Prolonged Exposure Therapy

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Prolonged exposure (PE) is an efficacious and effective treatment for PTSD that has been studied extensively and disseminated around the world. The theoretical underpinning of PE is emotional processing theory (EPT; Foa and Kozak 1985, 1986), an influential theory of pathological anxiety and therapeutic recovery. In this chapter, we briefly review EPT's account of the development and treatment of PTSD. We then describe the structure and key components of PE and illustrate its delivery using a case example. Next we provide an overview of the most common challenges faced by therapists delivering PE and discuss ways of overcoming these obstacles to maximize benefit from PE. We end our discussion with a summary of the extensive evidence supporting the efficacy and effectiveness of PE for a wide range of PTSD sufferers.

8.1 Theoretical Basis for Prolonged Exposure

Prolonged exposure (PE) therapy is based on emotional processing theory (EPT; Foa and Kozak 1985, 1986) which provides a comprehensive model for understanding the psychopathology and treatment of anxiety disorders. Foa and Cahill (2001) expanded EPT to provide a theoretical account for the development of chronic PTSD, the mechanisms involved in natural recovery after a traumatic event

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and in PE with chronic PTSD. A central premise of EPT is that emotions, including fear, are represented in memory as cognitive networks that include representations of the distressing stimuli, emotional responses, and their meaning. An emotional structure is activated when a person confronts information that matches some of the representations in the structure. In normal (nonpathological) emotional structures, the associations among the stimuli, responses, and meaning representation correspond to reality (e.g., house fires mean danger); activation of normal structures then is adaptive because they help avoid danger. In contrast, pathological emotional structures involve erroneous associations (e.g., crowded stores are dangerous, being raped is my fault). In PTSD, the traumatic memory is represented as a pathological emotional network that includes erroneous associations among representations of stimuli, responses, and their meaning. At present, the structure of fear has been delineated more clearly than other emotions (such as guilt, shame, and anger); therefore, we will focus on the structure of this emotion in this chapter.

For example, an individual with PTSD who has experienced a life-threatening motor vehicular accident may have a fear structure that includes representations of stimuli such as smells of gasoline and representations of responses such as increased respiration, quicker heart beating, and sweating. Of particular importance is the meaning assigned to the stimuli, such as the meaning of a gasoline smell as "danger" or the meaning of physiological symptoms as "I am afraid." Input matching some representations in the fear structure will activate the entire structure. Thus, smelling the scent of gasoline will activate the person's fear structure of cars.

According to EPT, the two mechanisms involved in both natural recovery and symptom reduction after therapy (Foa and Cahill 2001; Cahill and Foa 2007) are activation of the fear (emotional) structure and incorporation of information that disconfirms the pathological association in the structure. Specifically, natural recovery from trauma occurs via trauma-related erroneous perceptions, thoughts, and feelings being disconfirmed via thinking and talking about the trauma and/or approaching trauma reminders in daily life and by realizing that thinking and confronting trauma reminders do not result in the anticipated harm ("being attacked again" or "falling apart"). In contrast, persistent avoidance of trauma-related situations, objects, memories, thoughts, and feelings constitutes risk factors for developing PTSD because avoidance prevents the activation of the emotional structure and incorporation of information that disconfirms the unrealistically expected harm (e.g., being attacked in a crowded store) (Foa et al. 2006). It follows that effective treatment for PTSD should help patients confront safely trauma-related thoughts, images, objects, situations, and activities in order to promote activation of the traumatic structure and disconfirmation of distressing, harmful outcomes.

The two central therapeutic techniques in PE are (1) imaginal exposure, i.e., revisiting, by recounting aloud, the patient's memory of the trauma followed by processing of the experience, and (2) in vivo exposure, i.e., approaching safely situations and objects that the patient avoids because they are reminders of the trauma and hence cause distress. Once the negative emotion (e.g., fear) is activated in a safe setting, corrective learning occurs through integration of information that disconfirms the anticipated harm. Imaginal exposure corrects several

inaccurate perceptions. First, it helps the patient organize the traumatic memory and gain a new perspective about what happened during the traumatic experience (e.g., "I did the best I could under the circumstances" instead of "I could have saved my friend if I were more competent"). Second, the repeated revisiting and recounting of the traumatic memory helps the patient distinguish between remembering the trauma and being traumatized again. Third, it helps the patient realize that the emotional distress associated with revisiting does not persist indefinitely and that remembering the trauma does not result in "falling apart." In vivo exposure helps to correct erroneous perceptions (1) by helping to break the patient's habit of terminating distress by avoiding or escaping the distressing situation, (2) by correcting the exaggerated probability estimates of harm by activating the fear structure in the absence of feared outcomes (e.g., realizing that being out after dark does not result in another rape), and (3) by letting the patient realize that he or she can tolerate distress without relying on escape. As a result of these processes, patients are able to change their negative trauma-related cognitions about themselves and the world (e.g., I am totally incompetent, the world is completely dangerous) which, according to EPT, are the core psychopathological features of PTSD (Foa and Rothbaum 1998).

8.2   Implementing Prolonged Exposure Therapy

Prolonged exposure (PE) is a specific exposure therapy program designed to help PTSD sufferers to emotionally process their traumatic experiences through the main two PE procedures: (a) in vivo exposure typically as homework, i.e., gradual approach to trauma-related, safe situations that the person avoids because these are trauma reminders, and (b) imaginal exposure to the memory of the traumatic event, by having patients recount their trauma memories out loud followed by processing of the experience in session and then by listening to a recording of their account for homework. PE also includes two minor procedures: (a) psychoeducation about the nature of trauma and trauma reactions, which incorporates the presentation of a clear rationale for the use of exposure therapy to patients, and (b) training in controlled breathing.

The current PE program for treatment of PTSD consists of 8–15 individual 90-min sessions. In the first meeting, the clinician provides a detailed rationale for PE and explains that PTSD is maintained by two key factors. The first factor is avoidance of thoughts and images related to the trauma and avoidance of trauma reminders. The clinician explains that although avoidance is effective in reducing anxiety in the short term, it maintains PTSD by preventing opportunities to emotionally process and digest the trauma memory. The second factor is unhelpful and often erroneous perceptions and beliefs that have developed in the wake of the trauma: "the world is extremely dangerous" and "I (the survivor) am completely incompetent." PE aims to alter these erroneous perceptions by providing opportunities to obtain corrective information that disconfirms these perceptions or beliefs via imaginal and in vivo exposure.

Case Example

Nancy is a 29-year-old single Latina woman currently pursuing a graduate degree. She sought treatment at the University of Pennsylvania's Center for the Treatment and Study of Anxiety (CTSA) and presented with symptoms of PTSD and major depressive disorder (MDD). Nancy's baseline score on the posttraumatic stress symptom inventory (PSS-I) was 34, indicating severe PTSD symptoms. Her baseline score of the Beck Depression Inventory (BDI) was 28, indicating moderate depression. She reported daily reexperiencing symptoms regarding the trauma, vivid nightmares, insomnia, and autonomic hyperarousal.

The Traumatic Event Currently Causing the Most Distress (Index Event)

Nancy reported that on July 4th 10 years ago, she agreed to spend time with the man she had been dating but recently broke up with. She reported that she knew she shouldn't trust him but agreed to go out to a party with him and some friends anyway. After watching her ex-boyfriend become increasingly intoxicated and belligerent, she tried to leave the bar and go home. This reportedly made her ex-boyfriend very angry and he broke a glass on the table and slashed her, cutting her face, shoulder, and lower neck, before running out of the bar. Bar staff and patrons brought Nancy to a back room and provided aid to her while waiting for emergency workers to arrive. She was taken to the hospital and was told that she needed surgery immediately. At one point, she was left alone, which was very upsetting to her as she was under the impression that she might die. Nancy survived the incident with no permanent medical complications; she has a visible scar on her shoulder and chin.

Case Formulation

Nancy's PTSD symptoms were maintained by her avoidance of external cues (e.g., men, crowds) and internal cues (e.g., emotions, memories) associated with the trauma. This avoidance blocked opportunities to disconfirm beliefs about the danger inherent to these cues and her ability to cope with the distress associated with exposure to them. Nancy's avoidance also functioned to maintain the more general dysfunctional perceptions and beliefs about others (e.g., "all men are dangerous") and herself (e.g., "I always make bad decisions"). These beliefs, in turn, helped maintain several of Nancy's PTSD and depressive symptoms, including her hyperarousal, anger, social withdrawal, and feelings of being disconnected from others. Nancy reported feeling invalidated by some of her friends and family, who reportedly suggested that Nancy "just get over it" and that she should "be grateful she is alive." Nancy internalized these comments in the form of self-criticism, and she experienced marked shame about her PTSD symptoms.

Course of Treatment

In the first session, the therapist and patient typically clarify which trauma will be focused on during imaginal exposure. For patients who have a history of multiple traumas, this "index trauma" is selected by determining which

event is currently causing the greatest distress and dysfunction for the patient. Often, this will be the event that is associated with the most frequent and upsetting reexperiencing symptoms. The index trauma is identified during the first session as part of the trauma history interview. Nancy had experienced physical and verbal abuse in previous romantic relationships; however, the most recent traumatic event noted above was described as the most distressing event she had experienced. This index trauma served as the focus of the imaginal exposure. The beginning and end of the traumatic memory was also identified during this discussion.

Treatment began with the therapist providing an overview of the program and a rationale for exposure therapy. Nancy's therapist explained that PTSD symptoms are maintained by two factors: (1) avoidance of thoughts and feelings related to the trauma and avoidance of trauma reminders and (2) the presence of unhelpful, dysfunctional beliefs such as "the world is extremely dangerous" and "I am extremely incompetent." He then explained that PE alters these negative, dysfunctional perceptions by providing opportunities for disconfirming these perceptions through in vivo and imaginal exposure.

The first session also involved teaching the patient a slow-breathing relaxation technique that they are encouraged to practice on a daily basis to reduce daily stress. With her therapist's guidance, Nancy practiced the slow-breathing technique in session and agreed to continue to practice at home for homework.

The second session involved a brief discussion of common reactions to trauma in order to provide Nancy with a framework for understanding her symptoms. Nancy was forthcoming in describing the difficulties that she has experienced since the trauma. She reported that she didn't realize that some of her difficulties, such as difficulty concentrating and emotional numbing, were recognized as PTSD symptoms, and she expressed relief upon learning that PE is geared towards alleviating these symptoms. Next, Nancy's therapist introduced in vivo exposure which refers to confronting avoided places, people, and objects that reminded Nancy of the trauma. Nancy and her therapist collaboratively constructed an in vivo hierarchy of trauma-related situations that Nancy had been avoiding. Then, these situations were rank ordered based on how distressed Nancy expected to be if she confronted the situation. Distress ratings were collected using SUDS (subjective units of distress scale) from 0 (no distress) to 100 (intense distress). Nancy was able to identify a good range of situations for her hierarchy, with some that were associated with mild distress (e.g., going to the grocery store alone when it's not crowded), moderate distress (e.g., looking at photos of her ex-boyfriend/perpetrator), and high distress (e.g., going to a busy restaurant on a date). In vivo exposure was conducted in a stepwise fashion, beginning with situations that provoke moderate anxiety and gradually progressing to more challenging situations. After creating the in vivo hierarchy, Nancy and her therapist agreed on specific in vivo assignments that she would work on for homework that

week. To simultaneously address Nancy's depression, the in vivo assignments were broadened to include behavioral activation items (e.g., watching movies; joining study groups). This focus was applied to "rebuilding life" tasks later in therapy, including joining a gym, making new friends, and reestablishing relationships with family.

In the beginning of the third session, Nancy reported that she had practiced the breathing retraining occasionally, and she thought it was helpful. She had completed most of the in vivo homework exercises and cited her busy school schedule as the reason she did not go to a coffee shop as planned. Nancy's therapist presented a detailed rationale for imaginal exposure. Nancy expressed some hesitation regarding imaginal exposure (e.g., "what if it doesn't work?") but also expressed considerable motivation and hope. Nancy's therapist reminded her of the traumatic memory that was identified as the most distressing during session 1 as well as the beginning and the end of the trauma. The therapist then asked Nancy to close her eyes and describe aloud what happened during that trauma, while visualizing the event as vividly as possible. Nancy was encouraged to recount the trauma in as much detail as possible, including the thoughts, feelings, and physical sensations that occurred during the traumatic event. Imaginal exposure was continued for a prolonged period (usually 30–45 min) and included multiple repetitions of Nancy's memory. Nancy was emotionally engaged with the traumatic memory during the imaginal exposure as evidenced by tearfulness and reported SUDS (30 at pre, 90 at peak, and 60 at post), and afterwards she reported that the image was very vivid for her. Imaginal exposure was followed immediately by 15–20 min of processing, which aims to help patients integrate new information and insights into their memory thereby promoting a more realistic perspective. During processing, Nancy described feeling guilty about the trauma (e.g., "I had a bad feeling early on. If I had listened to my gut it wouldn't have happened"). However, she also noted that revisiting the memory helped her realize that her ex-boyfriend was pleasant when he invited her to join him and his friends and she could not have predicted that he would be so violent, therefore she could not have prevented the attack. She even stated that in some ways she had acted quite bravely. Homework in vivo exposure exercises for the coming week were assigned at the end of the session. Nancy was also asked to listen to the audio recording of the entire session once and to listen to the imaginal exposure narrative daily.

The remainder of treatment (sessions 4–10) followed a standard agenda that began with reviewing the preceding week's homework. Nancy was generally adherent with the in vivo exposure homework; she always listened to the imaginal exposure audio but often completed only part of the in vivo exposure exercises. The avoided tasks were behavioral activation assignments (e.g., physical exercises) and were therefore arguably less critical to her recovery from PTSD than homework aimed at confrontation of avoided trauma-related situations.

During imaginal exposure, Nancy's peak SUDS rating decreased exponentially over the course of treatment. She often commented after the imaginal exposure that it was "getting easier" and that it felt more and more "like a memory." In session 7, the therapist introduced "hot spots," which he explained to Nancy as moments of the trauma memory that were causing the most distress. Nancy identified two hot spots: the first was when her ex-boyfriend smashed the glass and slashed her and the second was when she had been left alone in an emergency room. These hot spots were the focus of the imaginal exposure for session 7–9. During the processing, Nancy and her therapist discussed her feelings of guilt about the trauma. At baseline, Nancy was quite convinced that she was responsible for what happened to her because she "should have known better." However, as therapy progressed she began to articulate a new perspective, one in which her actions were not culpable but were instead reasonable, in light of the information she had at the time. Revisiting the memory again and again helped Nancy realize that there wasn't anything she could have done differently and that it could have happened to anyone. Being able to tolerate her distress during the first several weeks of in vivo and imaginal exposures, until the distress began to subside, helped Nancy change her view that she was incompetent in dealing with life and instead realize that she was a strong person who was able to cope successfully with difficult situations. Towards the end of treatment, she even expressed feeling that her decision to spend time with her ex-boyfriend was a reflection of her forgiving and kind nature, rather than an indicator that she has poor judgment.

During the final treatment session, the therapist and Nancy reviewed progress, discussed lessons learned, and made a plan for how Nancy could maintain the gains made during treatment. At the end of treatment, Nancy's PTSD symptoms had decreased significantly (PSS-I = 4, indicating minimal PTSD symptoms) as had her depressive symptoms (BDI = 6 indicating minimal depression). Nancy reported feeling that she was a worthy person, who had much to offer. While she did not feel ready to start dating, she agreed to work towards this goal slowly on her own, beginning with creating an online dating profile for herself. In contrast to the guilt feelings she described at the beginning of treatment, at the end of treatment Nancy recognized that she had done the best she could in a "crazy" situation. Nancy had shifted her approach to managing PTSD symptoms from avoidance, which maintains fear, to confrontation of trauma reminders, which promotes recovery and mastery.

8.3   Special Challenges to Implementing Prolonged Exposure Therapy

Patients rarely present with PTSD in the absence of additional psychiatric and/or physical health problems. In fact, comorbid disorders and associated problems are the rule rather than the exception among PTSD sufferers. Fortunately, as reviewed

below, evidence is accumulating that PE is effective for PTSD sufferers with many commonly co-occurring disorders with little or no modification needed. We note that not all patients receiving PE do well, and unfortunately little is known about how to minimize nonresponse to treatment or premature dropout from treatment. Finally, we discuss some guidelines for when PE might be contraindicated.

8.3.1   Comorbid Depression

We now have considerable evidence that PE can effectively reduce PTSD symptoms among patients with comorbid depression. To illustrate, one study found that comorbid depression was unrelated to decrease in PTSD symptoms; those with current major depression, past major depression, and no history of major depression all benefitted equally from PE (Hagenaars et al. 2010). Interestingly, another study showed that patients with higher levels of depression pretreatment who received either cognitive processing therapy (CPT) or PE showed greater improvement in PTSD symptoms from pre- to posttreatment than those with lower depression (Rizvi et al. 2009).

Symptoms of PTSD and depression are closely linked, which may explain why reductions in PTSD severity tend to be associated with reductions in depressive symptoms as well. Not only has PE been found effective in reducing PTSD severity among those with comorbid depression, but it has also been found to significantly reduce depressive symptoms (Foa et al. 1991, 1999a; Marks et al. 1998; Paunovic and Ost 2001). It follows that among patients in which the primary presenting disorder is PTSD, comorbid depression should not be considered a contraindication for receiving PE. Depending on the patient's level of depression, therapists may want to incorporate more behavioral activation exercises when planning the in vivo hierarchy as recommended in the PE manual (Foa et al. 2007). In cases where major depression is the primary disorder or where the patient is deemed at a high risk for suicide, therapists should first provide crisis management and containment and/or an evidence-based treatment for depression prior to implementing PE.

8.3.2   Comorbid Substance Use

Traditionally, PTSD treatment studies have excluded patients with comorbid substance use disorders (Foa et al. 2005; Resick et al. 2008) based on the notion that PTSD treatment would be ineffective for patients with comorbid substance use or, worse, that it would exacerbate patients' substance use. More recently, however, studies have shown that PTSD and comorbid substance use can be treated successfully at the same time. For example, PE has now been found effective in reducing PTSD symptoms among patients with PTSD and comorbid alcohol dependence (Foa et al. 2013) and among those with comorbid cocaine dependence (Brady et al. 2001). Importantly, PE was not associated with an increase in substance use or craving in either of the aforementioned studies. Interestingly, Foa and colleagues found

that patients who received PE were also more likely to maintain reductions in drinking 6 months after treatment termination (Foa et al. 2013). In summary, PE is effective and can be safely implemented in patients with PTSD and comorbid substance who are receiving concurrent substance use treatment.

As with comorbid depression, substance use and PTSD symptoms can be closely linked. In fact, it is commonly held that PTSD patients use substances, in part, to self-medicate their PTSD symptoms (e.g., Leeies et al. 2010; Nishith et al. 2001). Thus, by encouraging patients to approach trauma-related stimuli and process the traumatic memories, PE leads to decreased substance use indirectly by reducing PTSD symptoms. Therapists should carefully assess for substance use before implementing PE. Patients who have substance abuse/dependence should be referred for concurrent substance use treatment. Even patients who do not meet criteria for abuse or dependence may be using the substance as a subtle avoidance strategy, and this should be addressed in the context of PE (see also Chap. 16).

8.3.3   Comorbid Traumatic Brain Injury

Traumatic brain injury (TBI) is increasingly common among PTSD patients, especially among active military personnel and veterans who often suffer head injuries during traumatic experiences. Fortunately, there are some data showing that TBI, at least when either mild to moderate in severity, does not interfere with PTSD treatment. For example, a recent study of veterans with PTSD found that PE was as effective for individuals with and without a history of TBI (Sripada et al. 2013). The results of this research provide promising evidence that PE can be helpful for individuals with PTSD and comorbid TBI, and additional research is currently underway to further examine the effect of TBI on response to PE. In fact, because the PE protocol is relatively simple and easy to individualize to each patient, it may be particularly well suited for adaptation to comorbid PTSD and TBI. Therapists should be sure to screen for and assess cognitive impairment in patients reporting a history of TBI and should adapt the PE protocol (e.g., incorporating homework reminders, enlisting help from the patient's partner, shorter sessions) as needed.

8.3.4   Comorbid Borderline Personality Disorder

Borderline personality disorder (BPD) with frequent self-injurious behaviors is another condition that has been a rule out in some studies on PTSD treatment (Clarke et al. 2008; Feeny et al. 2002; Mueser et al. 2008). The concern has been that comorbid personality disorders, and perhaps BPD in particular, may interfere with PTSD treatment (Merrill and Strauman 2004). However, two studies indicate that individuals with comorbid BPD or BPD symptoms can also benefit from PTSD treatment. In the first study, Feeny et al. (2002) reanalyzed data of patients who received PE, stress inoculation training (SIT), or their combination and found that women with BPD symptoms benefited as much from PE treatment as those without

BPD symptoms. Although this study was not comprised of patients who met full diagnostic criteria for BPD, it shows that the presence of BPD symptoms did not impact treatment outcomes for PTSD symptoms, PTSD diagnostic status, depression, anxiety, and improving social functioning averaged across PE, SIT, and PE/ SIT.

Similar results were found in a study that examined women with full DSM-IV criteria for BPD and PTSD and who reported recent and/or imminent serious intentional self-injury (Harned et al. 2012). In this open trial study, 13 patients received dialectical behavior therapy (DBT) for a period of at least 2 months when they had stopped engaging in self-injurious behavior followed by PE once weekly while continuing DBT. While it is necessary to be cautious when comparing results across studies, Harned et al. (2012) reported that percentage of self-injurious behavior in patients receiving DBT-PE was distinctly lower than that reported in a trial examining the efficacy of DBT only (Linehan et al. 2006) who received DBT alone for up to 12 months. The authors concluded that "there was no evidence that the DBT-PE protocol increased intentional self-injury urges or behaviors, PTSD, treatment dropout, or crisis service use." These results have been replicated in a larger, randomized study of DBT versus DBT-PE (Harned et al. 2014).

In summary, PE can be effective for patients with PTSD and comorbid BPD when delivered after and then concurrently with DBT. When working with this population, therapists should carefully assess the presence and severity of self-injurious behavior and suicidality on an ongoing basis and coordinate care with the DBT therapist (see also Chap. 17).

8.3.5   Symptoms Associated with PTSD

Related to the concern about comorbid BPD, there has been a long-held concern that patients with high levels of dissociative symptoms are not good candidates for PE because dissociation would reduce the efficacy of treatment by limiting emotional engagement. However, several studies have shown that pretreatment levels of trait/state dissociation, depersonalization, and numbing are not related to PTSD symptom improvement or dropout from PE (Harned et al. 2012; Jaycox and Foa 1996; Shalev et al. 1996). That is, patients with high levels of dissociative symptoms showed a similarly large reduction in PTSD severity as patients with low levels of dissociative phenomena. However, one of the studies showing equivalent symptom improvement/dropout from PE with high and low dissociation found that individuals with high levels of dissociation were significantly more likely to meet criteria for PTSD (69 %) at follow-up than those with low dissociative symptoms (10 %) (Hagenaars et al. 2010). When working with patients who dissociate when distressed, therapists should discuss the issue with the patient, explain why dissociation is unhelpful for recovery, and agree upon ways to help support and ground the patient when needed. The PE protocol offers a number of suggestions for promoting optimal engagement (and hence minimizing the probability of dissociation) that should be considered in such cases. Among women with high dissociation

whose PTSD was related to sexual abuse, Cloitre et al. (2012) found that providing emotional regulations skills training increased the benefit of modified prolonged exposure.

PE has also been found to ameliorate general anxiety (Foa et al. 2005), trauma-related guilt (Resick et al. 2002), and state anger (Cahill et al. 2003) and to improve social adjustment and functioning (Foa et al. 2005). Moreover, PE, with or without the addition of cognitive restructuring, was shown to significantly decrease reported physical health difficulties compared to wait list, and these improvements persisted at 1-year posttreatment (Rauch et al. 2009). In sum, PE can have a broad impact on the lives of PTSD sufferers by reducing both PTSD severity and associated symptoms and improving overall functioning.

8.3.6 Dropout

Although PE is often associated with rapid reductions in PTSD severity, it is important to note that some patients drop out of treatment or do not achieve a good response. A dropout rate of approximately 20–26 % has been found for CBT, both exposure and nonexposure treatments (Hembree et al. 2003), with dropout rates being lower in counseling or wait-list controls. For example, Schnurr et al. (2007) found that 38 % of those who received a combined treatment of PE with cognitive restructuring dropped out of treatment versus 21 % given present-centered therapy. On the other hand, in a recent study with adolescents (Foa et al. 2013), dropout from PE (10 %) was similar to the rate in client-centered counseling (17 %). Similarly, in a study examining efficacy of PE in individuals with comorbid alcohol dependence and PTSD, dropout rates were statistically equivalent across PE (37 %) and supportive counseling (29 %) (Foa et al. 2013). In a large-scale study by Resick and colleagues (2002), there was an equivalent dropout rate between those patients receiving CPT and PE (27 %). Thus, empirical studies indicate that PE does not have more dropout than other CBT treatments or control conditions.

Currently, very little is known about factors that predict treatment dropout. One study found that younger age, lower intelligence, and less education were associated with higher dropout from PE or CPT (Rizvi et al. 2009). In general, however, there are few factors that have been consistently identified as predicting dropout.

8.3.7 Contraindications

Like any treatment, there are contraindications to implementing PE. When considering whether or not to use PE, therapists should consider the following: first, PTSD must be the primary presenting issue. PE is the treatment for PTSD; therefore, a history of trauma in the absence of clinically significant PTSD symptoms is not sufficient to indicate PE. Second, there must be no safety issues such as imminent risk of suicide or homicide or current self-harm behavior. If present, PE should be withheld until the safety issues are addressed through crisis management or

containment. Third, there must be no comorbid disorders that might interfere with treatment including unmanaged bipolar disorder or active psychosis. Although two recent studies suggest that PE can reduce PTSD symptoms among individuals with psychosis and recent suicidal behavior (van Minnen et al. 2012; Harned et al. 2014), more studies should be done with these patient populations. Finally, benzodiazepine use has been found to interfere with exposure therapy for PTSD (Davidson 2004), perhaps because they limit emotional activation and interfere with extinction learning (see Otto et al. 2005). Therefore, patients presenting for PTSD treatment who are already taking a benzodiazepine should be encouraged to work with their prescribing physician to discontinue this medication. Patients who are unwilling to discontinue the benzodiazepine should, at the very least, be asked to not use this medication prior to or during in vivo or imaginal exposures. Concurrent pharmacotherapy with newer and safer medications such as the selective serotonin reuptake inhibitors and the serotonin-norepinephrine reuptake inhibitors is not a contraindication to PE; however, as a general rule it is best if medication dosage remains stable during therapy so that the patient and therapist can accurately gauge the efficacy of therapy. (See also Chap. 26.)

8.4   Evidence Supporting Prolonged Exposure Therapy

A large number of randomized controlled trials indicate that PE is effective in reducing PTSD symptoms (see McLean and Foa 2011) and is associated with rapid change and maintenance of treatment gains over time, up to 5 years posttreatment (Foa et al. 2005; Powers et al. 2010; Taylor et al. 2003). PE has been found to be effective across a wide variety of trauma types and has been examined by independent research groups around the world (e.g., Israel: Nacasch et al. 2007, Japan: Asukai et al. 2008, Australia: Bryant et al. 2008, Netherlands: Hagenaars et al. 2010). As noted above, PE has demonstrated efficacy for PTSD sufferers with a number of common comorbid disorders (Foa et al. 2013; Harned et al. 2011; Hagenaars et al. 2010). PE has also been found to have a positive effect on associated symptoms of PTSD, including depression, general anxiety, guilt, anger, and anxiety sensitivity, and social functioning and health (Keane et al. 2006; Rauch et al. 2010).

PE is more effective than wait list (Foa et al. 1991, 1999a; Keane et al. 1989; Resick et al. 2002; Cahill et al. 2009; Difede et al. 2007), supportive counseling (Bryant et al. 2003; Schnurr et al. 2007), relaxation (Marks et al. 1998; Taylor et al. 2003; Vaughan et al. 1994), and treatment as usual (Asukai et al. 2008; Boudewyns and Hyer 1990; Cooper and Clum 1989; Nacasch et al. 2011). In addition, a meta-analysis pooling the findings across these numerous studies found that PE was associated with large effect sizes compared to control conditions at posttreatment and at follow-up (Powers et al. 2010). Other meta-analyses examining the efficacy of exposure therapy in general have revealed that exposure therapy is superior in symptom reduction to wait-list control or supportive therapy (Hofmann et al. 2012; Bradley et al. 2005). While research indicates that PE is superior to nontrauma-focused treatments or wait-list/control conditions, studies have found few

differences among specific exposure therapies in the reduction of PTSD symptoms (Seidler and Wagner 2006; Bisson and Andrew 2007; Bisson et al. 2007).

Overall, the evidence in support of the efficacy of exposure therapy in general, and PE specifically, is extensive. Indeed, given this large evidence base for its efficacy, PE was identified in the joint Veterans Affairs-Department of Defense Clinical Practice Guideline for PTSD (VA/DoD Clinical Practice Guideline Working Group 2010) as "strongly recommended" for use with veterans with PTSD. Further, a 2008 report issued by the Institute of Medicine (IOM) concluded that exposure therapy was the sole treatment for PTSD with sufficient evidence for its efficacy. This conclusion led to its inclusion in practice guidelines for major key organizations providing care to trauma-exposed populations, namely, the American Psychiatric Association (2004), the Departments of Veterans Affairs and Defense (2004), and Foa et al. (2009).

As noted above, despite the impressive track record of PE, not all patients respond or complete treatment. There is room for improvement. Several studies have therefore explored whether the effects of PE can be bolstered or augmented. Specifically, cognitive enhancers hypothesized to boost extinction learning (e.g., D-cycloserine, methylene blue) have been receiving more attention as the field searches for ways to improve response and shorten treatment duration (Hofmann et al. 2011). Generally, these augmentation agents, while shown to be effective to varying degrees in several anxiety disorders, have had less support in the treatment of PTSD when using a component of PE (i.e., in session imaginal exposure only with no in vivo or imaginal homework; Litz et al. 2012). However, a recent pilot study found that individuals receiving virtual reality exposure therapy with d-cycloserine had significantly higher remission rates (46 %) than those receiving exposure therapy with placebo (8 %) (Difede et al. 2014). However, the rate of 8 % remission is much lower than was found in other PE studies (e.g., Foa et al. 2005; Schnurr et al. 2007). This inconsistency may be due to Difede et al. using a different treatment protocol than in PE studies. More investigation into the utility of cognitive enhancement with treatments for PTSD is needed. Other researchers have focused on the incorporation of supplemental psychological techniques with the hope that this may serve as significant adjuncts to PE. However, empirical evidence does not support the inclusion of these additional psychotherapy techniques (e.g., stress inoculation training: Foa et al. 1999a, b; cognitive restructuring: Foa et al. 2005; Marks et al. 1998). Outcome with the addition of these techniques is not better than PE alone, which suggests that all efficacious treatments modify the same dysfunctional cognitions underlying PTSD (Foa et al. 1999b). A number of studies have found benefit to incorporating skills training in emotional and social functioning with elements of PE for PTSD and related problems (Beidel et al. 2011; Cloitre et al. 2002, 2010; Turner et al. 2005). However, these studies have used only some components of PE; therefore, the utility of adding such treatment components to the full PE program is unclear. Research is underway to determine the mechanisms by which PE and other evidence-based treatments for PE work as our field moves towards the examination of neural circuits underlying changes in PTSD severity after treatment.

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