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Do You Need To Talk About It? Prolonged Exposure for the Treatment of Chronic PTSD

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Abstract

Is addressing the traumatic memory a necessary component of the treatment of posttraumatic stress disorder (PTSD)? Perhaps not for everyone, but in the present paper, we suggest that prolonged exposure, a cognitive behavioral treatment that includes repeated recounting of the traumatic memory, is a viable and robust treatment option. Prolonged exposure (PE) is widely regarded as an efficacious treatment for chronic posttraumatic stress disorder (Foa, Keane, & Friedman, 2000). The present paper reviews the efficacy and effectiveness of PE for the treatment of chronic PTSD and for a broader range of trauma-related symptoms. We will also review issues surrounding the acceptability of PE to mental health providers and potential clients. We conclude with a discussion the need for dissemination, additional dismantling studies, and further cross-cultural research.

Keywords

Exposure; Treatment; PTSD; Effectiveness; Cognitive-behavioral

The answer to the question is at once amazing simple and yet simultaneously immensely complicated. The simple answer is “No, you don’t need to talk about it.” Not everyone who undergoes a potentially traumatic event will go on to develop chronic posttraumatic stress disorder (PTSD, Kesler et al., 2005). In fact, the vast majority of individuals who experience such an event will not develop PTSD, with resilience being the normative response (e.g., Bonnano, 2004). Furthermore, for those who develop chronic PTSD, a number of empirically supported treatment options exist that do not include components focused on recounting of the traumatic memory. These other empirically supported treatments include several serotonergic medications (i.e., sertraline and paroxetine), cognitive therapy, stress inoculation training, and eye movement desensitization and reprocessing (e.g., Brady et al., 2001; Davidson, Rothbaum, Kolk, Sikes, & Farfel, 2001; Foa, Rothbaum, Riggs, Murdock, & Tamera, 1991; Foa, Dancu, Hembree, Jaycox, Meadows & Street, 1999; Resick, Nishith, Weaver, Astin, & Feuer, 2002; Taylor, Thordarson, Maxfield, Fedoroff, Lovell, & Ogrodniczuk, 2003). Yet, over the course of this paper, we are going to suggest that, for those with chronic PTSD, it probably is a good idea to talk about it and that prolonged exposure therapy is probably one of the best ways to do it.

What is Prolonged Exposure?

Exposure therapy is widely regarded as an efficacious treatment for chronic posttraumatic stress disorder (PTSD; Foa, Keane, & Friedman, 2000). In fact, the International Consensus Group on Depression and Anxiety, a group of internationally recognized experts, identified exposure as the first-line psychosocial intervention and the single most important treatment strategy for reducing PTSD symptoms (Ballenger et al., 2000; Ballenger et al., 2004). Exposure-based therapy (with *in vivo* and imaginal exposure) has demonstrated efficacy with variety of trauma-exposed individuals with chronic PTSD including combat veterans (e.g., Keane, Fairbank, Caddell, & Zimering, 1989), sexual assault survivors (e.g., Foa, Rothbaum,

Riggs, & Murdock, 1991), motor vehicle accident victims (e.g., Blanchard et al., 2003), mixed trauma samples (e.g., Marks, Lovell, Norshirvani, Livanuo, & Trasher, 1989; Taylor, Thordarson, Maxfield, Fedoroff, Lovell, & Ogradniczuk, 2003), adult survivors of childhood abuse (e.g., McDonagh et al., 2005) and refugees (Paunovic, & Öst, 2001).

Exposure-based techniques in the treatment of PTSD are designed to help the patient approach feared and avoided trauma-related material including memories, thoughts, feelings, and real-life situations. This process is often achieved in two primary ways: *in vivo* and imaginal exposure. *In vivo* exposure involves having the client systematically and repeatedly approach and re-engage in non-dangerous activities and situations that he or she had been avoiding. Imaginal exposure involves having the client systematically and repeatedly recount the trauma memory, focusing on thoughts and feelings at the time of the event, with the aim of fear reduction within and between sessions. The combination of these two techniques helps the client habituate to trauma-related fears as well as the trauma memory. Furthermore, by repeatedly recounting the memory, it is believed that the patient has the opportunity to process the memory, to better differentiate past from present, and to gain an improved sense of mastery and control over the memory (see Foa & Rothbaum, 1998). A variety of theories (e.g., Bouton, 1988, 1991; Brewin, 1996, 2001; Ehlers & Clark, 2000; Foa & Kozak, 1986) propose both behavioral and cognitive mechanisms underlying fear reduction seen in exposure-based therapy.

More specifically, prolonged exposure therapy (PE) is a particular exposure-based treatment protocol developed by Edna Foa and colleagues (Foa et al., 1991). The PE protocol contains the following components: 1) psychoeducation regarding treatment rationale and common reactions to trauma; 2) breathing retraining, a form of relaxation; 3) *in vivo* exposure, or approaching avoided trauma-related but objectively safe activities, situations, or places; and 4) imaginal exposure, or repeated recounting of the traumatic memory (Foa, Hearst, Dancu, Hembree, & Jaycox, 1994; Foa & Rothbaum, 1998). The standard PE protocol involves 9–12 treatment sessions, lasting approximately 90–120 minutes, with additional sessions sometimes implemented if needed. Within the literature, there is a general confusion regarding what is and is not referred to as PE. Although the specific prolonged exposure protocol contains a variety of components, for many, PE is considered synonymous with imaginal exposure (IE): systematic and repeated recounting of the traumatic memory. Specifically with imaginal exposure, Foa and colleagues (Foa & Kozak, 1986; Foa & Riggs, 1993; Foa, Molnar, & Cashman, 1995) have proposed that persistent emotional disturbances such as PTSD following a traumatic event may indicate inadequate processing of the trauma memory and that the recovery process involves the organizing and streamlining of the memory. Yet, at present, it is unclear whether the mechanisms underlying symptom reduction associated with repeated recounting of the traumatic memory involve this increased organization and defragmentation (van Minnen, Wessel, Dijkstra, & Roelofs, 2002; Zoellner & Bittinger, 2004).

Efficacy and Effectiveness of PE

A growing number of trials provide evidence for the efficacy and effectiveness of this specific prolonged exposure protocol (psychoeducation, relaxation, *in vivo*, and imaginal exposure) in the treatment of chronic PTSD (e.g., Feeny & Zoellner, 2005; Foa et al., 1991, Foa et al., 1999; Foa et al., 2005; Ironson et al., Resick et al., 2002; Rothbaum, in press). As discussed above, while a number of treatment outcome studies support the efficacy of exposure-based techniques and utilize various components (e.g., imaginal exposure alone), we have summarized the main trials that specifically describe their treatment as PE and include all four of the PE components as their sole intervention in Table 1. That is, these trials contain a PE alone treatment condition; where PE is not combined with cognitive restructuring, stress inoculation training, etc. Using a pre-post treatment Cohen's *d* effect sizes for treatment

completers, on the primary outcome measure of PTSD severity, all summarized trials report large (Cohen's $d > .8$) and sustained effect sizes over time. Thus, with PE, individuals with chronic PTSD are improving on PTSD severity (Cohen's d $M = 2.39$, $SD = .79$, 95% CI: 1.56–3.22) and sustaining these gains over time ($M = 2.69$, $SD = .81$, 95% CI: 1.84–3.54).

Does PE improve other trauma-related symptoms and conditions?

PE is also highly effective in addressing a broader range of trauma-related symptoms. To date, the majority of PE trials specifically include systematic assessment of depression, anxiety, and often global functioning as primary outcome measures. Furthermore, across these trials, PE consistently reduces both depression and anxiety and improves global functioning (e.g., Foa et al., 1991; Foa et al., 1999; Foa et al., 2005). In fact, the majority of individuals in these trials actually achieve good end-state functioning, with PTSD, depression, and anxiety dropping to non-clinical levels and sustaining these gains through follow-up. Yet, one of the questions regarding a highly fear-focused treatment such as PE is whether or not it adequately addresses a wider range of trauma-related symptoms such as trauma-related cognitions (including guilt), anger, and dissociation.

With trauma-related cognitions, a recent study by Foa and Rauch (2004) reported that PE produced clinically significant and lasting reductions in negative cognitions about one's self, the world, and self-blame. Reductions in these negative cognitions were associated with reductions in PTSD symptoms. Most notably, PE alone reduced these negative cognitions just as well as PE in combination with cognitive restructuring, suggesting that specifically targeting cognitive distortions in treatment is not necessary for cognitive change. Both Resick et al. (2002) and Taylor et al. (2003) reported similar reductions both for trauma-related cognitive distortions and trauma-related guilt following PE. For a more detailed discussion of cognitive changes seen in exposure-based therapy, see Moore, Zoellner, and Bittinger (2004).

Unlike trauma-related cognitions, where the majority of individuals with PTSD report the presence of negative cognitions, both the presence and extent of anger and dissociation symptoms are more variable. That is, not every individual with chronic PTSD presents with elevated levels of anger and dissociation. Thus, treatment effects on these variables may be obscured due to lower scores for some individuals. Consistent with this idea, Cahill and colleagues found prolonged exposure to be effective in reducing symptoms of anger, particularly for those with higher levels of anger at pre-treatment (Cahill, Rauch, Hembree, & Foa, 2003). Similar reductions have been also been reported by other investigators (e.g., Taylor et al., 2003). Even less is known about PE treatment effects on dissociation (Feeny & Danielson, 2004), though Taylor and colleagues reported reductions in dissociation with in vivo and imaginal exposure (Taylor et al., 2003). Undoubtedly, this area of improvement in secondary outcomes is a key one for future investigation and may be an important area in differentiating the most effective treatment approaches.

Another important issue is the impact of comorbid disorders on the treatment of chronic PTSD. Most commonly, PTSD is associated with comorbid major depression, other anxiety disorders, and substance abuse disorders (Kessler et al., 2005). However, although individuals with comorbidity are often viewed as a treatment resistant group (Havik & VandenBos, 1996), a growing number of the major clinical trials allow for the presence of comorbid disorders, seeking to have less rarified and more generalizable samples (e.g., Resick et al., 2002; Feeny & Zoellner, 2005; Foa et al., 2005). For example, Foa et al. (2005) reported 67% of the sample having some form of comorbidity, with 41% meeting criteria for comorbid major depression. To examine the impact of comorbidity on PTSD treatment outcome, van Minnen and colleagues (2002) examined a range of comorbid conditions as predictors of treatment outcome in a trial of PE for treatment of PTSD among adults with various trauma histories. None of the

comorbid conditions examined (including depression, general anxiety, substance use, and personality disorders) were significant predictors of treatment outcome. The authors concluded that, contrary to clinical lore, PTSD patients with comorbidity should not be excluded from treatment with PE (van Minnen, Arntz, & Keijsers, 2002). A similar picture has emerged with comorbid personality disorders, Feeny and colleagues (Feeny, Zoellner, & Foa, 2002) also found this to be the case in a study of treatment of women with chronic PTSD and borderline personality characteristics. Although the women with borderline personality characteristics were less likely to achieve good end state functioning, they did in fact benefit significantly from treatment. Likewise, Hembree and colleagues found similar results for PE even when a range of personality disorders were examined (Hembree, Cahill, & Foa, 2004).

Another important question is the efficacy of PE for particular types of trauma exposure or exposure to multiple potentially traumatic events. Less is known about its efficacy for veteran and childhood sexual abuse (CSA) samples. To date, there are no published specific PE protocol trials in veterans; however, there are several trials of exposure-based interventions (Keane et al., 1989; Boudewyns, Hyer, Woods, Harrison, McCrainie, 1990; Copper & Clum, 1989; Schnurr et al., 2003). Schnurr et al (2003), the largest and most recent of the trials, employed a group-based exposure intervention, showing comparable results but higher dropout for the exposure than the non-exposure intervention. The group nature of the intervention makes this study difficult to compare to other exposure-based interventions, particularly in its ability to foster within and between session habituation. For individuals with chronic PTSD resulting from CSA, Resick, Nishith, and Griffin (2003) reported no differences in treatment outcome (combining PE and Cognitive Processing Therapy treatment conditions) in individuals with CSA and those without, despite a hypothesized more complex symptom presentation. Yet, Hembree, Street, Riggs, and Foa (2004) reported that history of CSA predicted greater PTSD severity following treatment (combining PE, SIT, PE-SIT treatment conditions). Furthermore, McDonagh et al. (2005) reported a higher dropout rate for an exposure-based treatment than a non-exposure based treatment for CSA survivors. However, the higher dropout for the CBT treatment appears to be elevated due to one therapist with a 60% dropout rate. It may be that therapist-specific factors are a critical component of treatment retention and possibly more so with individuals with CSA (e.g., Cloitre, Stovall-McClough, Miranda, & Chemtob, 2004).

Is PE effective across ethnic or cultural groups?

Initial studies examining the efficacy of PE with various samples indicate that PE may be effective across ethnic and cultural backgrounds (e.g., Zoellner, Feeny, Fitzgibbons, & Foa, 1999; Nacasch, 2005). Most cross-cultural work to date has focused on variations of exposure-based interventions. Three studies are notable (Paunovic & Öst, 2001; Otto, Hinton, Korbly, Chea, Ba, Gershuny & Pollack, 2003; Neuner, Schauer, Klaschik, Karunakara, & Elbert, 2004). Using culturally sensitive variations, these trials suggest the potential benefits of including exposure-based interventions for the treatment of chronic PTSD across diverse samples. In particular, Neuner and colleagues found strong effects of exposure using narrative exposure therapy (NET) with Sudanese refugees with PTSD who were still living in a potentially traumatic environment (Ugandan refugee settlement). Although NET is not identical to PE, it too involves having the patient recount the traumatic memories, through writing. At one year post-treatment, only 29% individuals receiving NET in comparison to 79% of the supportive counseling group and 80% of the education group still met criteria for PTSD. Initial findings such as these are encouraging for disseminating culturally sensitive and effective PTSD interventions.

What Factors Are Associated with Poor or Worse Treatment Outcome?

One of the striking issues with this literature is simply that the majority of patients make substantial improvements across trials. Rauch and Cahill (2003) reported that reduction in PTSD symptoms across randomized control trials for exposure-based interventions ranges from 40% to 67%, compared to 26%–42% for active controls (supportive counseling or relaxation) and 1% to 20% for wait list. Thus, readers need to be careful when interpreting the literature on the prediction of treatment outcome, carefully differentiating between predicting “poor outcome,” that is, those who do not make substantial improvements or remain at clinically symptomatic levels of functioning, and “worse outcome,” that is those who make substantial gains but not as profound as others in the trial. Furthermore, an additional caveat in this literature is that often predictor studies are underpowered to detect stable predictors, both when lumping across treatment modalities and even more so within particular treatments.

At present, no clear *a priori* predictors of treatment outcome, either for poor or worse outcome, exist for PE. That is, it is very difficult to say at pre-treatment who is and who is not a good treatment candidate. Some of the factors noted across the PTSD exposure-based treatment literature include: childhood trauma and sustaining a physical injury during adult assault predicting greater PTSD symptom severity at post-treatment (Hembree, Street, Riggs, & Foa, 2004); anxiety sensitivity and pain predicting greater PTSD severity (Fedoroff, Taylor, Asmundson, & Koch, 2000); partial responders reporting greater pre-treatment numbing, anger, depression, pain, and worse functioning than full responders (Taylor, Federoff, Koch, Thordarson, Fecteau, & Nicki, 2001); and lower duration of therapy, male gender, and higher suicide risk predicting greater PTSD severity (Tarrier, Sommerfield, Pilgrim, & Faragher, 2002). Despite the range of factors included on this list and the lack of replication across trials, obviously, the question of “what works for whom and under what circumstances” is an important one (Coyne, 2001). However, at present, our knowledge is limited and tenuous.

Augmentation of PE with Other Treatment Modalities/Strategies?

Another approach to improve patient outcomes is the addition of other treatment strategies to PE. Good randomized control trials of augmentation studies are also in their infancy, but preliminary findings are promising in some areas and disappointing in others.

Augmentation of PE with pharmacotherapy

One of the most promising strategies is the addition of exposure-based therapy for those who have a partial medication response. Marshall, Carcamo, Blanco, and Liebowitz (2003) reported results from three case studies of augmentation of partial SSRI response with PE, with all three patients making additional treatment gains. Similarly, in a pilot study of ten Cambodian refugees with PTSD who were pharmacotherapy refractory, Otto and colleagues reported that sertraline plus exposure was more beneficial than sertraline alone (Otto, Hinton, Korbly, Chea, Ba, Gershuny, & Pollack, 2003). Finally, Cahill and colleagues recently reported the preliminary findings of a larger randomized augmentation trial of sertraline with PE (Cahill, 2004). Augmentation of sertraline partial-response with PE not only increased but also prevented loss of good end-state functioning. Taken together, these initial studies suggest the potential benefit of a stepped-care approach for the treatment of chronic PTSD.

Augmentation of PE with other psychotherapy components

Within the PTSD psychotherapy literature, there has been a trend toward packaging treatment components to enhance treatment outcomes. Specifically, two randomized trials sought to augment PE with an anxiety management program (i.e., stress inoculation training; Foa et al., 1999) or with cognitive restructuring (Foa et al., 2005). Neither combined treatment package

produced better results than PE alone, even on measures of cognitive distortions (Foa et al., 1999; Foa & Rauch, 2004; Foa et al., 2005). However, when imaginal exposure alone, and not in combination with vivo exposure, is augmented with cognitive restructuring, there are greater sustained reductions in PTSD and cognitive distortions (Bryant, Moulds, Guthrie, Dang, & Nixon, 2003). Thus, it appears that a partial exposure package (i.e., imaginal exposure alone) can be successfully augmented with cognitive restructuring.

Another augmentation trend has been toward selecting particular subgroups of individuals to receive special treatment components or packages. For example, common augmentation programs include: for comorbid panic disorder, Multiple Channel Exposure Therapy, specifically adding interoceptive exposure (Falsetti, Resnick, & Davis, 2005); and for childhood sexual abuse, Skills Training in Affective and Interpersonal Regulation plus Modified Prolonged Exposure, specifically adding mindfulness-based approaches (Levitt & Cloitre, 2005). Early trials indicate that these combined treatment protocols lead to good PTSD symptom reduction and also good improvement on other relevant symptoms (Falsetti, Resnick, & Davis, 2005; Cloitre, Koenan, Cohen, & Han, 2002). However, to date, no randomized control trials have directly compared these augmented packages to exposure therapy alone (Cahill, Zoellner, Feeny, & Riggs, 2004). Thus, at present, we are unable to determine whether these additive components provide any incremental benefit to these specific subgroups of patients. Given that current trials often include these subgroups (e.g., individuals with comorbid anxiety disorders or CSA) and that many individuals in these subgroups do currently benefit from exposure-based treatments, a potentially more parsimonious approach may be to consider selecting individuals based on certain characteristics (e.g., anxiety sensitivity, lack of distress tolerance) that would necessitate special treatment augmentation.

Will Therapists Use PE?

Despite the known efficacy of PE for PTSD, some experts suggest there may be significant barriers to therapists' use of these techniques in practice (Foy et al., 1996). Experts in the field have explored common myths that prevent the use of PE in the treatment of PTSD (Feeny, Hembree, & Zoellner, 2003). Among the most critical are provider fears surrounding possible symptom exacerbation and increased patient dropout. In one trial, we examined whether or not there was a reliable symptom exacerbation following the onset of imaginal exposure (Foa, Zoellner, Feeny, Hembree, & Alvarez-Conrad, 2002). After beginning imaginal exposure, only a small minority of patients reported an exacerbation in PTSD symptoms, depression, or anxiety, with this exacerbation being small and brief and unrelated to treatment outcome or dropout. In terms of increased patient dropout with exposure-based therapies, Hembree and colleagues reported that in an analysis across trials, dropout rates were comparable across exposure-based therapies (20.5%) and non-exposure based (stress inoculation/cognitive) therapies (22.1%; Hembree, Foa, Dorfman, Street, Kowalski, & Tu, 2003). Thus, both the concerns about potential exacerbation and/or patient dropout appear to be more clinical lore than clinical reality.

Despite this information, some providers appear reluctant to employ prolonged exposure, in particular, imaginal exposure where patients recount the traumatic memory. Using a survey, Becker, Zayfert, and Anderson (2004) reported that while the vast majority of behaviorally trained clinicians (93%) were trained in exposure, less than one third of the community providers had received any formal training. Consistent with these numbers, only 17% of community providers reported current use of imaginal exposure with their PTSD patients compared to 66% of the behaviorally trained providers. While these rates may solely reflect that utilization of exposure interacts with training, among clinicians who were both trained and experienced with PTSD, utilization of exposure was still low. Accordingly, this survey points to the need to better understand potential utilization barriers within the clinical community.

Fortunately, exposure therapy can be easily taught to and implemented by clinical providers (Foa et al., 2005; Feeny, Hembree, & Zoellner, 2003). In a recent clinical trial of PE with assault survivors, Foa and colleagues (Foa et al., 2005) delivered the PE protocol at two sites: doctoral-level clinicians at a university-based, clinical research site and masters-level therapists at a community site (Women Organized Against Rape, Philadelphia, PA). Clinicians initially received a five-day training on the administration of PE, followed by ongoing weekly supervision. There were no differences in post-treatment outcomes across provider sites, suggesting that therapists trained in PE are able to deliver the treatment effectively. Thus, this study provides initial evidence that PE can be successfully disseminated and implemented effectively with only brief training and minimal supervision.

Will Patients Choose PE?

Anecdotally, it is almost shocking how many individuals with chronic PTSD report that, although they have been in counseling for years, they have never talked about their traumatic event with their counselor. What is further interesting is that, given the above research, this potential omission may lie more on the part of the therapist than on the part of the client. A growing body of research suggests that, within the anxiety disorders, there is a general preference of patients for psychotherapy over pharmacotherapy (Barlow, 2004; Hazlett-Stevens, Craske, Roy-Byrne, Sherbourne, Stein, & Bystritsky, 2002; Wagner, Bystritsky, Russo, Craske, Sherbourne, Stein, & Roy-Byrne, 2005). This same pattern also appears in women presenting to the emergency room following sexual or non-sexual assault, with women reporting interest in both medications and counseling but a stronger preference for counseling (Roy-Byrne, Berliner, Russo, Zatzick, & Pitman, 2003).

In our own work, we have worked to extend these initial preference studies, providing individuals with detailed and matched treatment rationales for either prolonged exposure or sertraline in the treatment of chronic PTSD. Across both undergraduate and community samples, women consistently chose PE over sertraline, with ratios greater than a 4 to 1 (Feeny & Zoellner, 2005; Zoellner, Feeny, Cochran, & Pruitt, 2003). In addition to asking women to choose between the treatment options, we also asked women to give their reasons for their treatment choice. Across studies as well, the most common reason for choosing PE was the effectiveness or perceived mechanism underlying the treatment (Cochran, Pruitt, Fukuda, Zoellner, & Feeny, 2005; Angelo, Miller, Zoellner, & Feeny, 2005). This is surprising given that, in the treatment rationales, the wording regarding the effectiveness of the two treatments was identical. When examining the women's actual reasons, it makes more sense. Women routinely reported the perceived need to deal with the traumatic memory as critical to their recovery. For example, women stated: "It makes more sense to deal with the traumatic memories. This feels like a long lasting solution to the problem;" "[PE] faces the trauma rather than hide it;" and "I have never really talked about the specifics of my rape, so I have never acknowledged the reasons for my fear and shame." Undoubtedly, the question remains if individuals with PTSD will prefer PE to other forms of empirically supported psychotherapies; regardless, it is pretty clear that clients feel a strong need to talk about the traumatic event.

Future Directions

With strong empirical support confirming the efficacy of PE and treatment guidelines for PTSD identifying exposure as a critical component of treatment (Ballenger et al., 2004), it is critical to identify ways in which exposure-based treatment can be easily disseminated and utilized by treatment providers. Despite experts in the area of PTSD addressing and dispelling myths regarding PE (Feeny, Hembree, & Zoellner, 2003) and evidence verifying the trainability and acceptability of PE to treatment providers (Foa et al., 2005), many providers remain hesitant. If having patients approach trauma-related reminders and recount trauma memory is effective,

then why not have patients do this? Clearly, understanding and addressing therapist reluctance is critical. Intuitively, probably one the biggest barriers may be “fear of fear” on the part of the therapist. That is, when working with a trauma survivor who has undergone a horrific event or series of events, the last thing a therapist may want to do is to be the cause of further distress or discomfort. Yet, the fears and the memories are an everyday part of the trauma survivor’s life and approaching them rather than avoiding them may be one of the best ways to help the trauma survivor through the recovery process. Ultimately, better understanding and addressing of therapist reluctance and increased training in empirically supported principles and treatments, such as PE, are necessary for assuring high standards of care for trauma survivors with chronic PTSD.

Many questions remain to be addressed. Dismantling and augmentation studies are in their infancy. It remains to be seen if all components of PE are necessary for optimal symptom reduction or when and how PE can be best augmented. Particularly, within the area of imaginal exposure, little empirical work guides clinical decision making surrounding issues such as: what form of imaginal exposure is most beneficial (e.g., talking about the memory, writing about the memory, recounting the memory in imagination), what duration of exposure is most beneficial (e.g., how long within and across sessions), what components are most necessary for fear reduction (e.g., engagement, vividness), and how active and present the therapist should be during the exposure. Further work is also needed in identifying predictors of worse or poor treatment outcome and dropout. From this work, good guidelines regarding treatment contraindications and more strategic treatment augmentation packages may be developed. Finally, a key domain that needs further exploration is the applicability of PE across different ethnic groups and cultures. In the wake of recent large-scale disasters across the world, the need for such knowledge is crucial. Prolonged exposure is clearly an effective and efficacious treatment for PTSD. Answering these above questions will only make our practice, our research guidelines, and our standards of care better.

References

- Angelo F, Miller H, Zoellner L, Feeny N. Qualitative analysis of women’s reasons underlying treatment preference. 2005 Manuscript in preparation
- Ballenger JC, Davidson JRT, Lucrubier Y, Nutt DJ, Foa EB, Kessler RC, McFarlane AC. Consensus statement on posttraumatic stress disorder from the international consensus group on depression and anxiety. *Journal of Clinical Psychiatry* 2000;61(5):60–66.
- Ballenger JC, Davidson JRT, Lecrubier Y, Nutt DJ, Marshall RD, Nemeroff CB, Shalev AY, Yehuda R. Consensus statement update on posttraumatic stress disorder from the International Consensus Group on Depression and Anxiety. *Journal of Clinical Psychiatry* 2004;65(1):55–62.
- Barlow DH. Psychological Treatments. *American Psychologist* 2004;59(9):869–878. [PubMed: 15584821]
- Becker CB, Zayfert C, Anderson E. A survey of psychologists’ attitudes towards and utilization of exposure therapy for PTSD. *Behaviour Research and Therapy* 2004;42:277–292. [PubMed: 14975770]
- Blanchard EB, Hickling EJ, Devineni T, Veazey CH, Galovski TE, Mundy E, Malta LS, Buckley TC. A controlled evaluation of cognitive behavioral therapy for posttraumatic stress in motor vehicle accident survivors. *Behaviour Research and Therapy* 2003;41:79–96. [PubMed: 12488121]
- Blanchard EB, Hickling EJ, Malta LS, Freidenberg BM, Canna MA, Kuhn E, Sykes MA, Galovski TE. One- and two-year prospective follow-up of cognitive behavior therapy or supportive psychotherapy. *Behaviour Research and Therapy* 2004;42:745–759. [PubMed: 15149896]
- Bonanno GA. Loss, trauma, and human resilience: Have we underestimated the human capacity to thrive after extremely aversive events? *American Psychologist* 2004;59:20–28. [PubMed: 14736317]
- Bouton ME. Context and ambiguity in the extinction of emotional learning. Implications for exposure therapy. *Behavior Research and Therapy* 1988;26:137–149.

- Bouton, ME. A contextual analysis of fear extinction. In: Martin, PR., editor. *Handbook of behavior therapy and psychological science: An integrative approach*. New York: Pergamon General Psychology Series; 1991. p. 435-4530.
- Boudewyns PA, Hyer L, Woods MG, Harrison WR, McCrainie E. PTSD among Vietnam veterans: An early look at treatment outcome using direct therapeutic exposure. *Journal of Traumatic Stress* 1990;3:359-368.
- Brewin CR. Cognitive processing of adverse experiences. *International Review of Psychiatry* 1996;8(4): 333-339.
- Brewin CR. A cognitive neuroscience account of posttraumatic stress disorder and its treatment. *Behaviour Research and Therapy* 2001;39:373-393. [PubMed: 11280338]
- Bryant RA, Moulds ML, Guthrie RM, Dang ST, Nixon RD. Imaginal Exposure Alone and Imaginal Exposure With Cognitive Restructuring in Treatment of Posttraumatic Stress Disorder. *Journal of Consulting & Clinical Psychology* 2003;71(4):706-712. [PubMed: 12924676]
- Cahill, SP. Augmentation of sertraline with cognitive behavioral therapy in the treatment of posttraumatic stress disorder: Effects on acute treatment outcome and maintenance of treatment gains. Paper presented at the Anxiety Disorders Association of America Conference; Miami, FL. Mar. 2004
- Cahill SP, Rauch SA, Hembree EA, Foa EB. Effect of cognitive- behavioral treatments for PTSD on anger. *Journal of Cognitive Psychotherapy* 2003;17(2):113-131.
- Cahill SP, Zoellner LA, Feeny NF, Riggs DS. Sequential treatment of child abuse-related posttraumatic stress disorder: Methodological comment to Cloitre, Koenen, Cohen, and Han (2002). *Journal of Consulting and Clinical Psychology* 2004;72:543-548. [PubMed: 15279538]
- Cloitre M, Koenen KC, Cohen LR, Han H. Skills training in affective and interpersonal regulation followed by exposure: A phase-based treatment for PTSD related to childhood abuse. *Journal of Consulting and Clinical Psychology* 2002;70:1067-1074. [PubMed: 12362957]
- Cloitre M, Stovall-McClough KC, Miranda R, Chemtob CM. Therapeutic Alliance, Negative Mood Regulation, and Treatment Outcome in Child Abuse-Related Posttraumatic Stress Disorder. *Journal of Consulting & Clinical Psychology* 2004;72(3):411-416. [PubMed: 15279525]
- Cochran B, Pruitt L, Fukuda S, Zoellner L, Feeny N. Reasons underlying treatment preference for PTSD. 2005Manuscript in submission
- Coyne, J. Enhancement to the randomized clinical trial. Presentation made to NIMH, New Developments in Clinical Interventions Research; 2001.
- Copper NA, Clum GA. Imaginal flooding as a supplementary treatment for PTSD in combat veterans: A controlled trial. *Behavior Therapy* 1989;20:381-391.
- Ehlers A, Clark DM. A cognitive model of posttraumatic stress disorder. *Behaviour Research and Therapy* 2000;38:219-345.
- Erickson DJ, Wolfe J, King DW, King LA, Sharkansky EJ. Posttraumatic stress disorder and depression symptomatology in a sample of gulf war veterans: A prospective analysis. *Journal of Consulting and Clinical Psychology* 2001;69(1):41-49. [PubMed: 11302276]
- Falsetti SA, Resnick HS, Davis J. Multiple channel exposure therapy: Combining cognitive-behavioral therapies for the treatment of posttraumatic stress disorder and panic attacks. *Behavior Modification* 2005;29(1):70-94. [PubMed: 15557479]
- Feeny, NC.; Danielson, CK. PTSD, dissociation, and treatment. In: Taylor, S., editor. *Advances in the treatment of posttraumatic stress disorder: Cognitive-behavioral perspectives*. New York: Springer; 2004. p. 223-241.
- Feeny NC, Hembree EA, Zoellner LA. Myths regarding exposure therapy for PTSD. *Cognitive and Behavioral Practice* 2003;10:85-90.
- Feeny NC, Zoellner LA, Foa EB. Treatment outcome for chronic PTSD among female assault victims with borderline personality characteristics: a preliminary examination. *Journal of Personality Disorders* 2002;16:30-40. [PubMed: 11881159]
- Feeny NC, Zoellner LA. The role of choice in the treatment of chronic PTSD: PE versus sertraline. 2005Manuscript in preparation
- Foa EB, Dancu CV, Hembree EA, Jaycox LH, Meadows EA, Street GP. A comparison of exposure therapy, stress inoculation training, and their combination for reducing posttraumatic stress disorder

- in female assault victims. *Journal of Consulting and Clinical Psychology* 1999;67(2):194–200. [PubMed: 10224729]
- Foa, EB.; Hearst, DE.; Dancu, CV.; Hembree, E.; Jaycox, LH. Prolonged exposure (PE) manual. Medical College of Pennsylvania, Eastern Pennsylvania Psychiatric Institute; 1994. Unpublished manuscript
- Foa EB, Hembree EA, Cahill SP, Rauch SAM, Riggs DS, Feeny NC, Yadin E. Randomized trial of prolonged exposure for posttraumatic stress disorder with and without cognitive restructuring: Outcome at academic and community clinics. *Journal of Consulting and Clinical Psychology* 2005;73(5):953–964. [PubMed: 16287395]
- Foa, EB.; Keane, TM.; Friedman, MJ., editors. *Effective treatments for PTSD: Practice guidelines from the International Society for Traumatic Stress Studies*. New York: Guilford Press; 2000.
- Foa EB, Kozak MJ. Emotional processing of fear: Exposure to corrective information. *Psychological Bulletin* 1986;99:20–35. [PubMed: 2871574]
- Foa EB, Molnar C, Cashman L. Change in rape narratives during exposure therapy for posttraumatic stress disorder. *Journal of Traumatic Stress* 1995;8:675–690. [PubMed: 8564278]
- Foa EB, Rauch S. Cognitive changes during prolonged exposure versus prolonged exposure plus cognitive restructuring in female assault survivors with posttraumatic stress disorder. *Journal of Consulting and Clinical Psychology* 2004;72:879–884. [PubMed: 15482045]
- Foa, EB.; Riggs, DS. Posttraumatic stress disorder in rape victims. In: Oldham, J.; Riba, MB.; Tasman, A., editors. *American psychiatric press review of psychiatry*. Vol. 12. Washington, DC: American Psychiatric Press; 1993. p. 273–303.
- Foa, EB.; Rothbaum, BO. *Treating the trauma of rape: Cognitive-behavioral therapy for PTSD*. New York: Guilford Press; 1998.
- Foa EB, Rothbaum BO, Riggs DS, Murdock TB. Treatment of posttraumatic stress disorder in rape victims: A comparison between cognitive-behavioral procedures and counseling. *Journal of Consulting and Clinical Psychology* 1991;59:715–723. [PubMed: 1955605]
- Foa EB, Zoellner LA, Feeny NC, Hembree EA, Alvarez-Conrad J. Does imaginal exposure exacerbate PTSD symptoms? *Journal of Consulting and Clinical Psychology* 2002;70(4):1022–1028. [PubMed: 12182265]
- Foy DW, Kagan B, McDermott C, Leskin G, Sippelle RC, Paz G. Practical parameters in the use of flooding for treating chronic PTSD. *Clinical Psychology and Psychotherapy* 1996;3(3):169–175.
- Havik OD, VandenBos GR. Limitations of manualized therapy for everyday clinical practice. *Clinical Psychology: Science & Practice* 1996;3:264–267.
- Hazlett-Stevens H, Craske MG, Roy-Byrne PP, Sherbourne CD, Stein MB, Bystritsky A. Predictors of willingness to consider medication and psychosocial treatment for panic disorder in primary care patients. *General Hospital Psychiatry* 2002;24(5):316–321. [PubMed: 12220797]
- Hembree EA, Cahill SP, Foa EB. Impact of personality disorders on treatment outcome for female assault survivors with chronic posttraumatic stress disorder. *Journal of Personality Disorders* 2004;18(1):117–127. [PubMed: 15061348]
- Hembree EA, Street GP, Riggs DS, Foa EB. Do assault-related variables predict response to cognitive behavioral treatment for PTSD? *Journal of Consulting and Clinical Psychology* 2004;72(3):531–534. [PubMed: 15279536]
- Ironson G, Freund B, Strauss JL, Williams J. Comparison of two treatments for traumatic stress: A community-based study of EMDR and prolonged exposure. *Journal of Clinical Psychology* 2002;58(1):114–128.
- Jaycox LH, Foa EB. Obstacles in implementing exposure therapy for PTSD: Case discussions and practical solutions. *Clinical psychology and psychotherapy* 1996;3(3):176–184.
- Keane TM, Fairbank JA, Caddell JM, Zimering RT. Implosive (flooding) therapy reduces symptoms of PTSD in Vietnam combat veterans. *Behavior Therapy* 1989;20:245–260.
- Kessler RC, Demler O, Frank RG, Olfson M, Pincus HA, Walters EE, Wang P, Wells KB, Zaslavsky AM. Prevalence and Treatment of Mental Disorders, 1990 to 2003. *New England Journal of Medicine* 2005;352(24):2515–2523. [PubMed: 15958807]
- Kessler RC, Sonnega A, Bromet E, Hughes M, Nelson CB. Posttraumatic stress disorder in the National Comorbidity Survey. *Archives of General Psychiatry* 1995;52:1048–1060. [PubMed: 7492257]

- Levitt JT, Cloitre M. A clinician's guide to STAIR/MPE: Treatment for PTSD related to childhood abuse. *Cognitive and Behavioral Practice* 2005;12(1):40–52.
- Lombardo TW, Gray MJ. Beyond exposure for posttraumatic stress disorder (PTSD) symptoms: Broad-spectrum PTSD treatment strategies. *Behavior Modification* 2005;29(1):3–9. [PubMed: 15557476]
- Marks I, Lovell K, Norshirvani H, Livanuo M, Trasher S. Treatment of posttraumatic stress disorder by exposure and/or cognitive restructuring. A controlled study. *Archives of General Psychiatry* 1989;55:317–325. [PubMed: 9554427]
- Marshall RD, Carcamo JH, Blanco C, Liebowitz M. Trauma-focused psychotherapy after a trial of medication for chronic PTSD: Pilot observations. *American Journal of Psychotherapy* 2003;57:374–383. [PubMed: 12961821]
- McDonagh A, Friedman M, McHugo G, Ford J, Sengupta A, Mueser K, Demment CC, Fournier D, Schnurr PP, Descamps M. Randomized trial of cognitive-behavioral therapy for chronic posttraumatic stress disorder in adult female survivors of childhood sexual abuse. *Journal of Consulting and Clinical Psychology* 2005;73(3):515–524. [PubMed: 15982149]
- Meichenbaum, D. *Cognitive-behavior modification*. Morristown, NJ: General Learning Press; 1974.
- Moore, SA.; Zoellner, LA.; Bittinger, J. How do you combine cognitive restructuring with exposure?. In: Taylor, S., editor. *Advances in the treatment of posttraumatic stress disorder: Cognitive behavioral perspectives*. NY: Springer; 2004.
- Nacasch, N. Successful dissemination of prolonged exposure therapy (PE) in Israel: Process and Outcome. Paper presented at the International Society for Traumatic Stress Studies; Toronto, Canada. Nov. 2005
- Neuner F, Schauer M, Klaschik C, Karaunkara U, Elbert T. A comparison of Narrative Exposure Therapy, Supportive Counseling, and Psychoeducation for treating posttraumatic stress disorder in an African refugee settlement. *Journal of Consulting and Clinical Psychology* 2004;72:579–587. [PubMed: 15301642]
- Otto MW, Hinton D, Korbly NB, Chea A, Ba P, Gershuny BS, Pollack MH. Treatment of pharmacotherapy-refractory posttraumatic stress disorder among Cambodian refugees: a pilot study of combination treatment with cognitive-behavior therapy vs sertraline alone. *Behaviour Research and Therapy* 2003;41(11):1271–1276. [PubMed: 14527527]
- Paunovic N, Öst L. Cognitive-behavior therapy vs exposure therapy in the treatment of PTSD in refugees. *Behaviour Research and Therapy* 2001;39:1183–1197. [PubMed: 11579988]
- Rauch SAM, Cahill SP. Treatment and Prevention of Posttraumatic Stress Disorder. *Primary Psychiatry* 2003;10(8):60–65.
- Resick PA, Nishith P, Weaver TL, Astin MC, Feuer CA. A comparison of cognitive-processing therapy with prolonged exposure and a waiting condition for the treatment of chronic posttraumatic stress disorder in female rape victims. *Journal of Consulting and Clinical Psychology* 2002;70:867–879. [PubMed: 12182270]
- Rothbaum BO. Prolonged Exposure vs. EMDR for PTSD Rape Victims. *Journal of Traumatic Stress*. in press
- Roy-Byrne PP, Berliner L, Russo J, Zatzick D, Pitman RK. Treatment preferences and determinants in victims of sexual and physical assault. *Journal of Nervous and Mental Disease* 2003;191(3):161–165. [PubMed: 12637842]
- Schnurr PP, Friedman MJ, Foy DW, Shea MT, Hsieh FY, Lavori PW, Glynn SM, Wattenberg M, Bernardy NC. Randomized trial of trauma-focused group therapy for posttraumatic stress disorder. *Archives General Psychiatry* 2003;60:481–489.
- Taylor S, Thordarson D, Maxfield L, Fedoroff I, Lovell K, Ogradniczuk J. Comparative efficacy, speed, and adverse effects of three PTSD treatments. *Journal of Consulting and Clinical Psychology* 2003;71(2):330–338. [PubMed: 12699027]
- Taylor S, Fedoroff I, Koch W, Thordarson D, Fecteau G, Nicki R. Posttraumatic stress disorder arising after road traffic collisions: Patterns of response to cognitive-behavior therapy. *Journal of Consulting and Clinical Psychology* 2001;69(3):541–551. [PubMed: 11495183]
- Wagner AW, Bystritsky A, Russo JE, Craske MG, Sherbourne CD, Stein MB, Roy-Byrne PP. Beliefs about psychotropic medication and psychotherapy among primary care patients with anxiety disorders. *Depression and Anxiety* 2005;21(3):99–105. [PubMed: 15965996]

- van Minnen A, Arntz A, Keijsers GPJ. Prolonged exposure in patients with chronic PTSD: predictors of treatment outcome and dropout. *Behaviour Research and Therapy* 2002;40:439–457. [PubMed: 12002900]
- van Minnen A, Wessel I, Dijkstra T, Roelofs K. Changes in PTSD patients' narratives during prolonged exposure therapy: A replication and extension. *Journal of Traumatic Stress* 2002;15:255–258. [PubMed: 12092918]

Table 1

Cohen's d for Treatment Completers in Prolonged Exposure

Trial	Gender	PE Cell Size	Trauma Type	Measure	Length Follow-up	Pre-Post Cohen's d	Pre-FU Cohen's d
Foa et al. (1991)	F	10	Sexual Assault & Non-sexual Assault	PSS-I	3 months	1.21	1.47
Foa et al. (1999)	F	23	Sexual Assault & Non-sexual Assault	PSS-I	12 months	2.04	1.99
Foa et al. (2005)	F	79	Sexual Assault & Non-sexual Assault	PSS-I	12 months	3.31	3.30
Ironson et al. (2002)	MF	9	Mixed	PSS-SR	3 months	2.18	3.03
Resick et al. (2002)	F	40	Sexual Assault	CAPS	9 month	2.38	2.76
Feeny & Zoellner (2005)	F	15	Sexual Assault & Non-sexual Assault	PSS-I	5 months	3.24	3.60

Note. PSS-I: PTSD Symptom Scale -Interview Version; PSS-SR: PTSD Symptom Scale -Self-Report; CAPS: Clinician-Administered PTSD Scale