

# International Encyclopedia of Rehabilitation

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# **Treatment of Posttraumatic Stress Disorder**

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Posttraumatic stress disorder (PTSD) is a common mental health problem for people exposed to traumatic events. Since its introduction into psychiatric classification systems in the 1980s various psychotherapeutic approaches have been tested for the treatment of PTSD. The efficacy of these treatments in reducing traumatic stress symptoms varies greatly from one another. Meta-analyses of randomized controlled clinical trials concluded that trauma focused psychotherapies are most effective in PTSD (Bisson et al. 2007; Bradley et al. 2005; Van Etten and Taylor 1998). Trauma-focused treatments include cognitive behavior therapy (CBT) approaches, particularly exposure and cognitive therapy, and Eye Movement Desensitization and Reprocessing (EMDR). In this chapter we review these treatments, their theoretical basis, applications, efficacy, and issues surrounding their practicability in different settings.

## **Exposure Treatment**

Exposure treatment has the largest evidence base and strongest empirical support for efficacy in the treatment of PTSD. It has been shown to be effective in a wide range of trauma survivors seeking treatment in clinical settings (see a review in Bradley et al. 2005). Exposure has its theoretical foundation in learning theory of fear acquisition and extinction. Learning theory holds that fear is learned through classical conditioning and systematic exposure to feared stimuli without any adverse consequence results in progressive reduction in the fear response (i.e. habituation of fear response). The dominant theory of mechanisms of change in exposure treatment is the emotional processing theory of fear (Foa and Kozak 1986; Foa and McNally 1996). This theory considers fear conditioning within a more comprehensive cognitive framework and views emotions as represented by information structures in the memory. Accordingly, fear is viewed as a memory structure that involves information about feared stimuli, the physiological, behavioral, and cognitive responses they elicit, and the meaning attributed to the association between feared stimuli and response elements. Emotional processing involves the modification of memory structure that underlies fear. Exposure treatment exerts its effect through activation of the 'fear structure' and integration of non-pathological information that is incompatible with it (e.g. disconfirmation of overestimated probability of harm). The initial fear response and the extent of fear reduction within and across exposure sessions are indicators of successful emotional processing that determine the outcome of exposure therapy. Despite its popularity the emotional processing theory of fear received only partial empirical support. A recent review (Craske et al. 2008) found weak support for the role of initial fear response and fear reduction in overall improvement. In some cases improvement occurs despite lack of significant reductions in fear and anxiety (Craske et al. 2008; Marks and Dar 2000) and in some cases

fear declines despite negative expectations being confirmed during exposure (Marks and Dar 2000). Although exposure works, its mechanisms of action are still to be delineated.

Two forms of exposure are practiced in treatment of PTSD: imaginal exposure to trauma memories and live exposure to trauma reminders. In imaginal exposure the survivor recounts anxiety evoking memories about the traumatic event in a systematic, prolonged and repetitive manner, while in live exposure s/he confronts anxiety evoking reminders of the traumatic event. Most treatment protocols combine both methods, while a few incorporate only imaginal exposure (e.g. Bryant et al. 2003; Keane et al. 1989; Tarrier et al. 1999b). The way imaginal and live exposure is implemented shows variability across treatment programs. For instance, in the widely used Prolonged Exposure program (Foa et al. 1999a; Foa et al. 2005; Foa et al. 1991b) live exposure is introduced simultaneously with imaginal exposure and imaginal exposure is followed by a discussion of emotional responses to trauma memory. In the well-known Exposure Therapy protocol (Marks et al. 1998; Taylor et al. 2003), on the other hand, live exposure is introduced midway through the treatment following 5 sessions of imaginal exposure and emotional responses to trauma memory are not discussed at any stage. Many treatment programs that are based primarily on these two protocols have also employed additional interventions such as anxiety management techniques (e.g. relaxation training, coping skills training, breathing training, thought stopping, and guided self-dialogue) (Cloitre et al. 2002; Lee et al. 2002), cognitive restructuring (Difede et al. 2007; Fecteau and Nicki 1999; Glynn et al. 1999; Schnurr et al. 2003), supportive counseling (Bryant et al. 2003) and imagery rescripting (i.e. developing a positive alternative visual representation of oneself coping more effectively with the trauma during and / or after its occurrence) (Arntz et al. 2007; Grunert et al. 2007). Relatively little research has been conducted to examine the contribution of these techniques to improvement. While some evidence (Bryant et al. 2003) suggests that adding cognitive restructuring to exposure enhances treatment effects, other studies show that cognitive interventions (Foa et al. 2005; Marks et al. 1998; Paunovic and Öst 2001) or various anxiety management techniques (Foa et al. 1999a) do not confer additional benefits when used in combination with exposure.

A typical exposure treatment program takes 9-10 weekly sessions to deliver and each treatment session lasts 60 to 90 minutes. However, the number and duration of sessions vary greatly in different treatment protocols. In randomized controlled trials of exposure treatment the number and duration of treatment sessions ranged between 3 and 34 sessions and 50 to 140 minutes, respectively. Although the reasons for this variability are unclear, the inclusion of additional interventions in the exposure treatment protocols seems to increase the length of treatment delivery.

Despite its established efficacy exposure treatment is not widely used in clinical practice. A survey in the United Kingdom found that a large majority of licensed doctoral level psychologists do not use exposure therapy to treat patients with PTSD (Becker et al. 2004). Lack of training was an important factor for this finding, but psychologists' perception of likely contraindications of using exposure also posed barriers to its use in clinical practice.

Some authors suggested that high levels of anxiety induced by exposure to trauma memory and reminders may increase patients' distress levels, resulting in adverse effects and high treatment attrition (Kilpatrick and Best 1984; Pitman et al. 1991). The only study (Foa et al. 2002) that examined symptom deterioration in exposure treatment using a reliable definition of symptom worsening found some increase in PTSD, anxiety and depressive symptoms after the initiation of imaginal exposure. However, this exacerbation of symptoms was transient and it was not associated with treatment attrition or outcome. Another study that examined drop-out rates in 25 treatment studies of PTSD did not find significant differences between

exposure and other trauma focused treatment protocols (Hembree et al. 2003). These findings did not support reduced tolerability of exposure treatment.

## **Cognitive Therapy**

Cognitive therapy is based on the understanding that anxiety occurs due to the selective processing of information in the environment perceived as signaling threat or danger to the individual and such cognitive biases can be corrected through conscious reasoning (Beck and Clark 1997; Beck et al. 1985). In trauma survivors maladaptive appraisals about trauma and its consequences for one's life are also thought to play a crucial role in the pathogenesis of PTSD (Ehlers and Clark 2000; Janoff-Bulman 1992). Therapy is thus designed to restructure or correct dysfunctional ways of thinking that cause distress, anxiety, or fear. The survivor is taught to challenge dysfunctional thoughts or beliefs through Socratic reasoning, test their accuracy through behavioral experiments in situations perceived as threatening or dangerous, and replace them with alternative ones that better reflect reality. Exposure to trauma reminders, which is referred to as behavioral experiments, is considered a necessary component for successful treatment because it allows better processing of threat (Beck and Clark 1997; Beck et al. 1985). Many cognitive therapy protocols thus involve an exposure component, but this is limited to only a few sessions and its aim is to teach survivors to modify their beliefs about the meaning of the traumatic event.

Although all cognitive therapy programs incorporate Socratic reasoning in their protocols they differ in terms of the beliefs and appraisals they target and in the implementation of the technique. They also differ in their implementation of exposure in treatment. For example, in the well-known Cognitive Processing Therapy (Resick and Schnicke 1993) patients are encouraged to conduct imaginal exposure by writing a detailed account of the trauma, while they experience their trauma-related emotions, and then by reading the account back to themselves. In the Cognitive Therapy protocol (Ehlers et al. 2005), on the other hand, a combination of imaginal and live exposure techniques are used in treatment. Patients are encouraged to write out a detailed account of the event, relive the event in their imagination, and revisit the site where trauma occurred. Some other cognitive therapy protocols (Marks et al. 1998; Tarrier et al. 1999a) do not involve any exposure component.

Randomized controlled trials have established the efficacy of cognitive therapy over waitlist or minimal attention control groups (Ehlers et al. 2005; Ehlers et al. 2003; Resick et al. 2002). Comparative studies also found cognitive restructuring to be as effective as exposure (Marks et al. 1998; Resick et al. 2002; Tarrier et al. 1999a). However, the available evidence is not conclusive regarding the role of cognitive interventions in determining treatment response. As indicated before, many cognitive therapy programs (Ehlers et al. 2005; Ehlers et al. 2003; Resick et al. 2002) involved an exposure element which complicates the understanding of the true effects of cognitive interventions. Although some protocols (Marks et al. 1998; Tarrier et al. 1999a) have not directly involved exposure, it is possible that they may have indirectly triggered it. No study has examined whether cognitive therapy has instigated systematic self-exposure in some survivors between sessions. On the other hand, even if cognitive change is responsible for treatment outcome, exposure therapy alone may provide an opportunity to test dysfunctional appraisals about trauma and thereby lead to cognitive change. There is indeed evidence showing that exposure treatment without cognitive restructuring produces as much cognitive change as exposure with cognitive restructuring (Foa and Rauch 2004; Livanou et al. 2002; Paunovic and Öst 2001). Reductions in negative cognitions were significantly related to reductions in PTSD symptoms in these studies, suggesting that cognitive change occurs as a response to improvement in PTSD and not vice versa. These findings support the view that cognitive responses to trauma are

epiphenomena of traumatic stress. Indeed, although survivors with PTSD tend to report more negative beliefs (Dunmore et al. 1999; Foa et al. 1999b; Steil and Ehlers 2000) or information processing biases (Foa et al. 1991a; Smith and Bryant 2000; Zoellner et al. 2000), there is no strong evidence to show that these cause PTSD. Research that employed statistical controls to examine the role of all possible contributing factors to the disorder (e.g. demographic, personal history, trauma exposure characteristics etc) has not found a strong association between beliefs and PTSD (Basoglu et al. 2005a; Salcioglu 2004).

As with exposure treatment the number and duration of treatment sessions show variation across cognitive therapy programs. In randomized control trials, for example, the treatment was delivered in 4 to 30 sessions with each session lasting between 60 and 120 minutes. The fact that different protocols involved different techniques and focused on different cognitive processes may be responsible for this variability in treatment duration.

## **Eye Movement Desensitization and Reprocessing (EMDR)**

The field of PTSD treatment has witnessed a rapid growth of new treatment protocols, the most studied of which is undoubtedly EMDR. EMDR is an information processing therapy during which the patient recounts the traumatic event with its cognitive, affective, and physiological features while simultaneously focusing visually on bilateral movements of an external stimulus until the distress evoked by traumatic memory subsides (Shapiro 2001). EMDR theorists maintain that the eye movements reduce the distress associated with trauma memories and help with cognitive and emotional reprocessing of the traumatic event. EMDR has achieved significant treatment effects in randomized controlled trials involving waitlist or placebo treatment control groups (Bradley et al. 2005). Two methodologically rigorous studies compared EMDR to exposure treatment. In one of these studies (Taylor et al. 2003), compared with EMDR, exposure therapy (a) produced significantly larger reductions in avoidance and re-experiencing symptoms, (b) tended to be faster at reducing avoidance, and (c) tended to yield a greater proportion of participants who no longer met criteria for PTSD after treatment. In the other study (Rothbaum et al. 2005) both exposure and EMDR equally achieved clinically and statistically significant improvements at post-treatment but at the 6-month follow-up exposure resulted in higher rates of overall improvement than EMDR (78% vs 35%, respectively).

EMDR combines multiple theoretical perspectives and techniques, most pronouncedly imaginal exposure and cognitive restructuring. Proponents of EMDR hold that the requirement of prolonged and uninterrupted exposure for successful fear reduction and disconfirmation of fear-expectancies in exposure treatment (Foa and Kozak 1986; Marks 1987) is in contrast with the very brief and interrupted nature of imaginal exposure in EMDR sessions. However, research on the processes of change in exposure treatment has not been conclusive regarding these requirements (Craske and Mystkowski 2006; Craske et al. 2008). EMDR proponents also contend that the use of directed eye movements distinguishes this form of therapy from other cognitive behavioral approaches. However, the role of eye movements in treatment has not been theoretically clarified and the findings of dismantling studies (reviewed in a meta-analysis by Davidson and Parker 2001) suggest that the eye movements are neither necessary nor sufficient to the treatment outcome. These studies call into question EMDR's theoretical rationale. It seems that the common sharing of trauma exposure techniques and emotional reprocessing is principally responsible for treatment gains in EMDR (American Psychiatric Association 2004).

One important advantage of EMDR is that it is a relatively brief intervention. It achieves its efficacy in 4 to 6 sessions, lasting 60 to 90 minutes each. It has also been suggested that

because EMDR is less reliant on a verbal account of trauma and provides techniques to regulate anxiety during imaginal exposure, it is less anxiety provoking and better tolerated than exposure therapy (American Psychiatric Association 2004; Pitman et al. 1996). However, no study so far has directly compared the tolerability of these treatments. A study that examined drop-out rates in 25 treatment studies of PTSD did not find significant differences between EMDR and exposure (19% vs 20.5%, respectively) (Hembree et al. 2003).

## **Control Focused Behavioral Treatment**

The cross-cultural applicability of the interventions reviewed so far is largely unknown as they were mostly tested in western countries. Their practicability with and efficacy in survivors of natural disasters and wars are also unknown. As exposure therapy targets universals of human behavior (fear and anxiety) it would be expected to have promise in different cultural settings. On the other hand, it is difficult to make predictions about cognitive interventions, because the cross-cultural validity of maladaptive / faulty thinking patterns about trauma and its sequelae is not known. Furthermore, the requirements of keeping homework sheets (Foa et al. 1991b; Resick et al. 2002) and heavy writing tasks (Resick et al. 2002) involved in exposure and cognitive therapy protocols may complicate their practicability with survivors with low levels of education that characterize populations of developing countries. They also pose challenges of use in post-disaster or post-war settings, where survivors have to deal with day-to-day survival problems. Despite their relative brevity, exposure and EMDR are not sufficiently brief for easy dissemination after such mass traumatic events. The high demand for psychiatric care often overwhelms the clinical resources and high demographic mobility renders treatment attendance difficult for multiple sessions. The complex procedures involved in conducting imaginal exposure and cognitive restructuring pose challenges in the training of therapists. They are also not suitable for dissemination on a self-help basis because they rely on heavy therapist input. Indeed, two randomized controlled studies failed to demonstrate the efficacy of self-help booklets based on cognitive behavioral procedures in posttraumatic stress symptoms (Ehlers et al. 2003; Scholes et al. 2007).

With these considerations in mind we developed a brief and simple version of exposure treatment after the devastating 1999 earthquakes in Turkey. We modified exposure treatment by: (a) focusing on only behavioral avoidance (i.e. live exposure to trauma cues); and (b) shifting the focus of treatment from the habituation to feared stimuli to the enhancement of a 'sense of control' over them. The latter modification was based on two considerations: experimental work with animals show that unpredictable and uncontrollable stressors play an important role in the development of anxiety and fear responses (Basoglu and Mineka 1992; Foa et al. 1992) and the evidence from research with trauma survivors (Basoglu et al. 2007a; Basoglu et al. 2005a; Basoglu et al. 1997; Mineka and Zinbarg 2006; Salcioglu 2004) suggests that lack of sense of control over traumatic stressors is the critical mediating factor in PTSD. Helping the person regain control over traumatic stressors might therefore reduce traumatic stress (Basoglu and Mineka 1992). Some authors also (Craske and Mystkowski 2006; Craske et al. 2008) suggested a shift away from an emphasis on fear reduction during exposure as an index of learning toward a model of exposure therapy that emphasizes weakening of avoidance and strengthening tolerance of fear and aversive internal states. The new Control-Focused Behavioral Treatment (CFBT) thus targeted behavioral avoidance of trauma reminders and mainly involved therapist-delivered instructions for self-exposure to feared and avoided situations until the survivor was able to tolerate and felt in control of anxiety or fear (rather than until 'fear is reduced').

CFBT was tested in two open and two randomized clinical trials involving 331 earthquake survivors with chronic PTSD. In an open trial (Basoglu et al. 2003b) it achieved significant improvement in 76% of the cases after one session and in 88% of cases after two sessions. In a randomized controlled study it achieved improvement in 80% of survivors when delivered in a single session (Basoglu et al. 2005b). Behavioral avoidance was the first symptom to improve early in treatment (6 weeks), followed by improvement in re-experiencing and hyperarousal symptoms (Salcioglu et al. 2007). Thus, reduction in avoidance appeared to be the critical factor that initiated the process of improvement in other symptoms. Further studies showed that the treatment effect could be enhanced by 20% by an additional session involving therapist aided exposure to simulated earthquake tremors in an earthquake simulator (Basoglu et al. 2003a; Basoglu et al. 2007b). Improvement was maintained in the long-term in all studies, despite further exposure to numerous aftershocks and expectations of another major earthquake. CFBT also achieved significant improvement when delivered in the form of a self-help manual after initial contact with a therapist (Basoglu et al. 2009). This suggested that the important factor in treatment was the effective delivery of the critical treatment ingredients, rather than the medium of delivery per se. These findings showed that CFBT shows promise in the treatment of mass trauma survivors in non western settings. Further studies are needed to confirm these findings in trauma populations living in different cross-cultural settings.

## **Conclusion**

In this chapter we reviewed trauma focused treatment approaches for PTSD. Exposure based treatments, cognitive therapy, and EMDR are all efficacious treatments for this disorder. Exposure has several advantages over cognitive therapy and EMDR. Its theoretical background is more robust and experimentally validated. It also has a larger evidence base, was tested with a wider range of trauma survivors, and has more promise in cross-cultural practicability. Despite these advantages exposure therapy is not without problems. About 40% to 50% of patients fail to achieve clinically significant improvement after exposure therapy. These modest improvement rates could be explained by a strong focus on anxiety reduction, rather than anxiety tolerance, which may be counterproductive in treatment. Some authors (Craske and Mystkowski 2006; Craske et al. 2008) suggested a move toward a model of exposure therapy that emphasizes the weakening of avoidance and strengthening of fear tolerance. Recent evidence (Basoglu et al. 2003b; Basoglu et al. 2007b; Basoglu et al. 2005b) from clinical trials with earthquake survivors showed that a behavioral treatment approach focusing on the enhancement of a sense of control over traumatic stressors and attenuating avoidance of trauma cues is highly effective in PTSD. Although more controlled studies are needed to confirm the efficacy of this treatment in other trauma exposed populations, CFBT appears to be a promising brief treatment for PTSD.

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