A meta-analytic review of components associated with parent training program effectiveness

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CRD summary

This review investigated the efficacy of parent training programmes in the prevention and alleviation of early childhood behaviour problems. It concluded that programmes associated with the greatest effect sizes were positive parent-child interactions/emotional communication skills, teaching parents to use time out and the importance of parenting consistency. The conclusions appear appropriate, but shortcomings in review processes make their reliability unclear.

Authors' objectives

To evaluate parent training programmes that aim to prevent or remeditate early childhood behaviour problems and assess which programme components are associated with more successful outcomes.

Searching

PsycINFO and MEDLINE were searched from 1990 to September 2002. The search was limited to published articles, books or book chapters; search terms were reported. Some retrieved studies were searched to identify additional studies. A secondary search was undertaken on programmes and author names that appeared in the original search at least twice.

Study selection

Eligible studies evaluated parent (defined as primary caregiver) training programs (defined as programmes that included the active acquisition of parenting skills) for behaviour problems in children aged seven years or less. Studies were eligible only if their conclusions were relevant to a broad population base, they contained a comparison group and included sufficient information to calculate effect sizes. Programmes were required to be delivered in English. Studies were excluded if they focused on literacy or physical outcomes and if the programmes targeted specific groups of parents or children that would limit broad generalisability.

The included studies focused either on prevention or treatment of behaviour problems. Parent participants were either exclusively mothers, exclusively fathers, both or either parents or other close relatives. Most studies included children of either gender. Most children were under seven years of age. Programme content was categorised in eight domains and was delivered in various ways. Outcomes included parenting measures (knowledge, self-efficacy, attitudes/values and behaviours/skills), child measures (externalising and internalising behaviours, educational/cognitive outcomes and social skills) and parent-child interaction. Programme intent varied from enhancing and promoting positive parenting to prevention and/or treatment of child problem behaviours such as aggression, anxiety and hyperactivity, and promotion of desirable attitudes and skills.

Study selection was undertaken independently by three reviewers. A study was excluded if all three reviewers agreed that it met at least one exclusion criterion.

Assessment of study quality

Studies were assessed according to measurements on four domains: whether allocation to groups was randomised or not; whether baseline comparability of groups was undertaken; whether the comparison group received no treatment or alternate treatment; and whether the parent training programme included additional interventions.

Validity assessment was undertaken by a single reviewer. A subset of 40 studies was checked by a second reviewer, with statistics calculated for reliability between reviewers.

Data extraction

Data were extracted on specifically designed coding forms. Where necessary, secondary sources were used to provide additional information. Data were extracted on the programme's location, dosage, content and delivery. Methods were described to deal with multiple published reports, multiple outcome measures, multiple time points, multiple samples

and multiple treatment conditions. Data were grouped separately in parent and child categories. Individual effect sizes were calculated from the unadjusted means, standard deviations and sample sizes for the treatment and comparison groups at post test for each outcome.

Data extraction was undertaken by a single reviewer. A subset of 40 studies was checked by a second reviewer, with statistics calculated for reliability between reviewers.

Methods of synthesis

Fixed-effect meta-analysis of effect sizes weighted on inverse variance (Hedges and Olkin 1985) was carried out. Heterogeneity was assessed with the Q test. Overall effect sizes were calculated for studies with and without each programme component. ANOVA (analysis of variance) was used to compare differences in the effect sizes in order to determine predictors of greater success of individual programme components. Multiple linear regressions based on a mixed-effects model (incorporated a random-effects variance component) were performed to determine the robustness of the ANOVA, while controlling for the four quality domains and evaluation of parent training group as a standalone intervention. Analyses were performed separately for parent and child related outcomes. Publication bias was assessed by calculation of the fail-safe N (Orwin 1993).

Results of the review

Of 128 studies that met the inclusion criteria, only 77 (sample sizes not reported) provided appropriate relevant comparisons and were included in the meta-analysis; 45 were randomised controlled trials (RCTs). Most studies evaluated parent training programmes as standalone programmes and were mostly compared with no treatment. Thirty-three percent of the studies assessed baseline equivalence between groups.

The overall weighted effect size across all outcomes was 0.34 (95% CI 0.29 to 0.39), which indicated a significant mean difference between treatment and comparison groups. There was substantial heterogeneity (Q [76] 330.9, $p<0.001$).

Programme components that were associated with significantly larger effects on parental outcomes (in regression analyses controlled for methodological rigour and parent self report), included positive interactions with their child (regression weight 0.198), emotional communication skills (regression weight 0.437) and practising with their own child (regression weight 0.375). Programme components that were associated with smaller effects on parental outcomes included problem solving (regression weight -0.247), promoting children's cognitive/academic skills (regression weight -0.243) and ancillary services (regression weight -0.205).

Programme components that were associated with significantly larger effects on child behaviours (in regression analyses controlled for methodological rigour and parent self report), included positive interactions with the child (regression weight 0.284), time out (regression weight 0.170), consistent responding (regression weight 0.333) and practice with the child (regression weight 0.234). A programme component associated with smaller effects on child outcomes was promoting children's social skills (regression weight -0.198).

Four of the identified components (practice with the parents' own child, teaching skills related to emotional communication, teaching parents to interact positively with their children and disciplinary consistency) remained significant predictors of effect sizes with the use of a random-effects variance component in a mixed-effects model as a more conservative test of association.

The fail-safe N calculation suggested that 250 unpublished studies with non significant results would be required to substantially change the overall effect size, which suggested that publication bias was unlikely.

Authors' conclusions

Parent training programmes were effective in changing parenting behaviour and in preventing or ameliorating early child behaviour problems. Increasing positive parent-child interactions and emotional communication, teaching time out and the importance of parenting consistency, and requiring parents to practice new skills with their children were found to have the greatest impact on outcomes.

CRD commentary

The review addressed a clear research question and inclusion criteria appeared appropriate. Two relevant sources were searched, but searches were restricted to published studies and it was unclear whether language restriction was applied, so language bias could not be ruled out. Publication bias was considered and results from failsafe N indicated that this was unlikely. It was unclear why only 77 studies were analysed of the total of 128 studies that met the inclusion criteria. The methods used for data extraction and validity assessment were limited, which indicated that reviewer error and bias in the review process could not be ruled out; only a random subset of studies was assessed in duplicate for these processes. Results from the Q test suggested significant heterogeneity. Relevant subgroup analyses were conducted to determine specific programme components that influenced outcomes. Methods of analysis were appropriate and results were clearly presented. The authors' cautious conclusions appear appropriate and reflect the evidence presented, but due to restriction of the review to published studies, risk of language bias and other methodological flaws in the review process, the reliability of the conclusions is unclear.

Implications of the review for practice and research

Practice: The authors stated that resources might best be redirected from strategies associated with smaller effects (such as problem solving, teaching parents to promote children's cognitive, academic or social skills and providing an array of other services) to strategies associated with larger effects (such as increasing positive parent-child interactions and emotional communication, teaching time out and the importance of parent consistency, and requiring parents to practice new skills with their children).

Research: The authors stated that future studies that evaluated parent training programmes should include basic demographic information for participants, details of recruitment and assignment to groups, details of the intervention, details of facilitators' training, details and results of treatment fidelity assessments, outcome measure information, attrition information and basic statistical estimates and sample sizes.

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