

Prolonged Exposure Therapy for Posttraumatic Stress Disorders

Prolonged Exposure (PE) Therapy for Posttraumatic Stress Disorders is a cognitive-behavioral treatment program for adult men and women (ages 18-65+) who have experienced single or multiple/continuous traumas and have posttraumatic stress disorder (PTSD). The program consists of a course of individual therapy designed to help clients process traumatic events and reduce their PTSD symptoms as well as depression, anger, and general anxiety. PE has three components: (1) psychoeducation about common reactions to trauma and the cause of chronic posttrauma difficulties, (2) imaginal exposure (also called revisiting the trauma memory in imagination), repeated recounting of the traumatic memory, and (3) in vivo exposure, gradually approaching trauma reminders (e.g., situations, objects) that are feared and avoided despite being safe. Treatment is individualized and is conducted by social workers, psychologists, psychiatrists, and other therapists trained to use the PE manual, which specifies the agenda and treatment procedures for each session. Standard treatment consists of 8-15 sessions conducted once or twice weekly for 90 minutes each. The duration of treatment can be shortened or lengthened depending on the needs of the client and his or her rate of progress.

Descriptive Information

Areas of Interest	Mental health treatment
Outcomes	Review Date: December 2007 1: Severity of PTSD symptoms 2: Depression symptoms 3: Social adjustment 4: Anxiety symptoms 5: PTSD diagnostic status
Outcome Categories	Mental health Social functioning Trauma/injuries
Ages	18-25 (Young adult) 26-55 (Adult) 55+ (Older adult)
Genders	Male Female
Races/Ethnicities	Black or African American White Race/ethnicity unspecified Non-U.S. population
Settings	Outpatient Other community settings
Geographic Locations	Urban Suburban
Implementation History	The first study of PE began in 1984. Since then, the program has been evaluated in numerous outcome studies across the United States and in Australia, Israel, and Japan. Several hundred clients, including survivors of sexual and nonsexual assault, have participated in the intervention. PE workshops for clinicians have been conducted across the U.S. and in Israel, Japan, Korea, and many European countries.
NIH Funding/CER Studies	Partially/fully funded by National Institutes of Health: Yes Evaluated in comparative effectiveness research studies: Yes

Adaptations	The intervention manual has been translated into Hebrew, Japanese, and Spanish.
Adverse Effects	Treatment-related adverse effects include mild to moderate increases in PTSD symptoms, distress, anxiety, depression, and other negative emotions while the client is emotionally processing traumatic experiences. However, clinical experience and research have shown that these increases in distress are often temporary or transient and are not associated with less successful treatment outcomes. For example, in a 2002 study by Foa, Zoellner, Feeny, Hembree, and Alvarez-Conrad ("Does imaginal exposure exacerbate PTSD symptoms?" <i>Journal of Consulting and Clinical Psychology</i> , 70, 1022-1028), only a minority of participants exhibited clinically reliable symptom exacerbation. Further, these individuals benefited comparably from treatment, and symptom exacerbation was unrelated to premature dropout.
IOM Prevention Categories	IOM prevention categories are not applicable.

Quality of Research

Review Date: December 2007

Documents Reviewed

The documents below were reviewed for Quality of Research. The research point of contact can provide information regarding the studies reviewed and the availability of additional materials, including those from more recent studies that may have been conducted.

Study 1

[Foa, E. B., Dancu, C. V., Hembree, E. A., Jaycox, L. H., Meadows, E. A., & Street, G. P. \(1999\). 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*, 67\(2\), 194-200. !\[\]\(a870788d6ed9b8fd294b7654a8c8526b_img.jpg\)](#)

Study 2

[Resick, P. A., Nishith, P., Weaver, T. L., Astin, M. C., & Feuer, C. A. \(2002\). 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*, 70\(4\), 867-879. !\[\]\(3211b5d1d968fc1665909b34f9f16010_img.jpg\)](#)

Study 3

[Foa, E. B., Hembree, E. A., Cahill, S. P., Rauch, S. A., Riggs, D. S., Feeny, N. C., et al. \(2005\). 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*, 73\(5\), 953-964. !\[\]\(c50c8b7b2cc2cf9ff925edec0ee94c0d_img.jpg\)](#)

Study 4

[Bryant, R. A., Sackville, T., Dang, S. T., Moulds, M., & Guthrie, R. \(1999\). Treating acute stress disorder: An evaluation of cognitive behavior therapy and supportive counseling techniques. *American Journal of Psychiatry*, 156\(11\), 1780-1786. !\[\]\(9c2e8d1b5bd77cb5c9f83b7a9cff79fd_img.jpg\)](#)

Supplementary Materials

[Cahill, S. P., Foa, E. B., Hembree, E. A., Marshall, R. D., & Nacash, N. \(2006\). Dissemination of exposure therapy in the treatment of posttraumatic stress disorder. *Journal of Traumatic Stress*, 19\(5\), 597-610. !\[\]\(f60b7a900783ac3fd531bfd9c111be6d_img.jpg\)](#)

Cahill, S. P., Hembree, E. A., & Foa, E. B. (2006). Dissemination of prolonged exposure therapy for posttraumatic stress disorder: Success and challenges. In Y. Neria, R. Gross, R. D. Marshall, & E. S. Susser (Eds.), 9/11: Public health in the wake of terrorists attacks. Cambridge, United Kingdom: Cambridge University Press.

[Foa, E. B., Hearst-Ikeda, D., & Perry, K. J. \(1995\). Evaluation of a brief cognitive-behavioral program for the prevention of chronic PTSD in recent assault victims. *Journal of Consulting and Clinical Psychology*, 63\(6\), 948-955. !\[\]\(235bfe13ebf007ce2eea9e689707fac7_img.jpg\)](#)

[Foa, E. B., Rothbaum, R. O., Riggs, D. S., & Murdock, T. B. \(1991\). Treatment of posttraumatic stress disorder in rape victims: A comparison between cognitive-behavioral procedures and counseling. *Journal of Consulting and Clinical Psychology*, 59\(5\), 715-723. !\[\]\(eabd9f9ababee93effadc3b380fe65fd_img.jpg\)](#)

Outcomes

Outcome 1: Severity of PTSD symptoms

Description of Measures

Severity of PTSD symptoms was measured using three instruments:

- The PTSD Symptom Scale--Interview (PSS-I), a 17-item interview, assesses the severity of

	<p>each of the DSM-IV PTSD symptoms during the past 2 weeks and ascertains PTSD diagnostic status. Each symptom is rated on a 4-point scale from 0 (not at all) to 3 (very much; 5 or more times per week). Subscale scores are calculated by summing items in each of the PTSD symptom clusters: reexperiencing, avoidance, and arousal.</p> <ul style="list-style-type: none"> • The PTSD Symptom Scale--Self-Report (PSS-SR) is a self-report version of the PSS-I. Symptoms are rated for frequency and severity in the past week. • The Clinician Administered PTSD Scale (CAPS) is an interviewer-administered diagnostic instrument that measures PTSD. A clinician rates the frequency and intensity of each symptom on a scale ranging from 0 to 4. For a symptom to be considered clinically significant, it must score at least 1 on frequency and at least 2 on intensity.
Key Findings	<p>In a study that compared four treatment conditions--PE, stress inoculation training (SIT), PE plus SIT, and a wait-list control condition--all three active treatments significantly reduced the severity of PTSD symptoms compared with the wait-list condition ($p < .05$). Effect sizes were large for all the active treatment conditions, with PE having the largest effect size (Cohen's $d = 1.46$ for PE, 0.85 for SIT, and 0.82 for PE plus SIT).</p> <p>Another study compared PE, cognitive processing therapy (CPT), and a minimal attention condition. Participants in the PE and CPT groups showed significantly reduced severity of PTSD symptoms compared with participants who received minimal attention ($p < .001$). The PE and CPT groups did not differ significantly from each other on severity of PTSD symptoms.</p> <p>A third study compared PE, PE plus cognitive restructuring (CR), and a wait-list control condition. Participants in the PE and PE plus CR groups showed significantly reduced severity of PTSD symptoms compared with participants in the wait-list group ($p < .001$). The PE and PE plus CR groups did not differ significantly from each other on severity of PTSD symptoms.</p>
Studies Measuring Outcome	Study 1, Study 2, Study 3
Study Designs	Experimental
Quality of Research Rating	3.7 (0.0-4.0 scale)

Outcome 2: Depression symptoms	
Description of Measures	<p>Depression symptoms were assessed using two instruments:</p> <ul style="list-style-type: none"> • The Beck Depression Inventory is a 21-item self-report instrument used to assess symptoms of depression, each rated on a scale from 0 (e.g., I do not feel sad) to 3 (e.g., I am so sad or unhappy that I can't stand it). • The Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I) is a diagnostic instrument used to assess current and lifetime diagnosis of depression, alcohol dependence, substance dependence, and other Axis I DSM-IV disorders.
Key Findings	<p>In a study that compared four treatment conditions--PE, SIT, PE plus SIT, and a wait-list control condition--all three active treatments significantly reduced the symptoms of depression compared with the wait-list condition ($p < .001$). The effect size was large for PE (Cohen's $d = 1.42$) and medium for SIT (Cohen's $d = 0.73$) and PE plus SIT (Cohen's $d = 0.57$).</p> <p>Another study compared PE, CPT, and a minimal attention condition. Participants in the PE and CPT groups showed significantly reduced symptoms of depression compared with participants who received minimal attention ($p < .001$). The PE and CPT groups did not differ from each other on depression symptoms.</p> <p>A third study compared PE, PE plus CR, and a wait-list control condition. Participants in the PE and PE plus CR groups showed significantly reduced symptoms of depression compared with participants in the wait-list group ($p < .05$). The PE and PE plus CR groups did not differ significantly from each other on depression symptoms.</p>
Studies Measuring Outcome	Study 1, Study 2, Study 3
Study Designs	Experimental
Quality of Research Rating	3.7 (0.0-4.0 scale)

Outcome 3: Social adjustment

Description of Measures	Social adjustment was measured using the Social Adjustment Scale (SAS), a semistructured interview that assesses an individual's functioning in eight areas. The study used the Social and Work scales of the SAS, which were rated on a 7-point scale, with higher scores indicating more severe maladjustment.
Key Findings	<p>In a study that compared four treatment conditions--PE, SIT, PE plus SIT, and a wait-list control condition--PE participants had significantly improved social adjustment compared with participants in SIT, PE plus SIT, and the wait-list condition ($p < .05$). When the wait-list condition was compared with SIT and with PE plus SIT, no differences were detected.</p> <p>Another study compared PE, PE plus CR, and a wait-list control condition. Participants in the PE and PE plus CR groups showed significantly improved social adjustment compared with participants in the wait-list group ($p < .01$). The PE and PE plus CR groups did not differ significantly from each other on social adjustment.</p>
Studies Measuring Outcome	Study 1, Study 3
Study Designs	Experimental
Quality of Research Rating	3.3 (0.0-4.0 scale)

Outcome 4: Anxiety symptoms

Description of Measures	Anxiety symptoms were assessed using the State subscale of the State-Trait Anxiety Inventory (STAI). The STAI is a 40-item questionnaire that evaluates anxiety at the immediate moment (state anxiety) and the enduring tendency to experience anxiety (trait anxiety).
Key Findings	In a study that compared four treatment conditions--PE, SIT, PE plus SIT, and a wait-list control condition--all three active treatments significantly reduced the symptoms of anxiety compared with the wait-list condition ($p < .05$). The effect size was large for PE (Cohen's $d = 1.32$) and small for SIT (Cohen's $d = 0.37$) and PE plus SIT (Cohen's $d = 0.45$).
Studies Measuring Outcome	Study 1
Study Designs	Experimental
Quality of Research Rating	3.7 (0.0-4.0 scale)

Outcome 5: PTSD diagnostic status

Description of Measures	PTSD diagnostic status was assessed using the Clinician Administered PTSD Scale, Form 2, which assesses the frequency and severity of each PTSD symptom in the past week. This instrument was used at posttreatment and follow-up diagnostic assessments only, as the timing of those interviews (at least 30 days after baseline) made it possible to differentiate diagnoses of PTSD from acute stress disorder (in which severe symptoms typically do not persist after 30 days).
Key Findings	In a study that compared PE, PE plus anxiety management, and supportive counseling, patients in both the PE plus anxiety management group and the PE group were less likely to meet the criteria for PTSD diagnosis at posttest than those in the supportive counseling group ($p < .05$). Similar results were observed at 6-month follow-up ($p < .01$).
Studies Measuring Outcome	Study 4
Study Designs	Experimental
Quality of Research Rating	2.9 (0.0-4.0 scale)

Study Populations

The following populations were identified in the studies reviewed for Quality of Research.

Study	Age	Gender	Race/Ethnicity
Study 1	18-25 (Young adult) 26-55 (Adult) 55+ (Older adult)	100% Female	63% White 36% Black or African American 1% Race/ethnicity unspecified
Study 2	18-25 (Young adult) 26-55 (Adult) 55+ (Older adult)	100% Female	71% White 25% Black or African American 4% Race/ethnicity unspecified
Study 3	18-25 (Young adult) 26-55 (Adult) 55+ (Older adult)	100% Female	49% White 44% Black or African American 7% Race/ethnicity unspecified
Study 4	18-25 (Young adult) 26-55 (Adult) 55+ (Older adult)	51% Female 49% Male	100% Non-U.S. population

Quality of Research Ratings by Criteria (0.0-4.0 scale)

External reviewers independently evaluate the Quality of Research for an intervention's reported results using six criteria:

1. Reliability of measures
2. Validity of measures
3. Intervention fidelity
4. Missing data and attrition
5. Potential confounding variables
6. Appropriateness of analysis

For more information about these criteria and the meaning of the ratings, see [Quality of Research](#).

Outcome	Reliability of Measures	Validity of Measures	Fidelity	Missing Data/Attrition	Confounding Variables	Data Analysis	Overall Rating
1: Severity of PTSD symptoms	4.0	4.0	3.9	3.5	3.3	3.5	3.7
2: Depression symptoms	4.0	4.0	3.9	3.5	3.3	3.5	3.7
3: Social adjustment	2.8	2.8	3.9	3.5	3.1	3.8	3.3
4: Anxiety symptoms	4.0	4.0	3.8	4.0	3.0	3.5	3.7
5: PTSD diagnostic status	4.0	4.0	3.0	1.8	2.0	2.5	2.9

Study Strengths

The studies used standardized instruments with good to excellent psychometric properties. Adequate attention was given to intervention fidelity and process monitoring and assessment. The data analysis strategies (i.e., intent-to-treat samples, analyses of completers versus noncompleters) were thorough and attended to the potential threats posed by differential attrition and missing data.

Study Weaknesses

The studies had moderate levels of attrition and, in some cases, differential attrition by treatment condition.

Readiness for Dissemination

Review Date: December 2007

Materials Reviewed

The materials below were reviewed for Readiness for Dissemination. The implementation point of contact can provide information regarding implementation of the intervention and the availability of additional, updated, or new materials.

Cahill, S. P., Foa, E. B., Hembree, E. A., Marshall, R. D., & Nacash, N. (2006). Dissemination of exposure therapy in the treatment of posttraumatic stress disorder. *Journal of Traumatic Stress, 19*(5), 597-610. 

Center for the Treatment and Study of Anxiety, University of Pennsylvania. (n.d.). PTSD Symptom Scale--Interview (PSSI).

Center for the Treatment and Study of Anxiety, University of Pennsylvania. (n.d.). PTSD Symptom Scale--Self-Report (PSS-SR).

Foa, E. B., Hembree, E. A., & Rothbaum, B. O. (2007). Prolonged Exposure Therapy for PTSD: Therapist guide. New York: Oxford University Press.

PE Treatment Checklist

Rothbaum, R. O., Foa, E. B., & Hembree, E. A. (2007). Reclaiming your life from a traumatic experience: Workbook. New York: Oxford University Press.

Training documents:

- Four-day training workshop agenda
- PTSD reading list
- Resources for training and implementation

Readiness for Dissemination Ratings by Criteria (0.0-4.0 scale)

External reviewers independently evaluate the intervention's Readiness for Dissemination using three criteria:

1. Availability of implementation materials
2. Availability of training and support resources
3. Availability of quality assurance procedures

For more information about these criteria and the meaning of the ratings, see [Readiness for Dissemination](#).

Implementation Materials	Training and Support Resources	Quality Assurance Procedures	Overall Rating
3.0	3.5	2.8	3.1

Dissemination Strengths

The treatment manual includes session-by-session strategies and case examples. A comprehensive training provides opportunities for implementers to observe and practice the application of intervention concepts. Several tools, including client outcome measures and session checklists, are available to support quality assurance.

Dissemination Weaknesses

No resources or training is provided for program administrators or clinical supervisors. The intervention requires a high degree of clinical skill. Little guidance is available for using quality assurance measures and interpreting results.

Costs

The cost information below was provided by the developer. Although this cost information may have been updated by the developer since the time of review, it may not reflect the current costs or availability of items (including newly developed or discontinued items). The implementation point of contact can provide current information and discuss implementation requirements.

Item Description	Cost	Required by Developer
4-day, on-site clinical training (includes intervention therapist guide, client workbook, educational DVD, assessment measures, and adherence manual)	\$1,100 per participant	Yes

Replications

Selected citations are presented below. An asterisk indicates that the document was reviewed for Quality of Research.

[Bryant, R. A., Harvey, A. G., Dang, S. T., Sackville, T., & Basten, C. \(1998\). Treatment of acute stress disorder: A comparison of cognitive-behavioral therapy and supportive counseling. *Journal of Consulting and Clinical Psychology*, 66\(5\), 862-866. !\[\]\(6befd466863f06afb75445d91429f055_img.jpg\)](#)

* [Bryant, R. A., Sackville, T., Dang, S. T., Moulds, M., & Guthrie, R. \(1999\). Treating acute stress disorder: An evaluation of cognitive behavior therapy and supportive counseling techniques. *American Journal of Psychiatry*, 156\(11\), 1780-1786. !\[\]\(13163d77073735089069a7603de98433_img.jpg\)](#)

Foa, E. B., Zoellner, L. A., & Feeny, N. C. (2006). An evaluation of three brief programs for facilitating recovery after assault. *Journal of Traumatic Stress, 19*(1), 29-43. 

Paunovic, N., & Ost, L.-G. (2001). Cognitive-behavior therapy vs exposure therapy in the treatment of PTSD in refugees. *Behaviour Research and Therapy, 39*(10), 1183-1197. 

Rothbaum, B. O., Astin, M. C., & Marsteller, F. (2005). Prolonged exposure versus eye movement desensitization and reprocessing (EMDR) for PTSD rape victims. *Journal of Traumatic Stress, 18*(6), 607-616. 

Rothbaum, B. O., Cahill, S. P., Foa, E. B., Davidson, J. R. T., Compton, J., Connor, K. M., et al. (2006). Augmentation of sertraline with prolonged exposure in the treatment of posttraumatic stress disorder. *Journal of Traumatic Stress, 19*(5), 625-638. 

Schnurr, P. P., Friedman, M. J., Engel, C. C., Foa, E. B., Shea, M. T., Chow, B. K., et al. (2007). Cognitive behavioral therapy for posttraumatic stress disorder in women: A randomized controlled trial. *Journal of the American Medical Association, 297*(8), 820-830. 

Taylor, S., Thordarson, D. S., Maxfield, L., Fedoroff, I. C., Lovell, K., & Ogradniczuk, J. (2003). Comparative efficacy, speed, and adverse effects of three PTSD treatments: Exposure therapy, EMDR, and relaxation training. *Journal of Consulting and Clinical Psychology, 71*(2), 330-338. 

Contact Information

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Consider these [Questions to Ask](#) (PDF, 54KB) as you explore the possible use of this intervention.

Web Site(s):

- http://www.med.upenn.edu/ctsa/workshops_pet.html