A meta-analytic review of prolonged exposure for posttraumatic stress disorder
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CRD summary
The review concluded that prolonged exposure therapy was highly effective for post-traumatic stress disorder, which conferred lasting benefits across a wide range of outcomes. Given the lack of reported review process and participant details, as well as uncertain trial quality and short-term follow-up, the reliability of these conclusions is unclear.

Authors' objectives
To determine the efficacy of prolonged exposure therapy for the treatment of post-traumatic stress disorder.

Searching
PsycINFO, MEDLINE, Scopus, and the Cochrane Central Register of Controlled Trials (CENTRAL) were searched to March 2009; search terms were reported. Citation maps and references of relevant review articles were checked. Authors from trials for emerging publications were also contacted.

Study selection
Randomised controlled trials (RCTs) that compared prolonged exposure with psychological placebo or waiting list in adults or adolescents with post-traumatic stress disorder (PTSD) were eligible for inclusion in the review. PTSD patients had to meet full Diagnostic and Statistical Manual of mental disorders (DSM) III, IV or IV-TR criteria. More than one session of prolonged exposure during the acute phase of treatment was required. Treatments were classified as prolonged exposure if they included both imaginal and in vivo (i.e. confronting trauma cues in real life) exposure. Single case studies, studies that focused on acute stress disorder or studies with insufficient data (unless the authors were able to provide additional information) were excluded.

The primary outcomes included PTSD symptom severity; secondary outcomes included general subjective distress.

Included trials compared prolonged exposure therapy alone (and/or in combination with cognitive restructuring, psychological placebo or stress inoculation training) with an active treatment, an active control (psychological placebo) or an inactive control (waiting list) group. Psychological placebos included: supportive counselling; relaxation; present centred therapy; time limited psychodynamic therapy; eye movement desensitisation reprocessing therapy; and treatment as usual. All included trials used exposure therapy that was based on the manualised treatment developed by Foa et al. The number of therapy sessions ranged from six to 19 for a total of six to 30 hours.

Primary outcome measures included Clinician Administered PTSD Scale, Davidson's Structured Interview for PTSD, Child PTSD symptom scale, PTSD Symptom Scale-Self Report, PTSD Symptom Scale-Interview and PTSD severity measure or checklist.

The authors did not state how papers were selected for the review.

Assessment of study quality
Trial quality was assessed using a modified version of the Jadad scale; random assignment to condition, description of withdrawals and drop-outs, and evaluators blinded to therapeutic condition.

The authors did not state how many reviewers performed the quality assessment.

Data extraction
Between group effect sizes (Hedges’ g) were calculated for each trial. Trials with multiple outcomes were categorised into primary and secondary outcomes. All effect sizes were corrected for small sample sizes. Trial authors were contacted to obtain additional information, where required.
The authors did not state how many reviewers performed the data extraction.

**Methods of synthesis**

Pooled Hedges’ g effect sizes, with associated 95% confidence intervals (CIs), were calculated using a random-effects model. Heterogeneity was assessed, combining all trials with all time points (post-treatment and follow-up) on primary outcomes, using the Q statistic.

Meta-regression was performed looking at publication year, dose, trial quality, type of trauma, and time since trauma as possible moderators.

Publication bias was assessed with the fail-safe N.

**Results of the review**

Thirteen trials were included in the review (n=958 patients). There was a discrepancy in the number of participants enrolled between text and table; the number used in this abstract is calculated from data in table 2. Follow-up assessments ranged from one to 12 months.

A greater improvement in post-treatment primary outcome measures (Hedges' g=1.08 95% CI 0.69 to 1.46; 13 studies; n=675 patients) and secondary outcome measures (Hedges' g=0.77, 95% CI 0.53 to 1.01; 13 trials; n=666 patients) was found with prolonged exposure therapy compared with control conditions.

Similar results were found for primary outcomes when grouped by type of control (waiting list Hedges' g=1.52, 95% CI 1.12 to 1.90; psychological placebo, Hedges' g=0.65, 95% CI 0.29 to 1.01).

No significant difference was found when prolonged exposure therapy was compared with other active treatments (Hedges' g=0.07, 95% CI -0.42 to 0.28; six trials; n=262 patients).

At follow-up, a greater improvement on primary outcome measures (Hedges' g=0.68, 95% CI 0.27 to 1.10; seven trials; n=348 patients) and secondary outcome measures (Hedges' g=0.41, 95% CI 0.03 to 0.78; seven trials; n=368 patients) was found for prolonged exposure therapy compared with control conditions.

No significant effect of any moderator was found.

No evidence of publication bias was found.

**Authors’ conclusions**

Prolonged exposure therapy was highly effective in treating post-traumatic stress disorder and significantly more effective than inactive (waiting list) and active (psychological placebo) control conditions.

**CRD commentary**

The review addressed a focused question and inclusion criteria were clearly defined. Searching encompassed a range of databases and some attempt was made to locate unpublished trials; there was no evidence of publication bias when it was assessed. It was not clear whether the search was restricted by language. No details were provided on methods to reduce bias and error in the review process.

Trial quality was assessed using relevant criteria, but results were not presented. Limited participant details were reported. Standard methods appeared to have been used to pool trials but, while statistical heterogeneity was assessed, combining all time points was not appropriate.

The authors’ conclusions followed from the results presented, but lack of reported review process and participant details, as well as the uncertain trial quality and short-term follow-up, mean that the reliability of these conclusions is unclear.
Implications of the review for practice and research

**Practice:** The authors stated that the large effect sizes support the status of prolonged exposure therapy as the first line treatment of choice for post-traumatic stress disorder.

**Research:** The authors indicated that further investigation of the relative effectiveness of prolonged exposure therapy compared with other active psychological treatments and the relative efficacy of the individual components of prolonged exposure therapy are needed.

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