Cognitive-behavioral therapy for anger in children and adolescents: a meta-analysis
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CRD summary
This review evaluated the effectiveness of cognitive-behavioural therapy (CBT) for anger in children and adolescents. The authors concluded that CBT is effective. There are insufficient details of the included studies to allow an independent judgement of the reliability of the conclusions.

Authors' objectives
To evaluate the effectiveness of cognitive-behavioural therapy (CBT) for anger-related problems in children and adolescents.

Searching
PsycLIT, MEDLINE, and Dissertation Abstracts International were searched for studies reported in English; the search terms used were reported. The reference lists of individual outcome articles and previous meta-analyses were manually checked, and the authors of one key systematic review in the field were contacted.

Study selection
Study designs of evaluations included in the review
The inclusion criteria were not stated. Randomised and non-randomised studies were included.

Specific interventions included in the review
Studies of any form of CBT compared with no treatment or an attention control condition were eligible for inclusion. The target of treatment had to include one or more of the following: anger reduction, reduction of aggressive or anti-social behaviour, improvement of anger-related social-cognitive deficits, improvement of self-regulation or self-control, and improvement of social skills. Four categories of CBT were identified. These were defined as skills development, affective education, problem-solving and multimodal approaches. Other significant factors of CBT were also classified as a group or individual treatment modality of duration 2 to 7 hours, 8 to 18 hours, or 19 to 30 hours. There were three levels of therapist experience providing the therapy: professional, graduate student or paraprofessional.

Participants included in the review
Studies in children and adolescents aged 6 to 18 years were eligible for inclusion. The mean age of the participants per treatment group in the included studies was 12.5 years (range: 7 to 17.2). Six groups of informants were also identified for inclusion in the review: mental health worker, observer, parent, peer, self and teacher. The settings included school, out-patient facility, in-patient facility and correctional facility.

Outcomes assessed in the review
Studies that reported a measure of anger or aggression were eligible for inclusion. The outcomes assessed in the review were grouped into five domains: anger experience, physical aggression, social-cognition, self-control and social skills. Most domains used self-reported measures, or observational reports or ratings completed by various informants.

How were decisions on the relevance of primary studies made?
The authors did not state how the papers were selected for the review, or how many reviewers performed the selection.

Assessment of study quality
The studies were assessed and coded with regards to random assignment, blinding of the raters and treatment integrity. The first author coded the included studies. A second reviewer then independently coded a random sample of 25% of the papers.
Data extraction
The first author coded the studies. A second rater then independently coded a random sample of 25%. Any disagreements were resolved by discussion. Characteristics of the participants, study design, treatments, therapists and outcome measures were coded. Data were extracted to calculate effect size for each outcome in each study. If a study compared more than one treatment with control, each comparison was treated as a separate study.

Methods of synthesis
How were the studies combined?
Three effect sizes were calculated using Cohen's d: the overall effect size per study or comparison, the effect size per domain of outcome measurement and the effect size per type of informant. These effect sizes were then combined by taking the average over all of the effect sizes (i.e. n d-values were added together then divided by n). The authors assessed possible publication bias by computing a fail-safe N for the average effect size (using Orwin's formula), and testing for a difference between the overall effect size in published and unpublished studies.

How were differences between studies investigated?
The chi-squared test was used to investigate statistical heterogeneity between the studies and subgroup analyses were performed (e.g. for domain of measurement, source of information, treatment type). Differences between the subgroups were investigated using Kruskal-Wallis and Mann-Whitney tests. Correlations between other factors (such as technique variables, age and gender) and the overall effect size were also explored. It was unclear whether these analyses were pre-specified.

Results of the review
Twenty-one published studies and 19 unpublished studies were included; the total number of participants was 1,953. These studies provided 51 treatment versus control comparisons.

The overall pooled analysis (mean d=0.67) included 173 effect sizes, generated from 40 studies of all relevant measures and comparisons. Since the value was in the medium range it indicated that the average child receiving CBT would be in the lower quartile of the nontreated group. However, there was evidence of statistical heterogeneity (Q=250.42, d.f.=172, P<0.0001). The effect sizes by domain of measurement, source of information and treatment type varied from 0.63 to 0.73, -0.07 to 0.69 and 0.36 to 0.79, respectively; skills training and multimodal interventions were the most effective treatment types. It was also found that feedback, modelling and homework assignments were all statistically positively related to the overall effect size (Spearman rank-order correlation, rho=0.55, P<0.001; rho=0.46, P<0.001; rho=0.31, P<0.05, respectively).

Results of the tests of inter-observer agreement levels ranged from 0.87 to 0.51 for treatment type, problem severity and treatment integrity.

Using a 'small effect' value of 0.20 in the fail-safe N calculations, the authors anticipated that an extra 117 studies with small effect size would be required to reduce the overall d-value to 0.20.

There was no significant difference in the overall effect size between published and unpublished studies (d=0.64 and d=0.70, respectively, P<0.59).

Randomisation, rater blinding and treatment integrity were found not to be significantly related to the magnitude of the effect size.

Authors' conclusions
CBT is an effective treatment for anger-related problems in youth. Its effects are consistent with the effects of psychotherapy with children in general.

CRD commentary
The review question was clearly defined. Relevant electronic databases and other sources were searched for published and unpublished studies. The review might be subject to language bias because only studies reported in English were eligible for inclusion.

Samples of the data were extracted twice in order to reduce reviewer biases; inter-rater agreement ranged from high to fair. Details of the participants, intervention, outcomes measured and results for each individual study were not shown; it is therefore difficult to draw conclusions about the appropriateness of the authors' decision to pool the data, or the reliability of the pooled estimates. Since the effect size was not measured in the units of any of the outcomes measured in the included studies, the interpretation of the authors' conclusion regarding effectiveness is not straightforward.

Implications of the review for practice and research
Practice: The authors stated that it appeared that treatments that teach actual behaviours or include problem-solving are more effective than treatments that modify internal constructs or affective education treatments, such as relaxation. The use of homework was significantly and positively related to therapy outcomes, while the use of CBT seemed most beneficial for children with moderate anger-related problems rather than those with a history of violent behaviour.

Research: The authors stated that with regard to CBT, a meta-analysis could be used to investigate the mechanisms of change, moderators of outcomes, and exportability from clinical research to practice.

Bibliographic details

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This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.