Effects of music therapy for children and adolescents with psychopathology: a meta-analysis

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CRD summary
This review assessed the efficacy of music therapy for children and adolescents with psychopathology. The authors concluded that music therapy is an effective intervention for this group. This conclusion may not be reliable as it is based on an analysis combining primary studies of varying design and uncertain reliability.

Authors' objectives
To assess the efficacy of music therapy for children and adolescents with psychopathology.

Searching
The following were searched using the reported search terms: MEDLINE (1966 to 2000), PSYNDEx (1977 to 2000), PsycINFO (1887 to 2000), the Cochrane Library (Issue 3, 2001), Music Therapy Info CD-ROMs 1 to 3 (1996 to 2001), a register of music therapy studies, and databases for ongoing and unpublished studies and relevant conference programmes. Seven music therapy journals were handsearched and the reference lists of included studies were checked for further studies. There were no language restrictions.

Study selection
Study designs of evaluations included in the review
Studies with a pre-test post-test design (controlled or uncontrolled) were eligible for inclusion. Studies with only one participant were excluded.

Specific interventions included in the review
Studies of music therapy were eligible for inclusion. Studies addressing the effects of music alone or of music education were excluded. The included studies involved a range of music therapy models. Some studies were of individual-based therapy, while others were in a group setting.

Participants included in the review
Studies of children or adolescents with psychopathology were eligible for inclusion. The included studies covered a wide range of clinical diagnoses, ranging from developmental disorders to conduct disorders. The participants were aged from 4 to 19 years.

Outcomes assessed in the review
To be included, the studies had to report clinically relevant outcomes at the level of the individual participant, but no particular outcomes were specified. Studies where the measured outcome was considered too similar to what was done in therapy sessions were excluded from the review. The included studies reported behavioural observations, tests of development, and self-reports of self-esteem measured using a variety of instruments.

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 authors did not state that they assessed validity.

Data extraction
The authors did not state how many reviewers performed the data extraction.
The studies were coded systematically and treatment effects were extracted for post-test and for follow-up. Effect sizes were calculated as standardised mean differences (Cohen's d) and were corrected for pre-test differences. They were also transformed to Hedges' g effect sizes. Where a study had more than one outcome, the average of all outcome measures was calculated.

**Methods of synthesis**

*How were the studies combined?*

The studies were combined in a meta-analysis using a fixed-effect model, which weighted studies by sample size. Publication bias was investigated using a funnel plot.

*How were differences between studies investigated?*

Heterogeneity between studies was assessed using the Q statistic. The influences of clinical diagnosis, participant age, therapeutic approach and outcome measured were investigated in subgroup analyses.

**Results of the review**

Eleven studies, involving 188 participants in total, were included in the review. There was one randomised controlled study (n=26), 5 non-randomised controlled studies (n=105) and 5 studies with no control group (n=57).

When all studies were included, the pooled effect of music therapy was large and statistically significant (d=0.99; standard error 0.13; P<0.001), but there was significant heterogeneity between the studies. Exclusion of an outlying study from the analysis gave a smaller, but still significant, pooled effect (d=0.61; standard error 0.14; P<0.001) and there was no statistical heterogeneity. None of the subgroup analyses had a significant influence on the overall effect.

The funnel plot suggested no evidence of publication bias.

**Authors’ conclusions**

Music therapy is an effective intervention for children and adolescents with psychopathology.

**CRD commentary**

The review addressed a clear question and the inclusion criteria were reasonably well defined. The search for primary studies was thorough, involving a wide range of sources without language or publication status restrictions. It was unclear whether steps were taken to minimise the introduction of errors or bias during the study selection and data extraction, as these processes were not fully described. The included studies were combined using meta-analytic techniques. The main analysis combined the results of all studies; this may not have been appropriate given the differences between the studies, notably in terms of study design. Although the authors investigated clinical moderators of effect size, there was no subgroup analysis separating controlled studies from uncontrolled studies which are likely to be more biased. In addition, the reliability of the included studies is uncertain as study quality was not assessed. Overall, despite a comprehensive literature search, this review suffers from a number of methodological limitations and the authors’ conclusions may not be reliable.

**Implications of the review for practice and research**

*Practice:* The authors stated that music therapy produces a clinically relevant effect and is therefore recommended for clinical use.

*Research:* The authors stated that there is a need for further research on models of music therapy that are currently practised in Europe, and their effectiveness in clinical settings. Future studies should be sufficiently large and use multiple outcome measures.

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