

# Exposure-Based Therapy for Post-Traumatic Stress Disorder in Children and Adults

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**Abstract:** We review the main components of Cognitive Behavioral Therapy (CBT) in the treatment of Post-traumatic Stress Disorder (PTSD) and the various treatment protocols that were found to be effective in treating this disorder in adult and pediatric populations. We highlight Prolonged Exposure (PE) therapy, which received strong empirical support, and was widely disseminated in Israel. We provide a detailed description of the PE treatment protocol for adults and children, and review studies conducted in Israel. We discuss clinical issues commonly raised by professionals starting to utilize PE and other trauma-focused treatment protocols. Finally, we discuss the open questions in the treatment of PTSD, and suggest some ideas for future research.

## PTSD Symptoms and Prevalence

PTSD is an anxiety disorder characterized by symptoms of reexperiencing (e.g., nightmares, intrusive thoughts), avoidance of trauma-related stimuli and thoughts (e.g., situations, places), and hyperarousal (e.g., sleep problems, hypervigilance) (1). Epidemiological studies have estimated the lifetime prevalence of PTSD among adults as ranging from 7 to 24% (2, 3). Among children and adolescents, the prevalence of PTSD is estimated to be between 0.5% and 14.5% (4, 5).

## Main Components of CBT for PTSD

The accumulation of empirical evidence for the benefits of CBT in PTSD has been recognized by the Practice Guidelines of the International Society for Traumatic Stress Studies (6). Moreover, the U.S. Department of Health recommended the use of psychological treatment for PTSD, while

concluding that there is “most evidence for cognitive behavioral methods” (7).

CBT for the treatment of PTSD encompasses numerous diverse techniques such as exposure therapy, cognitive restructuring, and anxiety management. *Exposure techniques* (ET) include flooding, systematic desensitization, graded in-vivo exposures, and prolonged recall of a painful memory. All ET methods share the common feature of confrontation with anxiety-provoking, yet realistically quite safe situations, memories and images. In *cognitive restructuring* (CR) techniques, patients are encouraged to challenge unhelpful cognitions. Typically, in PTSD, CR patients re-examine their attributions of self-blame with respect to the traumatic event, as well as their views that the world is mostly dangerous, and that people cannot be trusted (8, 9). *Anxiety management* (AM) techniques are designed to teach patients ways of relaxation and self-soothing which include breathing retraining and muscle relaxation.

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Most effective CBT packages for PTSD encompass several components. Most include psychoeducation, that is, information about post-traumatic reactions and explanation of the rationale of the treatment. Most packages include several components in addition to psychoeducation, such as ET and AM (e.g., 10). Treatment packages differ in the relative emphasis of each of these components. Comparative studies have generally found equivalence in outcome among exposure, cognitive therapy and combinations of these interventions (11). However, among the various CBT interventions, ET has gained the greatest support across the widest range of populations (12–17; see also 18 for extensive review).

All the studies listed above focus on the treatment of adult PTSD sufferers. Compared to adults, there has been a paucity of methodologically rigorous studies for the treatment of PTSD in children and adolescents. PTSD treatment studies that have been conducted with a pediatric population consistently support the efficacy of CBT interventions in treating PTSD among sexually abused children (19–22) and young victims of other types of trauma (23–26). Indeed, the majority (57% to 92%) of children (ages 7–18) who received CBT in these studies exhibited significant improvement in post-traumatic distress.

## Empirical Evidence for the Efficacy of Various Treatment Packages for PTSD

### a) Cognitive Processing Therapy (CPT)

In CPT, a trauma-focused intervention, patients undergo cognitive training for challenging dysfunctional cognitions, particularly self blame, and process the traumatic event via detailed writing. Studies have documented the effectiveness of CPT (16, 17) for adult PTSD in well-controlled studies meeting high methodological standards.

### b) Cognitive Restructuring (CR)

CR or Cognitive Therapy (CT) was developed to challenge the patient's emotions and beliefs about the meaning of the traumatic event, and the attributions patients make about themselves or the world, following the event. This method aims to modify patients' pre-traumatic maladaptive cognitions

and patterns of emotions. CR focuses on modifying trauma related cognitions, without necessarily focusing on the traumatic event itself. A few studies support the use of this treatment protocol in adult PTSD (8, 9).

### c) Anxiety Management (or applied relaxation)

Anxiety Management packages are non-trauma focused interventions that are geared to reduce the level of anxiety and overall distress. They teach patients to reduce stress by using various techniques, such as breathing retraining, deep muscle relaxation and thought stopping.

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

In EMDR patients are trained to reduce distress, and then invited to recall the traumatic memory and its associated features (e.g., negative self-statements). Lateral sets of eye movements are induced simultaneously with the traumatic recall. Several studies have supported the use of EMDR in the treatment of adult (e.g., 27, 28) and child PTSD (29, 30). However, considerable controversy (31) surrounds this treatment package, as not all of the studies were well controlled, and there is a lack of clear evidence that the eye movements component contributes to the efficacy of the treatment beyond other components, such as exposure (32).

### e) Trauma Focused – Cognitive Behavioral Therapy (TF-CBT)

TF-CBT is the only treatment package developed specifically for a pediatric population, children victims of sexual abuse. Its components are summarized by the acronym PRACTICE: psychoeducation & parenting skills, relaxation skills, affective modulation skills, cognitive coping skills, trauma narrative and cognitive processing of the traumatic event, in-vivo mastery of trauma reminders, conjoint child-parent sessions, and enhancing safety and future developmental trajectory. Several well controlled studies have gathered strong support for this package for pediatric victims of sexual as well as non-sexual abuse (19–22, 33).

### f) Prolonged Exposure (PE)

Prolonged Exposure is a trauma-focused intervention that includes psychoeducation, anxiety management, and exposure as its components. The main body of the treatment involves inviting patients to confront trauma-related reminders and thoughts both through in-vivo encounters, and prolonged and repeated recall of the traumatic experience. PE for adults has received the highest quality empirical support for a variety of populations. Specifically, a large number of randomized controlled studies (e.g., 8, 12, 17, 34, 35) found PE to be effective with diverse types of trauma. At treatment termination, 40% to 87% of adult participants no longer met criteria for PTSD. PE efficacy is closely followed by CPT, with direct comparisons between treatments typically finding comparable outcomes (17). Compared to AM and EMDR, PE produces faster and larger reductions in avoidance and intrusive symptoms (28).

The PE protocol has been adapted to the pediatric population of PTSD sufferers (36), and studies supported its efficacy in an open trial with children and adolescents following various trauma types (37) and in a randomized controlled trial with post-traumatic adolescents following a single event trauma (38).

In the rest of this paper we focus on the PE intervention for two main reasons: first, because PE has gathered the widest support, with the largest number of well-controlled studies, and second, because PE has been widely disseminated in U.S. and in Israel (37–41). Research regarding dissemination programs in the U.S. and Israel demonstrated that following a relatively brief training, even non-specialists, can be taught to successfully apply PE programs (39). Indeed, in Israel, PE was successfully applied among adults and children following various traumatic events. In the following sections, we first introduce the theory underlying this intervention, and then present detailed accounts of PE protocols for adults and children. We then address clinical issues commonly raised by professionals who consider adopting this (as well as other trauma-focused) approach. Finally we discuss challenges facing clinicians and researchers seeking to help PTSD sufferers.

## PE: From Theory to Efficacy

### a) Conceptual basis of PE: Emotional Processing Theory

PE is based on Emotional Processing Theory (EPT) (42). According to EPT, post-traumatic sufferers develop a cognitive network that includes pathological associations between a large number of representations associated with danger, with the consequent reaction of avoidance. Exposure provides a corrective process during which new information, incompatible with the pathological elements of the cognitive network, is integrated into the memory structure. As a result, patients show a decrease in fear responses during and across exposure sessions. Furthermore, the memory of the trauma becomes organized and coherent, while the difference between reliving the trauma and recounting it becomes evident. These processes result in alleviation of trauma-related distress.

### b) PE in Israel

#### I. Empirical evidence in adults

In a randomized control study conducted by Nacasch (40), the efficacy of PE in combat and terror related PTSD was compared to treatment as usual (TAU, psychodynamic and supportive therapy). Preliminary results indicate a significant decrease in PTSD and depressive symptoms in the PE group as compared to the TAU group. Symptom reduction in the PE group was 49% from pre-treatment to post-treatment and 56% from pre-treatment to follow-up, in comparison to TAU group which presented 4.8% and 3.8% symptom reduction, respectively. In addition, in a case series (41) five patients with severe chronic PTSD due to combat, unresponsive to previous treatment (medication and supportive therapy), completed 10–15 weekly sessions of PE treatment, 20 and 30 years after the trauma occurred. All five patients exhibited marked improvement with a mean decrease of 48% in PTSD symptoms and 69% in depressive symptoms. Four patients maintained treatment gains or kept improving 6–18 months after treatment.

The findings regarding the effectiveness of PE for severe chronic PTSD are especially impressive given the limited amount of support using exposure-based therapy packages in combat-related

PTSD (43). Indeed, meta-analysis by Bradley and colleagues (44) found a statistically lower effect size in studies focusing on combat veterans compared to other trauma groups such as female victims of sexual abuse. In contrast, Nacasch suggests that the outcome of PE for Israeli male combat victims is similar to the outcome of PE for U.S. female assault victims (e.g., 12).

## II. Empirical evidence in youth

Gilboa-Shechtman and her collaborators (37) reported an open trial of 104 children and adolescents exposed to diverse traumatic events (e.g., MVA, terror, sexual and non-sexual assault) treated using a developmentally adapted PE. Treatment completers exhibited a mean decrease of 72.3% in PTSD symptoms and 65.8% in depression symptoms. Moreover, 92% of completers lost their PTSD diagnosis. This trial provides a strong support for PE effectiveness in a highly heterogeneous pediatric population. In a randomized controlled study conducted by Gilboa-Schechtman and her colleagues (38), the efficacy of PE in adolescent victims of single event traumas was compared to Time Limited Dynamic Psychotherapy (TLDP). Results indicated a significant decrease in PTSD and depression symptoms in both groups, with significantly greater reduction of PTSD symptoms in the PE as compared to the TLDP group. At treatment termination, 87% of PE completers did not meet diagnosis for PTSD, as opposed to 53% of TLDP completers.

### c) Overview of PE protocol in adults

PE treatment protocol for adults is comprised of 9–15 weekly sessions, lasting 90 minutes each. The treatment consists of four active components: education about common reactions to trauma, relaxation through breathing retraining, gradual exposures to trauma-related situations and objects (in-vivo exposure or IV), and repeated and prolonged recounting of the trauma memory (imaginal exposure or IE). IV and IE are considered to form the core elements of this treatment package.

In the first three sessions of the PE protocol, patients are introduced to the treatment rationale, trauma history is briefly discussed and breathing retraining is practiced. Next, the therapist describes

common post-traumatic reactions, gathers information about the patient's specific symptoms, and attempts to normalize these symptoms. Later, the rationale for IV is discussed and a hierarchy of avoided trauma related situations and objects is constructed. Three types of activities are commonly included in this hierarchy: (a) activities to decrease reality-based anxiety, such as exposure to situations that are mostly safe (e.g., going to a mall); (b) activities to decrease memory-based anxiety, such as exposure to situations that are in themselves not dangerous, but remind the patient of the traumatic event (i.e., wearing the outfit worn on the day of the trauma); (c) activities to increase pleasure and satisfaction (such as seeing friends or listening to music). Following the construction of the hierarchy, the patient is encouraged to gradually confront the situations listed in it. These confrontations with anxiety are typically completed between sessions.

Next, the rationale for IE is presented emphasizing the salient outcomes of prolonged and repeated recounting of the trauma: the organization of the memory of the trauma (trauma "digestion"), anxiety reduction, and enhancement of self efficacy and self control. Then, the patient is invited to recount the trauma memory and to provide a vivid, engaged and detailed narrative of the traumatic event. In order to process the traumatic memory and related emotions, the patient is encouraged to recount the story of the trauma while maximizing the engagement with trauma-related feelings and sensations (e.g., recounting the narrative in the present tense and with eyes closed). During the recounting, the therapist encourages the patient to attend to his/her current level of distress, while including emotions, actions, thoughts, sensations and physiological responses that were experienced during the occurrence of the traumatic event. The therapist and the patient then discuss the changes in the levels of stress during the IE and examine the thoughts related to patient-predicted consequences of such recounting. In addition, they discuss the thoughts and feelings related to the traumatic event itself. Following the first recounting, the patient is encouraged to continue processing the event between sessions, typically by listening to the recording of his/her traumatic narrative. IV and IE are continuously practiced for the remainder of the

therapy. In the final meeting, patient and therapist review the progress that has been made and discuss which parts of the treatment were most helpful to the patient.

#### **d) Overview of PE protocol in children and adolescents**

The adolescent and children protocol is based on the PE program for adults and was developed jointly by Foa, Creshman and Gilboa-Schechtman (36). Adaptations to the adult protocol were made to create a more flexible, modular and developmentally attuned protocol.

The pediatric PE protocol is divided into four modules: pretreatment stage, psychoeducation and treatment planning, exposures, relapse prevention and treatment termination. A module is a therapeutic unit with specific topics and goals. A module may be mapped to a flexible number of sessions, which are dependent on the particular patient's characteristics and his/her developmental stage.

The pre-treatment module, which is unique for children and adolescents, is aimed at assessing and promoting treatment motivation, and enhancing patient-therapist's collaboration. Co-morbid problems (e.g., conduct), as well as major social and educational difficulties, are identified, and plans are made to conduct the treatment in view of those challenges. The therapist becomes acquainted with the youth's familial environment and parental involvement in treatment is negotiated, emphasizing a balance between age appropriate need for independence and privacy, and the parents' desire for involvement in the treatment process.

In the psychoeducation and treatment planning module, the treatment rationale is presented to children and their families in an age appropriate manner. Next, a trauma interview is conducted to identify post-traumatic symptoms and dysfunctional cognitions. Subsequently, common reactions to trauma are discussed with children and their parents.

At the beginning of the Exposure Module, the rationale for IV is presented to children and their parents. Next, a hierarchy for real-life exposures is created, relying on children's and parent's reports. During this stage, therapist and youth patients jointly examine issues of safety and danger as they

pertain to the experiences that the youth is about to undertake in treatment. In the next sessions, the rationale behind recounting the trauma memory is presented, and the child is encouraged to explore his/her traumatic memory using either verbal accounts or other symbolic means such as drawing and playing.

In the final, relapse prevention and treatment termination module, patients are encouraged to consider possible future challenges and ways of coping. The therapist encourages the patient to make a list of stressful events which may trigger significant distress. With Israeli adolescents, an emphasis is placed on the recruitment into the military and on other difficulties which may lead to the activation of post-traumatic distress. Finally, coping strategies are reviewed and evaluated. At the end of the therapy, therapist and patient summarize the course of treatment, its challenges and successes.

#### **e) Clinical concerns**

##### **I. Who should and should not get PE?**

As indicated earlier, a high percentage of the population is exposed to traumatic events. Exposure to a life-threatening event is not, by itself, a reason to undergo treatment of any kind, as spontaneous recovery is the rule rather than the exception in dealing with traumatic events (4). Moreover, people suffer from some psychological distress following trauma and do not necessarily develop PTSD, or may develop other forms of distress such as major depression, panic disorder, etc. (4, 5, 45–47). In rare cases, traumatic events may trigger the occurrence or the exacerbation of severe mental illness such as bipolar or psychotic disorder.

When considering a treatment plan for a patient who seeks therapy following a traumatic event, the presence and centrality of intrusive and avoidant symptoms should be weighed. If the patient's main clinical problem is PTSD, then trauma-focused approaches, and specifically PE, need to be considered. Importantly, the presence of comorbid disorders (e.g., panic disorder, major depression or personality disorders) is not in itself counter-indicative for PE. In contrast, when the presence of another disorder is deemed more central than PTSD, PE will not be the first (or only) treatment.

## II. How well is PE tolerated?

Despite the vast empirical support for PE, as well as other exposure and trauma-focused interventions, many clinicians are reluctant to use these methods. A recent survey among trauma professionals cites concern with symptoms exacerbation as one of the main preventing issues (47). Symptoms exacerbation includes prolonged and irreversible exacerbation of suffering (e.g., an outburst of a psychotic episode) as well as temporary, yet considerable, increase in patient suffering. Some clinicians fear that patients will not be able to meet the challenges involved in exposure and consequently drop out of therapy. Research fails to support any of these concerns: First, the presence of psychotic symptoms is an exclusion criteria for PE. Indeed, the literature on the treatment of several hundred patients did not include reports of decompensation. With respect to temporary exacerbation, a study by van Minnen et al. (48) showed that higher emotional activation and engagement during the first sessions of IE are associated with *better* treatment outcome. A study conducted by Foa and colleagues (49) found that only a minority of participants exhibited a temporary increase in posttraumatic, depressive or anxiety symptoms following the first IE, and that these patients still benefited comparably from treatment. Moreover, symptoms exacerbation was unrelated to dropout. Finally, dropout rates among adult PE patients vary between 8% to 34% (17, 34, 50), and are quite similar to the rates found in other active treatments (e.g., CR, CPT, EMDR) (28). Among children and adolescents, dropout rates are also similar to other active treatments that were directly compared to PE (e.g., TLDP, 37).

## III. How wide is PE's effect?

PTSD is often comorbid with additional disorders, especially mood and anxiety (4). Though the active components in PE are mainly aimed at the alleviation of avoidance and intrusive symptoms, depressive symptoms are significantly reduced by the end of treatment (39, 50). This may be interpreted as indicating that the processing of the traumatic memory can also modify the patient's core dysfunctional beliefs. In addition, studies conducted with children and adolescents found that various CBT programs, specifically PE and TF-CBT, improve the

global functioning as assessed by an independent clinician, in addition to alleviating posttraumatic and depressive symptoms (22, 39).

## Concluding Remarks

We reviewed a large number of studies that support CBT for PTSD. Yet, improvements for such treatments are needed. First, some PTSD patients do not reach complete recovery and continue reporting residual symptoms. Understanding such lack of success is important for further refinements of existing treatments. Second, reduction of dropout rates, which may be as high as 30%, is another important clinical concern (48). Third, additional research is needed for the development and evaluation of efficacy of CBT for PTSD with comorbid conditions, especially with externalizing disorders. Fourth, studies assessing the effectiveness of CBT for PTSD may need to focus not only on reduction of distress, but also on the enhancement of well-being (e.g., improvement in interpersonal relationship, sense of belonging and meaning). Fifth, long-term follow-up studies focusing on anxiety and depressive symptoms are needed in order to examine treatment gains maintenance. Sixth, studies and public policy efforts may be aimed at increasing compliance of therapists with using empirically supported treatment protocols. Seventh, despite the awareness of PTSD, the gap between epidemiological studies and the experience of trauma professionals indicates that most PTSD sufferers do not seek treatment. More effective outreach programs need to be designed to help a larger number of trauma victims.

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