Effects of psychotherapy for anxiety in children and adolescents: a meta-analytic review
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CRD summary
This review concluded that there was sufficient evidence to recommend psychological therapy, specifically behavioural or cognitive-behavioural therapy, for treating anxiety disorders in children and adolescents. The review was generally performed well and the authors' main conclusion seems reliable despite a lack of power in many trials.

Authors' objectives
To assess the efficacy of psychotherapy for anxiety in children and adolescents.

Searching
MEDLINE and PsycINFO, were searched for studies published in English from January 1990 to December 2010; search terms were reported. The bibliographies of relevant articles and reviews, and journals where relevant studies had been identified, were handsearched. Authors of relevant studies were contacted to identify completed studies due to be published. Only studies published in peer-reviewed journals were considered.

Study selection
Studies with random allocation of participants to a minimum of one treatment group and one control group of psychotherapy interventions specifically designed to alleviate the symptoms of any diagnosed anxiety disorder or elevated anxiety levels in participants under 19 years old, were eligible for inclusion. Control groups could be active or passive. To be eligible studies had to report means and standard deviations for outcome measures or allow their deduction from the data provided. The primary outcome was child or adolescent self-reported anxiety symptoms.

Many included studies were performed in a clinic (45%) or the community (29%), some were in mixed environments (16%), and the rest were in schools, health service screening, or not stated. Cognitive-behavioural therapy was the most common intervention (87%). The few (5%) studies of behavioural therapy were combined with cognitive-behavioural therapy studies for analyses. Most studies (54%) provided group therapy. The most frequent control group was waiting list (65% studies), with wide variation in the other studies. Participant age ranged from two to 19 years and the proportion of girls ranged from none to all. Most studies included participants with mixed or comorbid anxiety disorders. Most studies (60%) were of specific anxiety disorders, such as post-traumatic stress disorder, social phobia, or obsessive-compulsive disorder. The most common anxiety symptom measures were: the Revised Children's Manifest Anxiety Scale (RCMAS) and the Spence Children's Anxiety Scale (SCAS).

The authors did not report how many reviewers performed the study selection.

Assessment of study quality
Two independent reviewers assessed quality, using a modified version of the 23-item Moncrieff system for studies of depression or neurosis, with discrepancies resolved by discussion. Items evaluated included randomisation method, sample selection and size, intention-to-treat analysis, length of follow-up, and presentation of results. Items were rated zero for absent, one for partial, and two for in full, or zero for no and two for yes. The authors omitted the criterion for blinding participants to treatment and added two criteria for therapy according to a manual and therapy integrity tested, each scoring one for yes or zero for no.

Data extraction
One reviewer extracted the data. Two independent reviewers assessed the data, using a coding scheme, with discrepancies resolved by discussion. Where trials reported more than one measure of anxiety symptoms, only one relevant outcome measure was extracted. If the trial focused on a specific anxiety disorder then a disorder-specific outcome was extracted. For other studies, the most frequently measured anxiety symptoms were extracted. Mean scores with standard deviations were extracted at baseline, end of treatment, and, where possible, at follow-up.

Methods of synthesis
The differences in mean scores from baseline to follow-up were pooled to give effect sizes with 95% confidence intervals, using a random-effects model, since heterogeneity was expected. Negative values indicated a greater reduction in anxiety for the intervention than for the control group.

Subgroup analyses were performed for passive versus active control groups, length of follow-up, cognitive-behavioural therapy versus other types, the anxiety disorder, patient age, parental involvement, delivery mode, and duration of treatment. Funnel plots were used to test for evidence of publication bias. Between-study heterogeneity was assessed using the Cochran Q.

Results of the review
Fifty-five randomised controlled trials were identified, with 4,258 participants (range 12 to 325). The mean quality score was 29.9 (SD 5.19; range 19.5 to 43). All trials met the minimum quality criteria; quality improved with later publication. Few trials performed intention-to-treat analysis and few assessed adverse events.

Self-reported anxiety symptoms: A meta-analysis of all studies found a significant moderate reduction in anxiety symptoms with the psychotherapy interventions versus controls (effect size -0.65, 95% CI -0.82 to -0.48).

Subgroup analyses: Results remained significant in subgroup analyses for active (19 trials) or passive (39 trials) controls, for up to six month follow-up (six trials), but not for longer, and for cognitive-behavioural therapy (48 trials), but not for other therapy (seven trials). Effects were moderate for disorder-specific cognitive-behavioural therapy (27 studies) and where children or adolescents were diagnosed with post-traumatic stress syndrome (nine trials) or social phobia (nine trials), while the largest effect was found in children with obsessive-compulsive disorder (five trials).

Other subgroup analyses found significant effects of treatment regardless of parental involvement, delivery mode, or age, with larger effects for adolescents (six trials) than children aged 13 or younger (20 trials), but no significant effect for children aged four to five years. Effects were significant regardless of duration of treatment, with larger effects with nine hours or more of treatment. Further details were reported.

Funnel plots of all studies and of those of higher quality showed no evidence of publication bias.

Authors' conclusions
There was sufficient evidence to recommend psychological therapy, specifically behavioural or cognitive-behavioural therapy, for treating anxiety disorders in children.

CRD commentary
The review addressed a well-defined question for study design, participants, interventions and relevant outcomes. Relevant databases were searched and some efforts were made to identify unpublished studies, but only studies published in English in peer-reviewed journals were included, and some relevant studies may have been missed, but there was no evidence of publication bias. Study quality was assessed with suitable criteria; the maximum score was not reported, but was presumably 46. It appeared that study quality was adequate, but the authors noted that many studies had insufficient power.

Data extraction and validity assessment were carried out with efforts to reduce error and bias, but it was not clear whether the same efforts were applied to study selection. The relevant study details were reported. The statistical method for the meta-analysis seems to have been appropriate. Suitable subgroup analyses were performed. The authors did not report the between-study heterogeneity results. They noted that using child and adolescent self-reported anxiety symptoms could produce a conservative estimate of the treatment effect.

The review was generally performed well and the authors' main conclusion seems reliable despite a lack of power in many trials.

Implications of the review for practice and research
Practice: The authors recommended that clinical decisions on how to treat children and young people should be guided by integrating research evidence with clinical judgement and specialist knowledge of systemic and developmental theory, as well as the preferences of the children and their parents.
Research: The authors recommended that future studies should follow Consolidated Standards of Reporting Trials (CONSORT) reporting standards. They should be adequately powered, have adequate follow-up, use intention-to-treat analysis, measure cost-effectiveness, and use active controls to measure long-term effects. Smaller high-quality trials should assess whether new treatments or new delivery methods, such as over the Internet or by teachers, could be effective, acceptable, safe and feasible, and then large-scale, multi-site randomised controlled trials should be conducted.

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