# Behavioral Interventions for Trauma and Posttraumatic Stress Disorder

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**Abstract**

Optimal therapy for Posttraumatic Stress Disorder (PTSD) follows logically from an understanding of etiological models describing the development and maintenance of the disorder. Accordingly, the present article provides a brief overview of PTSD with particular attention paid to etiology. Exposure-based interventions have consistently been shown to promote superior posttraumatic adjustment relative to alternate treatment approaches. In addition to describing exposure therapy for PTSD, we briefly review the supporting treatment-outcome literature. Misconceptions surrounding exposure therapy are presented and discussed. Finally, cultural considerations and complex presentations are considered.
Keywords: Posttraumatic Stress Disorder (PTSD), peritraumatic reaction, intense fear, helplessness, horror

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In order to meet diagnostic criteria for posttraumatic stress disorder (PTSD), an individual must experience, witness or be confronted with an event that involves actual or threatened serious injury or death, or a threat to the physical integrity of self or others. Further, the peritraumatic reaction to the event must involve intense fear, helplessness or horror (American Psychiatric Association; APA, 2000, pp.467). Although resiliency in the face of trauma is the norm, exposure to events that may potentially elicit PTSD is not uncommon. By way of example, one large scale epidemiological study of nearly 6,000 U.S. citizens indicated that approximately 61% of men and 51% of women have experienced at least one potentially traumatic event in their lives (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995). Events that frequently precipitate PTSD include combat, natural disasters, sexual assault, violent crime, or witnessing or experiencing significant accidents or injuries.

According to the most recent version of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR; APA, 2000), in order for an individual to meet diagnostic criteria for PTSD he or she must have at least one symptom of re-experiencing, three or more avoidance symptoms, and two or more persistent symptoms of heightened arousal related to traumatic exposure. Re-experiencing may include recurrent and intrusive distressing recollections of the event, recurrent dreams of the event, acting or feeling as if the event were re-occurring, intense psychological distress at exposure to internal or external cues which represent the event, or physiological reactivity with exposure to internal or external cues that represent an aspect of the event. The second symptom cluster, characterized by avoidance, involves efforts to avoid thoughts, feelings, conversations, activities, places or people that are associated with recollections of the trauma, an inability to recall important aspects of the trauma, diminished interest in activities, feelings of detachment from others, a restricted range of affect, or a sense of a foreshortened future. The hyperarousal symptoms that constitute the third cluster include difficulty falling or staying asleep, irritability or outbursts of anger, difficulty concentrating, hypervigilance, and an exaggerated startle response. In order to meet diagnostic criteria for PTSD the symptoms outlined above must persist for at least one month following the trauma and must significantly interfere with an individual's social, educational, or occupational functioning.

Although exposure to potentially traumatic events is not uncommon in the general population, results from the National Comorbidity Survey indicate that PTSD affects only 7.8% of the population,

with the rate for women (10.4%) being more than twice the rate for men (5.0%) (Keane & Barlow, 2002; Kessler et al., 1995). It is important to note that the elevated rate of PTSD for women is most likely due to the increased rate of victimization among women. In a national study of exposure to crime among women in the United States, 36% of women reported being directly affected by crime at some point in their lives, with rape or molestation being the most frequently experienced crime (Keane & Barlow, 2002; Resnick, Kilpatrick, Dansky, Saunders, & Best, 1993). Despite high rates of traumatic exposure however, resiliency does appear to be normative, in that most individuals who experience a traumatic event do not go on to develop PTSD. An increased likelihood of developing PTSD has been linked to a variety of vulnerability factors including prior psychiatric history, prior exposure to a traumatic event, and family history of a psychiatric disorder (Gray & Acierno, 2002; Marshall, Spitzer, & Liebowitz, 1999).

***Theoretical Models of PTSD***

Before turning to optimal treatment approaches for PTSD, it is first necessary to consider the etiology of the disorder as treatment considerations follow logically from an understanding of the development and maintenance of PTSD. The etiology of PTSD is unique in that it is the only disorder within the *DSM-IV* for which the prominent (though not sole) cause is generally known, as it is the direct result of an external event. Empirically validated etiological models of PTSD are generally informed by behavioral principles, in that they typically focus on conditioned reactions to trauma-relevant stimuli and acknowledge the prominent role that avoidant coping behaviors play in maintaining or exacerbating conditioned fear and anxiety responses to trauma cues and contexts.

The earliest theoretical models of PTSD were based on the learning and conditioning processes. According to these conditioning models (e.g., Keane, Zimering, & Caddell, 1985) intense fear and anxiety is an unconditioned response to the traumatic event. This emotional response becomes paired with a host of objectively safe proximal stimuli present during the event. A broad array of trauma-reminiscent sensory stimuli and contextual factors may become associated with the event, thereby becoming conditioned stimuli which elicit conditioned fear and anxiety responses. For instance, a sexual assault survivor who was assaulted while attending a fraternity party may now experience the same feelings of fear, helplessness, and anxiety experienced during the original attack in all party settings, regardless of whether or not they are objectively safe. Similarly, a combat veteran hearing a car backfire may suddenly experience heightened fear and anxiety similar to exposure to an explosion in a combat setting.

However, simple classical conditioning alone cannot account for the maintenance of PTSD symptoms. Theoretically, if the individual is repeatedly presented with fear-provoking stimuli that are objectively safe but merely trauma-reminiscent, the conditioned fear and anxiety responses should gradually extinguish. Indeed, this quite probably explains the significant symptom remission that occurs for most trauma survivors. PTSD cannot be diagnosed within a month of traumatic exposure precisely because the overwhelming majority of victims experience the defining symptoms in the immediate aftermath of trauma. Such responses are normal, not pathological, responses to life-threatening or otherwise harrowing situations. By way of example, Rothbaum, Foa & Riggs (1992) noted that almost all rape survivors in their sample would have met criteria for PTSD within 1-week of their assaults. By 3 months post-assault, however, only half of these individuals continued to exhibit significant distress. Arguably, repeated exposure to trauma memories, cues, and contexts – in the absence of additional harm – results in lessened anxiety and fear-based responding over time. Although simple classical conditioning can account for the establishment and generalization of intense fear and anxiety to a broad spectrum of trauma-related stimuli, the failure of such responses to diminish with repeated exposure in the absence of harm required early theorists to incorporate additional learning principles.

Mowrer's (1960) two-factor theory posits that fear acquisition is the result of classical conditioning, whereby neutral stimuli present during the traumatic event take on fear-eliciting properties

as a result of their pairing with the unconditional stimulus (Brewin & Holmes, 2003). Such associations are considered part of the first factor, the acquisition of aversive emotions (Keane & Barlow, 2002). In such instances, the individual will experience negative emotions when presented with stimuli reminiscent of the traumatic event. The second factor, explained by operant principles, concerns the subsequent avoidance of stimuli that elicit these aversive emotions (Keane & Barlow, 2002). Hence, many individuals who have experienced a traumatic event are likely to avoid cues such as, people, places, or thoughts associated with the traumatic event. Such avoidance becomes a means to reduce their negative emotionality and anxiety, thereby taking on reinforcing properties, which serve to maintain the disorder and prevent the extinction of the conditioned responses. Avoidance serves to transiently reduce anxiety, but disallows extinction of the conditioned response. Because it is impossible to predict and avoid all trauma-related cues and context, frequent and sudden conditioned fear reactions continue to occur.

Other more recently proposed etiological explanations for PTSD incorporate cognitive components as well. These theories are not incompatible with basic learning principles. They have generally retained learning and conditioning elements while including a focus on memories and information processing in addition to physiological, emotional and behavioral responses. Cognitive models hold that traumatic events are stored in memory in special way, and if they are not processed appropriately, psychopathology will result (Brewin & Holmes, 2003). Initial cognitive theories were based on the work of Peter Lang (1977, 1979) who viewed fear structures as a network in memory which represents three types of information: a) information about the feared stimulus or situation, b) information about verbal, physiological, and overt behavioral responses, and c) information about the meaning of the stimulus and response elements of the structure (Foa, Steketee, & Rothbaum, 1989). Lang further posited that fear memories are easily activated by stimuli reminiscent of the traumatic event, and once activated, physiological responses and meaning judgments occur, which coincide with the original memory (Brewin & Holmes, 2003).

Building upon Lang's theory, Foa, et al. (1989) proposed that what distinguishes PTSD from other anxiety disorders is the violation of safety that results from the traumatic event. Stimuli and responses that were previously associated with safety become associated with danger when confronted with a traumatic event. In addition, Foa et al. (1989) distinguished memory for a traumatic event from normative memories by noting that additional nodes are activated which represent strong behavioral and physiological reactions. These researchers proposed that in order for such associations within the fear network to be weakened the network must be activated and replaced with new incompatible information (Brewin & Holmes, 2002; Foa et al., 1989). Foa and Rothbaum (1998) later modified this theory and proposed the emotional processing theory, which suggests that individuals who possess rigid pre-trauma views, either positive or negative, are more vulnerable to PTSD because the event directly conflicts with their pre-existing cognitions (Brewin & Holmes, 2002; Foa & Rothbaum, 1998). Repeated exposure to fear related cues is thought to increase fear habituation and reduce responses to trauma-related cues (Brewin and Holmes; 2002). Thus, repeatedly being presented with fear provoking stimuli is expected to result in an extinction of the fear associations, which eliminates the negatively reinforcing properties of avoidance (Brewin & Holmes, 2002; Foa and Rothbaum, 1998). In doing so, the individual is left with an experience in which being in the presence of fear-related stimuli no longer poses a threat, thereby allowing for the incorporation of safety information.

In terms of treatment implications, earlier conditioning-based models and more recent information processing models both point to the necessity of an exposure-based intervention. That is, in order for symptom reduction to occur, the individual must be presented with objectively safe, trauma-related stimuli.

***Exposure-Based Treatment for PTSD***

The specific goal of exposure therapy is to facilitate the confrontation of the feared, objects, situations and images which serve to maintain the disorder. Exposure therapy has been used successfully for many years to treat a variety of disorders such as phobias, panic disorder, and obsessive-compulsive disorder (Rothbaum & Schwartz, 2002). As noted previously, the persistent fear of such cues often results in avoidance, which prevents the extinction of the conditioned emotional response. Repeated exposure to event-related phenomena over time reduces the occurrence of conditioned fear responses. From an information-processing perspective, exposure facilitates symptom reduction by allowing the client to realize that contrary to their mistaken beliefs, being in safe situations that are reminiscent of the trauma is not dangerous, remembering the trauma is not analogous to experiencing it, anxiety does not remain in the presence of fear-related cues upon repeated exposure, rather it diminishes, and that anxiety and PTSD symptoms are not indicative of a loss of control (Foa & Meadows, 1997; Foa & Jaycox, 1996).

Exposure-based therapies vary in both duration and degree of exposure. Exposure for PSTD employs both imaginal and in vivo techniques; however imaginal techniques are implemented more often in PTSD relative to other anxiety disorders. Since frequent and pervasive memories of fear-laden experiences are central and more prominent to PTSD, imaginal techniques are frequently employed. Additionally, since the source of distress often pertains to distal experiences that are not regularly encountered in everyday situations (e.g., combat), this variant of exposure is often necessary for practical purposes. Imaginal exposure typically begins by asking the client to close his or her eyes and vividly imagine the traumatic event. The client is asked to describe it aloud, in present tense, and to provide as much sensory detail and information related to their current thoughts and feelings as possible. Some forms of imaginal exposure also require clients to produce written accounts of the traumatic event and their accompanying feelings. In either case, the client is usually given either a tape-recording of their verbal account or their written account and is told to review it at least once a day between sessions. Regularly reviewing their account of the event serves to facilitate a reduction in their anxiety and distress and prevents maladaptive avoidant coping between sessions. To the extent possible, therapy for PTSD should also utilize in vivo techniques so that the client can benefit from exposure to activities, places, or cues directly associated with the event that have previously been a source of anxiety and have been avoided. In vivo exposure facilitates the generalization of treatment gains outside of the clinic walls. Quite obviously, whether a client is engaged in imaginal or in vivo exposure exercises, sessions are not terminated until the client reports a significant reduction (e.g., greater than 50% reduction) in anxiety and distress. Ending the session prematurely, when the client is experiencing a high degree of anxiety, can result in sensitization rather than extinction (Gray & Acierno, 2002; Frueh, Turner, Beidel, & Mirabella, 1996).

Exposure therapy typically consists of 10-20 sessions (Gray & Acierno, 2002; Rothbaum et al., 2000). However, the number of sessions utilized in exposure-based treatments depends on a number of factors. Notably, the chronicity of the disorder and the severity of symptoms greatly affect the number of prescribed sessions, obviously with a more profound symptom presentation necessitating more sessions. The number of sessions also depends on how often the client engages in exposure-related activities outside of session. Since extinction of the fear-related responses depends on repeated exposure, the greater the number of exposure experiences the more expedient the symptom improvement. Treatment generally can be concluded once the individual can provide accounts of the traumatic event with minimal distress, and once he or she is no longer avoidant of trauma-reminiscent cues and contexts. Occasionally, cognitive restructuring techniques may supplement exposure based therapies. Cognitive restructuring is based on the premise that identifying and modifying catastrophic or maladaptive interpretations of one's traumatic experience and future well-being will lead to symptom reduction (Bryant, Moulds, Guthrie, Dang, & Nixon, 2003). However, in a recent randomized trial comparing prolonged exposure with or

without exposure to a waitlist condition, evidence indicated that cognitive restructuring was not necessary for the improvement of PTSD symptoms (Foa, Hembree, Cahill, Rauch, Riggs, Feeny, & Yadin, 2005). Thus, while teaching clients techniques to alter maladaptive thoughts may be helpful, it may not be necessary for overall symptom improvement. Further, as noted earlier, cognitive etiological models are not incompatible with – and may even be subsumed by – behavioral models. In the case of cognitive/belief change, cognitive restructuring techniques are based on an assumption that explicit dialogue is necessary to alter maladaptive ideations. While this approach can facilitate cognitive change, behavioral exposures can also provide the requisite experiences to challenge erroneous beliefs. Such an approach may, in fact, be preferable in that belief change follows personal experience rather than clinician assurance.

### *PTSD Treatment-Outcome Literature*

Several comprehensive reviews of the literature have converged in their uniform conclusion that exposure-based therapy is the treatment of choice for PTSD (Foa & Meadows, 1997; Rothbaum & Schwartz, 2002; Nemeroff et al., 2006). As Rothbaum and Schwartz (2002) noted, exposure therapy has more empirical evidence supporting its efficacy than any other treatment for PTSD. Not only does exposure have the strongest empirical support for its efficacy, but it has also been evaluated with more trauma populations than any other treatment. In sum, exposure therapy appears to be one of the most routinely examined and empirically supported treatments for PTSD. A comprehensive review of the PTSD treatment outcome literature is beyond the scope of this paper, but the following studies are representative and illuminating.

Foa, Dancu, Hembree, Jaycox, Meadows, and Street (1999) compared exposure therapy, stress inoculation training (SIT), and their combination among a sample of 96 female assault victims. Participants were assigned to one of the three treatment conditions or to a wait list condition. Treatment took place over the course of five weeks and consisted of nine twice-weekly sessions conducted by Ph.D.-level clinical psychologists. Results indicated that all three treatment conditions were superior to waitlist and that the immediate effects of all treatments were maintained at a 12-month follow up. However, prolonged exposure was shown to be superior to the other two treatment conditions. In fact, individuals who received prolonged exposure were found to have a lower drop-out rate, larger decrements on measures of PTSD, depression, and anxiety, and greater social adjustment. Additionally, prolonged exposure was the only treatment that significantly reduced anxiety symptoms among intent-to-treat participants. The authors also noted that prolonged exposure is less complex than SIT and may be more accessible to clinicians outside of specialized settings.

More recently, Taylor, Thordarson, Maxfield, Fedoroff, Lovell, and Ogrodniczuk (2003) conducted a comparative, randomized study on the efficacy and expediency of exposure therapy, eye movement desensitization and reprocessing therapy (EMDR), and relaxation training among 45 patients with longstanding PTSD. All three treatments were found to produce reductions in depression, dissociative symptoms, and trauma-related anger and guilt. Yet, results specifically indicated that exposure therapy was the most effective in reducing reexperiencing and hyperarousal symptoms and more rapidly diminished patterns of avoidance among treatment completers. Also, exposure therapy was found to yield the highest percentage of participants who no longer met DSM-IV criteria for PTSD.

Similarly, Foa and Rauch (2004) compared exposure therapy with and without cognitive restructuring in a sample of 54 female victims of sexual and nonsexual assault. Results indicated that treatment with prolonged exposure resulted in substantial reductions in negative cognitions about the self, the world, and self blame. In fact, exposure therapy was found to produce reliable change in the majority of participants and changes were maintained at a modal 12-month follow-up. Additionally, changes in negative cognitions were found to be significantly related to reductions in PTSD symptoms. The authors

concluded that the addition of a cognitive restructuring component failed to enhance changes in dysfunctional cognitions. Thus, recent evidence suggests that exposure therapy is an excellent means of alleviating both the anxiety and cognitive symptoms specific to PTSD.

### *Misconceptions of Exposure Therapy*

Although exposure therapy has been found to be extremely effective in treating PTSD, misconceptions pertaining to its practical utility often prevent its usage by many clinicians. For instance, a commonly cited misconception of exposure-based therapies is that they exacerbate symptoms thereby increasing the rate of attrition in clients. While anxiety and distress symptoms may increase briefly during treatment, they typically subside relatively quickly. A recent study (Foa, Zoellner, Feeny, Hembree, & Alvarez-Conrad, 2002) investigated self-reported symptom exacerbation in a group of females with assault related PTSD undergoing exposure therapy and found that only a very small minority (10.5%) of participants experienced consistent symptom exacerbation throughout treatment (Feeny, Hembree, Zoellner, 2003). It has not been shown that such (relatively rare) exacerbations are a) attributable to exposure per se or b) appreciably different from those occurring with other treatment modalities. Also, as mentioned earlier, ensuring that clients experience significant reductions in anxiety before ending an exposure session also helps to prevent symptom exacerbation. Symptoms increases are likely to occur when discussing a traumatic anxiety-provoking event. However, exposure therapy does not appear to be any more likely to exacerbate symptoms or produce client attrition any more than other treatments for PTSD. In terms of the alleged heightened attrition rates associated with exposure therapy, Hembree and colleagues (2003) reviewed studies of cognitive-behavioral treatment for PTSD and found no significant difference in dropout rates among 25 controlled studies of varied treatments for PTSD.

Critics of behavioral therapies and exposure often mischaracterize such interventions as being cold, mechanistic, and insufficiently attentive to client-therapist relationship factors. This criticism is not bolstered by any compelling evidence and seems to be based instead on subjective perception rather than direct observation or personal experience. Requiring a client to undergo uncomfortable anxiety-eliciting experiences, such as recounting an embarrassing and painful sexual assault (for instance), requires tremendous trust in the clinician. To the extent that the therapist is perceived by patients as caring and empathic, they will be more forthcoming in therapy and will be more willing to engage in exposure exercises in session and between sessions. Hembree, Rauch, and Foa (2003), noted that for trauma survivors, an empathic and supportive relationship is crucial and that a strong therapeutic alliance can facilitate successful disclosure and completion of treatment.

An additional false impression held by exposure therapy detractors is that they only focus on the anxiety symptoms, thereby ignoring other post-traumatic issues such as depression. However, studies that include outcome measures that focus on these domains indicate that there are consistent global and diverse treatment gains (Marks, Lovell, Noshirvani, Livanou, & Thrasher, 1998; Tarrier, Pilgrim et al., 1999; Tarrier, Sommerfield, Pilgrim, & Humphreys, 1999). Improvements are often seen in areas such as depression and self-blame. Thus, although the primary goal of exposure therapy is to reduce symptoms of anxiety, other symptoms are remediated by exposure as well.

### *Applicability of Exposure to "Complex" Cases*

The "complex" case typically refers to the client who possesses some combination of negative characteristics which are thought to impede standardized treatment delivery. Ruscio and Holohan (2006) outlined common features of complex cases to include: comorbid condition or chronic conditions, issues related to safety, physical/medical problems, intellectual barriers, unfavorable personality characteristics, and previous treatment failures. Such features are thought to have a direct impact on treatment outcome success. Some critics assert that the present methods used to determine a treatment's efficacy use client

samples with straightforward symptom presentations, thereby ignoring the complex case. Westen and Bradley (2005), for instance, commented that patients who present with a single syndrome are the exception rather than the rule in clinical practice and research settings. Critics argue that treatments tested among homogenous populations characterized by straightforward symptom presentations, are not representative or especially useful. When presented with a client with post-traumatic stress disorder, who is simultaneously dealing with substance use problems (a very common scenario), the clinician is faced to contend to with an assortment of issues, all of which warrant attention. Some skeptics argue that proceeding with "straight" exposure therapy is misguided in that such an approach fails to target all of the presenting problems in the service of addressing the most conspicuous and perhaps most readily altered problem.

However, Stirman and colleagues (2003, 2005) recently examined the applicability of randomized control trial (RCT) studies to generalized samples of community outpatients with frequent instances of comorbidity. Information was obtained from outpatient charts which were matched to inclusion and exclusion criteria from previously published RCT studies. Results revealed that the majority of patients from both samples would have been eligible to participate in RCTs (80% and 95%, respectively). A commonly cited reason for exclusion from RCTs was because the current condition was of insufficient severity or duration. The complex client in actuality may very well be the more severe client, who may in fact be disproportionately represented in RCTs. Thus, studies which examine the efficacy of exposure therapies are likely to contain samples which possess severe symptom presentations. Therefore, it is probable that the evidence supporting the efficacy of exposure therapy is indeed generalizable to real-world patients.

Additionally, a variety of suggestions have been offered to clinicians to facilitate the utilization of Empirically Supported Treatments (ESTs), such as exposure therapy, to complex cases. Ruscio and Holohan (2006) noted that clinicians can modify treatments when significant barriers to treatment implementation become apparent. The clinician should first attempt to proceed with exposure therapy and make adjustments only when necessary. For instance, in the case of client who is actively abusing substances, the clinician may want to first employ techniques to discontinue substance use and then commence exposure. Thus, when dealing with complex cases, clinicians should make modifications to optimal interventions, rather than completely abandoning such treatments.

### *Cultural Considerations*

Directly related to the issue of the complex client, is the argument concerning how successful exposure therapies are with the ethnically and/or culturally diverse client. The modern-day clinician is faced with clients who may be of a different ethnicity or sexual orientation than their own. It is debatable whether treatment-outcome investigation samples are representative of the present cultural variability or whether results are applicable to diverse client populations. Lau (2006) has expressed the concern that such treatments have been developed based on work with mainstream samples and that their efficacy may not generalize to ethnic communities. Such concerns are accentuated by the U.S. Surgeon General (2001) report that the gap between research and practice is particularly acute for racial and ethnic minorities (Sue & Zane, 2006). There is certainly a need to assess the applicability of prominent treatments to minorities. It should not tacitly be assumed, however, that if a treatment has not been tested with a particular population that it will not be efficacious with that population. Lau (2006) makes the observation that there is limited evidence to support that ESTs are ineffective for minority clients. This observation is likely to be particularly apt in the case of exposure-based therapies for anxiety disorders such as PTSD given the emphasis on universally applicable learning and conditioning principles. Since there appears to be a dearth in research examining differential exposure therapy outcomes as a function of culture, it is premature to conclude that exposure is likely to be less efficacious with more diverse clients. Additionally, potential solutions have been offered when treating clients of varying cultural backgrounds.

Of course, as with all presenting problems and diagnoses, the clinician should assess for and be aware of cultural considerations that may impact treatment and should make adaptations to the treatment plan while simultaneously incorporating exposure techniques in session. For instance, if presented with a female sexual assault victim, who is of a different cultural background or gender than the clinician, it is possible that she may have greater difficulty disclosing or discussing the details of the assault. However, if the clinician is conscious of this barrier to disclosure he or she can make the appropriate accommodations along the way to facilitate treatment progression. By creating a safe environment and ensuring a strong therapeutic alliance free from judgment, and built on trust and compassion the clinician can promote a sense of understanding with the client, thereby increasing the likelihood of disclosure.

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