless, the results from this analysis do not support the notion that one treatment is superior to the other (Seidler & Wagner, 2006). The authors underscore two limitations of this review: the relatively small number of studies that compare EMDR to TFCBT and the fact that results are based on clients who completed treatment. Both study groups had substantial numbers of dropouts (EMDR—21%, TFCBT—23%).

Several meta-analytic reviews of outcome studies suggest that EMDR is an efficacious treatment for PTSD (Bisson & Andrew, 2007; Bisson et al., 2007; Bradley et al., 2005; Davidson & Parker, 2001; van Etten & Taylor, 1998), possibly as effective as exposure therapies (e.g., Ironson, Freund, Strauss, & Williams, 2002; Lee, Gavriel, Drummond, Richards, & Greenwald, 2002; Rothbaum, Astin, & Marsteller, 2005). In five studies using clinician-based assessments of PTSD symptoms, EMDR resulted in significantly better outcomes than wait-list controls or treatment as usual (Standardized Mean Difference =  $-1.51$ ; 95% confidence interval,  $-1.87$  to  $-1.15$ ) (Bisson & Andrew, 2007). Other researchers, however, have critiqued the evidence base for EMDR (e.g., Herbert et al., 2000; McNally, 1999), noting several controlled studies with contradictory results that did not support the efficacy of EMDR (e.g., Devilly & Spence, 1999; Jensen, 1994). These scholars are concerned by the aggressive marketing and dissemination strategies by EMDR’s developers and have argued that EMDR may simply be a variant of exposure therapy (Herbert et al., 2000). There also has been considerably less evidence for incremental efficacy that would indicate EMDR is a significant improvement over other established PTSD treatments (Rodenburg et al., 2009).

SIT, PE, and the combination of the two have been found to effectively reduce PTSD symptoms, as well as anxiety and depression in female victims of assault (Foa, Dancu, et al., 1999; Foa et al., 1991). The 1991 study

involved 45 female victims of rape or attempted rape randomly assigned to one of four conditions: PE, SIT, supportive counseling, and wait list. The results indicated that SIT was most effective in reducing symptoms immediately following treatment. PE was also effective in reducing symptoms at posttreatment, and it showed greater results at the follow-up measures. Both treatments showed significant reductions of symptoms when compared to supportive counseling and wait list. According to Foa et al. (1991), SIT appears to provide more immediate relief of symptoms because its focus is on anxiety management. On the other hand, PE may produce some immediate increases in anxiety as the result of the exposure to the traumatic memory. However, the emotional processing of the trauma with cognitive reframing of its theme of dangerousness may result in longer lasting effects. The efficaciousness of SIT and PE was supported by Foa, Dancu, et al. (1999) in a comparison of PE, SIT, and a combination of the two to treat PTSD in female assault victims. That comparison revealed that all three active treatment conditions were superior to wait list in reducing symptoms of PTSD and depression, but there were not significant differences among those three (Foa, Dancu, et al., 1999). Ninety-six women started treatment, of whom 63% were Caucasian and 36% African American. The assaults included rape, attempted rape, and nonsexual incidents such as aggravated assault. Assessments were conducted at pre- and posttreatment as well as the 3-, 6-, and 12-month follow-up periods. Treatment gains were maintained at follow-up measures. Although there were no significant differences among the three treatment conditions, PE produced lower anxiety levels than the combination of exposure and SIT. The PE treatment also produced larger effect sizes than both SIT and PE-SIT on measures of PTSD symptoms, depression, and anxiety (Foa, Dancu, et al., 1999).

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## Empirical Status of VRE for PTSD

Although the use of VRE is a relatively new approach to treating PTSD and the research behind it is limited, the results of the few available outcome studies show significant promise for the use of VRE as a viable option for treating PTSD. There are a number of studies that assert the effectiveness of VRE for treatment of anxiety disorders other than PTSD (North et al., 1998; Parsons & Rizzo, 2008; Power & Emmelkamp, 2008). However, here we have chosen to discuss a sample of studies that have focused on PTSD exclusively. Difede et al. (2007) evaluated a sample of 21 mostly middle-aged males following the attacks on the World Trade Center. The participants were randomly assigned to VRE ( $n = 13$ ) or wait list ( $n = 9$ ). The results revealed significant decreases across all domains of PTSD symptoms, as measured by the clinician-administered PTSD Scale (Blake et al., 1995) and a large effect size of 1.54 for between-groups posttreatment comparisons. The findings suggest that VRE is an effective tool for enhancing exposure therapy to treat

rescue workers involved in civilian disasters. In a single case study conducted by Difede and Hoffman (2002) with a 26-year-old, single, African American woman with PTSD symptoms after the World Trade Center attacks, the results suggest that VRE is effective in the treatment of PTSD in that case. Posttreatment measures indicated that the individual showed significant decreases over time in subjective units of distress, related to each of the exposure activities. That is, as treatment went on, the woman reported feeling less distressed when confronting the traumatic scenarios. The client also showed significant reductions in standardized measures of depression and PTSD, including all three main symptom clusters of PTSD: reexperiencing, avoidance, and arousal. In this case, by the end of six exposure sessions, the client no longer met criteria for PTSD, as rated by independent evaluators. Other single case studies conducted with Vietnam and Iraq War veterans have also shown participants to have benefited from receiving VRE for PTSD (Hodges et al., 1999; Reger & Gahm, 2008; Rothbaum et al., 2003).

In an open clinical trial (Rothbaum et al., 2001), 16 Vietnam veterans with PTSD participated in VRE. Ten participants completed treatment, and 9 completed all posttreatment assessments. Most of the participants were taking psychotropic medications at the time of the trial. Although the sample was small and the authors discuss limitations to generalizability, pre- to post-treatment comparison showed statistically significant changes from baseline to a 6-month follow-up in clinician-rated PTSD symptoms. The authors report that at the 6-month follow-up mark, all of those completing treatment reported a reduction in PTSD symptoms from 15% to 67%, including significant reductions in the three major symptom clusters of PTSD. Baños et al. (2009) evaluated 19 individuals (6 men and 13 women) with traumatic stress-related problems who had been diagnosed with PTSD, adjustment disorder, or pathological grief. The results indicate that participants experienced significant reductions in measures of depression and negative affect and significant increases in positive affect measures. Moreover, participants also indicated significant increases in treatment expectations and satisfaction.

The available research suggests that VRE may be a viable form of treatment for PTSD and could be used as a stand-alone form of treatment or as part of a comprehensive therapy approach for persons suffering from stress related to either combat or civilian trauma (Rizzo et al., 2006). Although additional research is needed to solidify the benefits and effectiveness of VRE with different types of trauma and different populations, VRE offers the advantage of creating scenarios to allow victims to re-create the traumatic event under controlled conditions that facilitate habituation and cognitive restructuring (Rothbaum et al., 2001).

## Comments on Current Research

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One of the criticisms of the research on the use of CBT to treat PTSD was raised in a meta-analysis ( $N = 15$ ) conducted by Benish et al. (2008). The

criticism states that in the reviewed studies, comparisons were often made with wait-list groups or conditions usually labeled as “supportive therapy” that are not meant to be therapeutic (Benish et al., 2008). The authors indicate that the results of their meta-analysis, focusing on comparisons with “bona fide psychotherapies,” suggest that TFCBT is no more efficacious than other nontrauma-focused “bona fide psychotherapies.” These conclusions were challenged by Ehlers et al. (2010) on the basis that Benish et al. failed to take into account the supposition that research into the relative effectiveness of treatments for PTSD needs to show that those treatments are indeed more effective than natural recovery and, perhaps most important, that the continued increases in effect sizes during the past two decades coming out of research on TFCBT underscore that content of treatment (i.e., trauma focused vs. nontrauma focused) does indeed matter.

Other limitations that have been cited regarding the evaluation of cognitive-behavioral approaches to treatment of PTSD include the consistently high number of dropouts (Bisson & Andrew, 2007; Seidler & Wagner, 2006) and the lack of sufficient evidence to assert that positive changes attained during treatment are sustained over time (Bisson & Andrew, 2007; Bradley et al., 2005). Regarding follow-up measures, Bradley et al. (2005) suggested that follow-up should continue at least to the 2-year posttreatment mark to provide stronger evidence of the long-term impact of treatment. Bradley et al. also criticized current research because of the exclusion criteria used to select participants for the studies as well as because of the lack of information provided regarding co-occurring conditions associated with PTSD. Both issues limit the generalizability of findings to community-based treatment populations (Bradley et al., 2005).

According to Bradley et al. (2005), commonly used exclusion criteria often include substance abuse or dependence, suicide risk, or other co-occurring conditions. However, these criteria would effectively exclude clients who are commonly part of community-based treatment for PTSD. At the same time, Bradley et al. argue that few studies provide adequate information about comorbid Axis I (e.g., anxiety, depression, substance abuse disorders) or Axis II (e.g., personality disorders) conditions, a common occurrence with PTSD. According to Yen et al. (cited in Bradley et al., 2005), about 35% of individuals with personality disorders also meet criteria for PTSD. Similarly, none of the studies reviewed by Bradley et al. reported PTSD with comorbid psychotic symptoms despite studies that suggest a common co-occurrence (Bradley et al., 2005). To address these issues, the authors offer the following recommendations to make research findings more relevant to community-based clinicians: Researchers should provide detailed justification for their exclusion criteria, exclusion criteria in future studies should apply only when it is medically necessary, and due to the exclusion of participants with comorbid conditions, researchers should clearly specify the particular client populations for whom they suggest their findings can be generalized.

Another limitation of the research literature is that none of the evaluated therapies have been tested across a broad range of trauma groups. Therefore,

it is difficult to draw conclusions about which trauma patients might benefit from which methods (Ponniah & Hollon, 2009; Seidler & Wagner, 2006). One cannot assume that because a certain treatment works with a specific trauma (e.g., rape), it will work with other types of trauma (e.g., combat, accidents). This concern notwithstanding, Ponniah and Hollon (2009) indicated that there is evidence to suggest that TFEBT is effective for assault-related and automobile accident traumas. Therefore, future research should move beyond evaluating the general efficacy of treatment to establish which type of trauma is more likely to benefit from which treatment and to establish evidence-based treatments with diverse client populations. Specifically regarding the use of EMDR, Seidler and Wagner (2006) suggested that more research is needed to define the specific contribution of the eye movement component to treatment outcomes.

## Summary and Conclusions

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As we have discussed in this chapter, the available evidence supports the notion that trauma-focused cognitive behavioral treatments (i.e., those that incorporate either imaginal, virtual reality, or written narrative exposure) and EMDR are efficacious therapies for PTSD. Exposure strategies designed to revisit the trauma memory are intended to produce activation of the fear structure. This process allows for corrective emotional engagement with the trauma memory while at the same time providing opportunities to modify and reframe dysfunctional and irrational cognitions (Hembree & Foa, 2004). However, although the available research supports the use of cognitive-behavioral approaches to treat PTSD, it also underscores three general areas of attention for future studies, namely, the following: (a) Future research should be able to identify with greater specificity those clients who are most likely to benefit from the various cognitive-behavioral approaches for PTSD. Current attrition rates highlight that not all study participants respond well to treatment and those who do not respond well are more likely to drop out (Cahill et al., 2009). This may entail discriminating more particularly the type of treatment that would benefit specific types of trauma (e.g., combat, rape, accidents) as well as specific groups of individuals, that is, effectively matching treatment to a particular client problem or characteristic (Vonk, Bordnick, & Graap, 2006). For example, researchers could ask, Who is more likely to benefit from prolonged imaginal exposure as opposed to VRE? or, Who is more likely to benefit from CPT? or From EMDR? Is treatment equally effective across diverse racial or ethnic groups? (b) As Bradley et al. (2005) suggested, future researchers should also seek to increase the length of follow-up measures to at least a 2-year mark to provide stronger evidence for the long-term effects of treatment. (c) We also agree with Bradley et al.'s recommendation that researchers provide more detailed information about comorbid conditions of the sample participants as well as

justification for exclusion criteria indicating the intended populations to whom the treatment effects are generalized. This information would be beneficial for clinicians in the field seeking to implement evidence-based practices with their client populations.

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