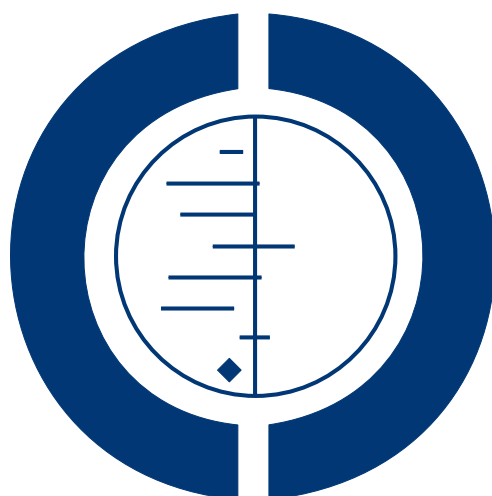


# **Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years (Review)**

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# Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

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## ABSTRACT

### Background

Early-onset child conduct problems are common and costly. A large number of studies and some previous reviews have focused on behavioural and cognitive-behavioural group-based parenting interventions, but methodological limitations are commonplace and evidence for the effectiveness and cost-effectiveness of these programmes has been unclear.

### Objectives

To assess the effectiveness and cost-effectiveness of behavioural and cognitive-behavioural group-based parenting programmes for improving child conduct problems, parental mental health and parenting skills.

### Search methods

We searched the following databases between 23 and 31 January 2011: CENTRAL (2011, Issue 1), MEDLINE (1950 to current), EMBASE (1980 to current), CINAHL (1982 to current), PsycINFO (1872 to current), Social Science Citation Index (1956 to current), ASSIA (1987 to current), ERIC (1966 to current), Sociological Abstracts (1963 to current), Academic Search Premier (1970 to current), Econlit (1969 to current), PEDE (1980 to current), Dissertations and Theses Abstracts (1980 to present), NHS EED (searched 31 January 2011), HEED (searched 31 January 2011), DARE (searched 31 January 2011), HTA (searched 31 January 2011), mRCT (searched 29 January 2011). We searched the following parent training websites on 31 January 2011: Triple P Library, Incredible Years Library and Parent Management Training. We also searched the reference lists of studies and reviews.

### Selection criteria

We included studies if: (1) they involved randomised controlled trials (RCTs) or quasi-randomised controlled trials of behavioural and cognitive-behavioural group-based parenting interventions for parents of children aged 3 to 12 years with conduct problems, and (2) incorporated an intervention group versus a waiting list, no treatment or standard treatment control group. We only included studies that used at least one standardised instrument to measure child conduct problems.

## Data collection and analysis

Two authors independently assessed the risk of bias in the trials and the methodological quality of health economic studies. Two authors also independently extracted data. We contacted study authors for additional information.

## Main results

This review includes 13 trials (10 RCTs and three quasi-randomised trials), as well as two economic evaluations based on two of the trials. Overall, there were 1078 participants (646 in the intervention group; 432 in the control group). The results indicate that parent training produced a statistically significant reduction in child conduct problems, whether assessed by parents (standardised mean difference (SMD) -0.53; 95% confidence interval (CI) -0.72 to -0.34) or independently assessed (SMD -0.44; 95% CI -0.77 to -0.11). The intervention led to statistically significant improvements in parental mental health (SMD -0.36; 95% CI -0.52 to -0.20) and positive parenting skills, based on both parent reports (SMD -0.53; 95% CI -0.90 to -0.16) and independent reports (SMD -0.47; 95% CI -0.65 to -0.29). Parent training also produced a statistically significant reduction in negative or harsh parenting practices according to both parent reports (SMD -0.77; 95% CI -0.96 to -0.59) and independent assessments (SMD -0.42; 95% CI -0.67 to -0.16). Moreover, the intervention demonstrated evidence of cost-effectiveness. When compared to a waiting list control group, there was a cost of approximately \$2500 (GBP 1712; EUR 2217) per family to bring the average child with clinical levels of conduct problems into the non-clinical range. These costs of programme delivery are modest when compared with the long-term health, social, educational and legal costs associated with childhood conduct problems.

## Authors' conclusions

Behavioural and cognitive-behavioural group-based parenting interventions are effective and cost-effective for improving child conduct problems, parental mental health and parenting skills in the short term. The cost of programme delivery was modest when compared with the long-term health, social, educational and legal costs associated with childhood conduct problems. Further research is needed on the long-term assessment of outcomes.

## PLAIN LANGUAGE SUMMARY

### Group parenting programmes for improving behavioural problems in children aged 3 to 12 years

Parenting programmes that are delivered in group settings have the potential to help parents develop parenting skills that improve the behaviour of their young children. This review provides evidence that group-based parenting programmes improve childhood behaviour problems and the development of positive parenting skills in the short-term, whilst also reducing parental anxiety, stress and depression. Evidence for the longer-term effects of these programmes is unavailable. These group-based parenting programmes achieve good results at a cost of approximately \$2500 (£1712 or EURO2217) per family. These costs are modest when compared with the long-term social, educational and legal costs associated with childhood conduct problems.

## BACKGROUND

### Description of the condition

Conduct problems in children are common and costly. In the UK and the USA, approximately 5% to 10% of children between five and 15 years of age present with clinically significant conduct problems (Offord 1989; Loeber 2001; Task Force 2006). In Western countries, there has been a steady increase in the incidence of such

problems since the 1930s (Robins 1999). Conduct problems are the most common reason for referral to psychological and psychiatric services in childhood (NICE 2006). They typically include troublesome, disruptive and aggressive behaviour; an unwillingness or inability to perform school work; few positive interactions with adults; poor social skills; low self-esteem; non-compliance with instructions; and emotional volatility (Loeber 2000; Scottish Executive 2001; Task Force 2006). These kinds of problems tend to exist on a continuum of severity (Burke 2002; Dretzke 2009). Children with the most severe disruptive behaviours may be di-

agnosed with Conduct Disorder (CD) or Oppositional Defiant Disorder (ODD) (see Diagnostic and Statistical Manual of Mental Disorders IV (DSM-IV 2000)). Conduct problems are three to four times more likely to be present in boys than girls and can develop into CD if left untreated (Burke 2002); they are also sometimes comorbid with Attention Deficit Disorder (ADD) or Attention Deficit Hyperactivity Disorder (ADHD) (Loeber 2000; Burke 2002). The prognosis for early-onset conduct problems (when compared with onset in adolescence) is poor and the negative outcomes in adolescence and adulthood may include antisocial and criminal behaviour (Carey 2000; Dretzke 2009); psychiatric disorders; drug and alcohol abuse; higher rates of hospitalisation and mortality; higher rates of school drop-out and lower levels of educational attainment; greater unemployment; family breakdown; and intergenerational transmission of conduct problems to children (Moffitt 1993; Loeber 2000; Burke 2002; Broidy 2003; Farrington 2007).

The costs of early-onset conduct problems to society are considerable. Children with severe conduct problems, when compared to those without conduct problems, are more likely to require remedial help at primary and secondary school; are up to 10 times more likely to leave school with no educational or vocational qualifications; will make significantly more use of primary care services (for example, doctor, hospital, speech therapist) (Edwards 2007; McGroder 2009); and are significantly more likely to have contact with the police in adolescence (Gregg 1999). By the age of 28 years, the cost of health, social, education and legal services may be 10 times higher for individuals with a clinical diagnosis of CD at age 10 years (EUR 104,416; GBP 70,019; USD 137,450) than for those without these problems (EUR 11,069; GBP 7423; USD 14,571). The costs for those with non-clinical conduct problems at age 10 years (that is children who do not meet diagnostic criteria) have been found to be 3.5 times higher (EUR 38,836; GBP 35,311; USD 57,311) (Scott 2001b; Fergusson 2005).

There is now considerable evidence to show that poor quality parenting is one of the most important precursors of early-onset conduct problems (Lipsey 1998; Farrington 2007; Odgers 2008). Inadequate parenting is typically characterised by ineffective parenting skills, including low levels of parental supervision and involvement, and punitive and inconsistent discipline. These tend to positively reinforce childhood aggressive behaviour whilst reducing positive behaviours by not attending appropriately to them (Farrington 1999; Patterson 2002a; Reid 2002). Moreover, other findings indicate that parental distress and mental illness, substance abuse and disrupted family life (all of which can affect the quality of parent-child interactions) are involved in the aetiology of early-onset conduct problems (Mash 1983; Shaw 1994; Hogan 2002). However, the causal link between parental stress and depression and childhood problem behaviour may be bi-directional in that parents and children reciprocally affect and shape one another's behaviour (Patterson 2002a; Long 2008). For example, the parent who lacks positive parenting skills may become increas-

ingly restrictive and negative when trying to cope with their non-compliant child. This, in turn, makes the child more difficult to handle, which further increases parental distress and their sense of helplessness and hopelessness in managing the child's misbehaviour (Campbell 1997).

Poor quality parenting is just one of a number of complex, interacting dispositional and contextual risk factors for conduct problems. Others include individual differences amongst children; difficult temperament; impulsivity; low verbal intelligence; deficits in processing social information; neurochemical abnormalities; economic deprivation; parental unemployment and low educational and occupational status; exposure to violence; deviant peer influences; and broader cultural factors (Patterson 1995; O'Connor 2002; Farrington 2002; Frick 2004). However, notwithstanding the effects of interacting and cumulative risk factors, there is growing evidence that an improvement in parenting skills can reduce problematic behaviours in childhood and increase children's positive social and compliant behaviours, as well as improving parental mental health (Osofsky 2000; Patterson 2002a; Webster-Stratton 2004a; Hutchings 2007b). In particular, existing research supports the effectiveness of group-based parenting interventions that are informed by behavioural, cognitive and social-learning theory principles in reducing the intensity of childhood conduct problems (Sanders 2000; Webster-Stratton 2004a; Hutchings 2007a).

## Description of the intervention

Behavioural and cognitive-behavioural parenting interventions are now typically delivered in a group format and have become increasingly popular as a means of addressing conduct problems in childhood (Webster-Stratton 1997; Sanders 2000; Hutchings 2007a; Kling 2010). These kinds of group-based parenting programmes typically involve an interactive and collaborative learning format in which programme facilitators teach key behavioural principles and parenting skills (for example, play, praise, rewards, discipline) to parents and caregivers who then practise the skills that they have learned. It appears that key elements of effective programmes include learning how and when to use positive parenting skills; observation; modelling; behaviour rehearsal (for example, role-play); discussion; homework assignments; using peer support, reframing unhelpful cognitive perceptions about their child or about child-management in general; and tackling barriers to attendance (Mihalic 2002; Gardner 2004; Hutchings 2004a; Azar 2006). However, behavioural and cognitive-behavioural parenting programmes vary in the extent to which they include these components; for example, it has been shown that differences in the duration of the programme, which may range from four (Martin 2003) to 24 weekly group sessions (Webster-Stratton 1997), affects the amount of time dedicated to practice and may impact upon the mechanism of group support. In addition, some programmes incorporate material on parent-related stress factors and social support (for example, Braet 2009) whereas others do not.



Furthermore, some but not all programmes tackle barriers to attendance by providing transport and childcare facilities for participating parents (for example, 'the Incredible Years'). Please see [Characteristics of included studies](#) for further details about components of each intervention. Different behavioural and cognitive-behavioural parenting programmes also vary in the extent to which they appear to be effective with families who are most at risk or children with the most severe problems ([Hutchings 2004a](#); [Hutchings 2006](#)).

## How the intervention might work

Behavioural and cognitive-behavioural interventions incorporate social learning principles and techniques from cognitive therapy alongside principles of operant and classical learning. Operant learning theory emphasises the environmental antecedents and consequences of behaviour. Thus, programmes based on operant learning theory involve teaching techniques of positive and negative reinforcement to parents, helping them to focus on the child's positive behaviour (by praising and rewarding the desired behaviour) and to ignore or introduce limit-setting and 'time-out' consequences for the child's negative behaviour ([Webster-Stratton 2004b](#)). Parents also learn how to pinpoint proximal and distal antecedents for identified positive and negative target behaviours for their child ([Webster-Stratton 2000](#)). Social learning theory posits that children learn how to behave by imitating the behaviour modelled by others in their environment and, therefore, if this behaviour is reinforced it is likely to be repeated ([Bandura 1986](#)). Programmes based on this principle help parents to model appropriate behaviour. In addition, group facilitators and leaders have the opportunity, within certain group-based behavioural programmes, to model key parenting skills in each session, whilst parents imitate and practise the new skills through role-plays and homework assignments ([Webster-Stratton 1998](#)). Parents may also be encouraged to act as empathic and supportive role-models for each other ([Webster-Stratton 1998](#)). However, it is important to note that the level of role-modelling and support provided by facilitators and other parents varies between programmes ([Sanders 2000](#); [Hutchings 2004a](#)).

The cognitive component of parenting interventions focuses on problematic thinking patterns in parents that have been associated with conduct problems in their children ([Azar 2006](#)). For instance, typical cognitive distortions include globalised 'all or nothing' thinking such that one minor setback may trigger a negative automatic thought (for example, 'I am a bad parent') thereby leading to feelings of stress, hopelessness, low self-esteem, a perceived inability to cope with the situation and learned helplessness ([Seligman 1990](#)). Thus, behavioural and cognitive-behavioural parenting interventions are aimed at helping parents to learn how to reframe distorted cognitions or misattributions and to coach them in the use of problem-solving and anger management techniques ([Macdonald 2004](#)).

Research suggests that the impact of behavioural and cognitive-behavioural parenting programmes may be moderated by socioeconomic factors, such as socioeconomic disadvantage arising from low levels of income or low levels of educational attainment and employment ([Hutchings 2004a](#)). For instance, two meta-analytic reviews ([Lundahl 2006](#); [Reyno 2006](#)) have found that lower socioeconomic status reduces the effectiveness of parenting programmes, although other research (for example, [Gardner 2010](#)) indicates that certain parenting programmes may achieve positive outcomes for all parents, irrespective of socioeconomic status. Another important moderator of impact may include implementation fidelity; that is, the extent to which programmes delivered in more naturalistic service settings adhere to the original design of the programme. Thus, if monitoring (that is training and supervision of programme deliverers) is critical to programme success, a programme might be efficacious within experimental research settings but not effective when rolled out within more naturalistic settings ([Mihalic 2002](#); [Webster-Stratton 2004b](#)). There is increasing evidence that another important mechanism of change within behavioural and cognitive-behavioural group-based interventions may involve change in parenting skill as a substantial predictor of the child problem behaviour outcome ([Gardner 2006](#); [Gardner 2010](#)). On the other hand, qualitative studies highlight the increased parental social support and confidence that comes from sharing problems within a group context ([Barlow 2001](#); [Patterson 2005](#); [Furlong in press](#)). Although there were insufficient studies within the current review to conduct appropriate meta-regression analyses, in future updates we will explore the putative mechanisms of change by examining changes in parenting skills and parental social support and confidence as predictors of child behaviour outcomes.

## Why it is important to do this review

Several studies have demonstrated the effectiveness of behavioural and cognitive-behavioural group-based parenting programmes in reducing conduct problems in children (for example, [Webster-Stratton 1997](#); [Scott 2001a](#); [Larsson 2008](#)). In addition, a number of previous reviews in the area have focused on the wide range of parenting programmes that are currently available and have produced evidence to suggest that group-based interventions, based on social learning theory, offer an effective treatment for conduct problems in children (for example, [Brestan 1998](#); [Barlow 2000](#); [Farmer 2002](#); [NICE 2006](#); [Dretzke 2009](#)). However, a number of key questions remain unanswered.

Firstly, reviews differ with respect to the methodologies employed. For example, some systematic reviews ([Brestan 1998](#); [Farmer 2002](#)) have not involved a statistical meta-analysis but, instead, have focused on evaluating studies against recognised criteria of well-established treatments, such as those developed by the Division 12 (Clinical Psychology) Task Force on Promotion and Dissemination of Psychological Procedures ([Task Force 1995](#)). Such

systematic reviews provide a list of individual 'high quality' studies, but give no indication of the magnitude of the effect size of the intervention when results across these interventions are pooled. In addition, there has been growing concern that many reviews do not use sufficiently rigorous methodological criteria in determining the quality of the evidence to be included (Hutchings 2004a; Dretzke 2009). For instance, in the NICE 2006 review, a parenting intervention based on only a single study and that had not achieved replication or long-term follow-up, nor demonstrated any tools for assessing implementation fidelity, received the same status as a programme that fulfilled all these criteria. Hutchings 2007b and Dretzke 2009 also noted that many previous reviews in the area have included non-randomised studies, have failed to undertake an intention-to-treat analysis and do not report heterogeneity or confidence intervals. However, both the NICE 2006 and Dretzke 2009 reviews did include statistical meta-analyses whilst Dretzke 2009 also aimed to employ Cochrane criteria in their meta-analysis. While the majority of included studies in these reviews focused on group-based behavioural parenting programmes, both reviews combined results from group-based and individual-based parenting programmes and included children with comorbidities in addition to conduct problems. Furthermore, Dretzke 2009 included parenting programmes based on different theoretical models as well as those with adjunctive treatments (for example, marital training) and programmes involving both children and parents. Moreover, meta-analyses within Dretzke 2009 and NICE 2006 selected specific measures from each study for an outcome (for example, the Eyberg Child Behaviour Inventory) and did not obtain the mean of a construct from several measures. Thus, the evidence for behavioural group-based parenting programmes in reducing clinically significant conduct problems in young children remains unclear.

The current review focused on examining the effectiveness of behavioural and cognitive-behavioural group-based parenting programmes for a number of important outcomes and used sensitivity analyses to address shortcomings related to the risk of bias in the trials. In addition, the review incorporated an evaluation of the cost-effectiveness of parenting programmes and investigated moderators of impact, including socioeconomic status and implementation fidelity. We could not conduct the prespecified meta-regression of putative mechanisms of change within group-based parenting programmes due to a lack of reported outcomes relating to parenting skills and parental confidence. However, a later updated review may provide sufficient studies to explore predictors of change.

## OBJECTIVES

To examine the effectiveness of behavioural and cognitive-behavioural group-based parenting programmes for children with

early-onset conduct problems in improving: a) child behaviour outcomes; and b) parenting skills and parental mental health.

To critically appraise and summarise current evidence on the incremental resource use, costs and cost-effectiveness of behavioural and cognitive-behavioural group-based parenting programmes when compared to treatment as usual.

## METHODS

### Criteria for considering studies for this review

#### Types of studies

Randomised controlled trials (RCTs), with or without cluster randomisation, and quasi-randomised studies (that is where allocation is by a quasi-random method such as alternate days, date of birth etc) conducted in either research or service settings. The review evaluated behavioural and cognitive-behavioural group-based parenting programmes when compared with control conditions of a waiting list, treatment as usual or no treatment.

We excluded head-to-head studies comparing two different types of parenting programme, regardless of content, if they did not have a control group. We also excluded studies that involved children with comorbid physical and intellectual impairments, such as autism spectrum disorders, Down Syndrome, tic disorders, significant language delay and learning problems. However, we included studies that reported on conduct problems comorbid with ADD and ADHD if they reported outcomes for conduct problems separately from ADD and ADHD outcomes.

For the economic evaluation, we included costs and cost-effectiveness analyses of behavioural and cognitive-behavioural group-based parenting programmes versus treatment as usual or no treatment. Only costs or cost-effectiveness studies conducted alongside or subsequent to RCTs that met our eligibility criteria were included (Shemilt 2008).

#### Types of participants

Parents or primary caregivers of children aged 3 to 12 years who manifested either: (a) conduct problems, as identified by a score above the clinical cut-off point on an outcome measure, such as the Eyberg Child Behaviour Inventory (ECBI) (Eyberg 1980a); or (b) a clinical or psychiatric diagnosis of Conduct Disorder (CD) or Oppositional Defiant Disorder (ODD), or both, as classified by the Diagnostic and Statistical Manual of mental disorders (DSM-IV 2000) or the International Statistical Classification of Diseases and Related Health Problems, 10th Revision (WHO 2009). Samples were drawn from community, clinical or research settings. Primary caregivers were of either gender and were single

parents or two-parent families. Studies involving parents of children older than 12 years or younger than 3 years were only included if more than 90% of the sample fell within the age range specified above. We contacted the study author(s) for more information if the precise proportion was not specified within the study report.

### **Types of interventions**

Structured, group-based parenting programmes underpinned by behavioural and cognitive-behavioural theories and provided on a regular basis (for example, weekly or fortnightly) for at least three sessions of between one and two hours.

We excluded studies in which parenting skills training formed a minor component of a larger programme. We also excluded education or information-based training programmes (that is programmes that rely only on providing information or discussion, or both).

### **Types of outcome measures**

#### **Primary outcomes**

##### **(A) Child outcomes**

- 1) Conduct problems

##### **(B) Parent outcomes**

- 1) Mental health (for example, stress, depression, anxiety levels, sense of confidence)
- 2) Appropriate parenting skills and knowledge (self-report and direct observation)
  - i) Positive parenting practices (for example, praise, positive affect, physical positive, play, talk, proactive discipline)
  - ii) Negative parenting practices (for example, criticism, yell, threaten, physical negative, laxness)

#### **Secondary outcomes**

##### **(A) Child outcomes**

- 1) Emotional problems (for example, depression and anxiety)
- 2) Educational and cognitive ability
- 3) Long-term outcomes in adolescence and adulthood
  - i) Criminal justice system involvement (police contacts, court appearances, imprisonment)
  - ii) Unemployment

##### **(B) Parent outcomes**

- 1) Increased level of social support

##### **(C) Adverse outcomes**

- 1) Financial and psychological burden to family in attending and accessing course (for example, childcare issues)
- 2) Increased conflict within family in relation to introduction of new parenting techniques

##### **(D) Economic data**

The review of economic costs were informed by guidelines outlined by [Shemilt 2008](#).

- 1) Costs per parent of running programme
  - i) Non-recurrent costs: materials (programme kit), training for deliverers of programme
  - ii) Recurrent costs: staff costs (salary per hour) in delivering programme, including delivering session, preparation, travel and supervision
  - iii) Recurrent costs: facilities provided for parents (for example, transport, crèche, money for babysitting, refreshments provided)
  - iv) Recurrent costs: managerial overheads (for example, venue rental)
- 2) Utilisation of health, social care and special education services by children and parents at different time-points (for example, at six month follow-up, one year follow-up)
  - i) Number and costs of visits to primary care and hospital (for example, doctor, nurse, hospital, speech therapists, paediatrician)
  - ii) Number and costs of visits to social services (for example, child psychology, psychiatric and social work services)
  - iii) Number and costs of visits to special education services (for example, resource hours, special needs assistant)
- 3) Incremental cost-effectiveness ratios (ICER) at different follow-up time-points. An ICER point estimate compares the costs and consequences of running a behavioural or cognitive-behavioural parenting intervention relative to the costs and consequences of a specified alternative, which is most commonly chosen to be the status quo. ICERs are a central component of full economic evaluations. However, full economic evaluations of parenting interventions are relatively rare ([Edwards 2007](#)). We also searched for economic studies accompanying eligible RCT studies that included costs data.

#### **Data sources**

Primary and secondary outcomes (not including economic data) may be measured by: (i) parent, carer or child reports or (ii) independent reports, which should report on inter-rater reliability, where appropriate.

### Timing of outcome assessment

All outcomes measured at baseline and a short-term follow-up immediately post-treatment to three months post-treatment. We could not analyse follow-ups of six months, 12 months and longer as such data were not available with a comparator.

### Search methods for identification of studies

We identified studies through key word and text word searches of relevant electronic databases and the websites of well-known parenting interventions, as well as searching grey literature (conference papers, unpublished PhD theses, reference lists of other parenting reviews) and personal communication with experts in the field.

### Electronic searches

We searched the following databases.

Cochrane Central Register of Controlled Trials (CENTRAL) (2011, Issue 1), which is part of *The Cochrane Library*. Searched 23 January 2011.

MEDLINE 1950 to current. Searched 23 January 2011.

EMBASE 1980 to current. Searched 27 January 2011.

Academic Search Premier 1970 to current. Searched 24 January 2011.

ASSIA (Applied Social Sciences Index and Abstracts) 1987 to current. Searched 24 January 2011.

CINAHL 1982 to present. Searched 24 January 2011.

Dissertations and Theses Abstracts 1980 to current. Searched 27 January 2011.

ERIC 1966 to current. Searched 28 January 2011.

metaRegister of Controlled Trials (mRCT). Searched 29 January 2011.

PsycINFO 1872 to current. Searched 30 January 2011.

Social Science Citation Index 1956 to present. Searched 30 January 2011.

Sociological Abstracts 1963 to present. Searched 30 January 2011.

### Economic sources

NHS Economic Evaluation Database (NHS EED). Searched 31 January 2011.

Health Economic Evaluations Database (HEED). Searched 31 January 2011.

DARE. Searched 31 January 2011.

Health Technology Assessments (HTA). Searched 31 January 2011.

Econlit 1969 to present. Searched 31 January 2011.

Paediatric Economic Evaluation Database 1980 to present. Searched 31 January 2011.

### Parent training websites

Triple P library. Searched 31 January 2011.

Incredible Years' library. Searched 31 January 2011.

Parent Management Training library. Searched 31 January 2011.

Parent-Child interaction therapy library. Searched 31 January 2011.

### Search terms

Search terms for MEDLINE and for the other databases can be found in [Appendix 1](#). We applied no date, publication, geographic or language restrictions to the searches.

### Searching other resources

We examined the reference lists of included studies and of systematic and non-systematic reviews (see [Appendix 1](#) for more details of reviews) identified from database searches to indicate further relevant studies. We retrieved the full texts of any references identified as being potentially eligible. We also contacted experts and researchers working in the area in order to search for unpublished and ongoing studies (for example, conference papers, unpublished dissertations or working papers).

### Data collection and analysis

#### Selection of studies

Two authors (MF and TB) independently reviewed titles and abstracts identified through searches in order to determine their potential eligibility against the above inclusion criteria. Any citation deemed potentially relevant by at least one author was retrieved in full text and, again, independently assessed by MF and TB against the inclusion criteria. We occasionally contacted study authors to obtain additional information. We resolved disagreements by consensus with a third author (SMcG). We documented the specific reasons for exclusion for each study that might reasonably have been expected to have been included but which did not meet the inclusion criteria. We translated studies in other languages, although none of these were subsequently considered eligible for inclusion in the review.

#### Data extraction and management

MF and TB independently extracted information on a number of the key characteristics of each eligible study. These included: study design and implementation; sample characteristics; intervention and control characteristics; implementation integrity; and all reported outcomes. A data extraction form was designed specifically for the purposes of this review, piloted on a sample of studies and

then finalised. We discussed any differences between review authors in extracting data from studies in order to resolve discrepancies and SMcG arbitrated where agreement could not be reached. Where applicable, MF contacted study authors and a considerable amount of additional data were obtained as a result, including information on participant demographics, means, standard deviations and sample sizes that were not reported in the original paper. We organised citations and data in Microsoft Excel prior to entry into Review Manager (RevMan) 5.1 software ([Review Manager 2011](#)).

For the economic analysis, MF and TB independently extracted details of the characteristics and results of included health economics studies. The characteristics of interest included: year of study; details of interventions and comparators; study design; type of economic evaluation; source(s) of resource use; unit costs; decision making jurisdiction; geographical and organisational setting; analytic perspective; discount rates; and time horizon for both costs and effects. Where necessary, we sought additional information and unpublished data from study authors. See [Characteristics of included studies](#).

### Assessment of risk of bias in included studies

Review authors (MF and TB) independently assessed the risk of bias (that is 'high', 'low' or 'unclear') within each included study across the following six domains ([Higgins 2008a](#)): (1) sequence generation; (2) allocation concealment; (3) blinding; (4) incomplete outcome data for parent and independent reports (including data on attrition and exclusions; whether an intention-to-treat (ITT) analysis was conducted); (5) selective outcome reporting; and (6) other sources of bias, such as comparability of baseline characteristics between groups and attempts to control for imbalance. We entered these judgements into a 'Risk of bias' table in Review Manager (RevMan) 5.1 ([Review Manager 2011](#)) with a brief rationale for the judgement. MF, TB and SMcG discussed the judgements, with additional input from JH, SS and MD. We sought missing information concerning 'risk of bias' criteria from all study authors, including details on randomisation, blinding procedures and ITT analyses. Please see [Characteristics of included studies](#).

For the cost-effectiveness analysis, we used the 'Drummond checklist' and 'Evers checklist' to critically appraise the methodological quality of included health economic studies ([Shemilt 2008](#)). Two review authors (MF and TB) completed these independently and resolved any disagreements through discussion. We contacted study authors for missing information. See [Appendix 2](#) for completed checklists for eligible economic evaluations.

### Measures of treatment effect

#### Continuous and dichotomous data

We analysed data from continuous outcomes if the means and standard deviations were available, or if we could calculate effect sizes from other data (for example, from t-tests, F-tests, or exact P values). We contacted study authors to provide missing data as necessary (see [Appendix 3](#)). Within the section on individual study data, we present continuous data using similar, but not identical, instruments as standardised mean differences (SMDs) and dichotomous data as risk ratios (RR). There were several different instruments measuring an outcome within most studies. Thus, we obtained a mean effect size and standard error for each outcome within the study and entered these into the generic inverse variance analytic method, using the effect measure of SMD. For the meta-analyses, we converted RRs into SMDs as the dichotomous measures tapped into an underlying construct that was continuous. We used confidence intervals (CI) of 95% for individual study data and pooled estimates. As anticipated, we found evidence of heterogeneity and therefore reported results of random-effects models, as indicated in our protocol. We examined effects at a specific short-term period (up to three months post-treatment). In future review updates, we will examine later follow-up periods, if such data become available together with data from a comparator group.

### Economic evaluation

We did not pool resource use, costs and cost-effectiveness outcomes as the outcomes were not considered comparable across the trials. The results are specific to the countries in which the studies were undertaken due to differences between the public health systems and variations in resource utilisation and associated costs in different countries. In addition, when outcomes were similar within the two included costs studies, one economic evaluation provided a more detailed account of resources and unit costs than the other, thereby precluding the possibility of any meaningful comparisons. We classified studies according to whether they measured resource costs or whether they calculated an incremental cost-effectiveness ratio (ICER). An ICER point estimate compares the costs and consequences of running a behavioural or cognitive-behavioural parenting intervention relative to the costs and consequences of a specified alternative (most commonly chosen to be the status quo).

We included a narrative summary in the 'Results' section in order to provide information on the accuracy, direction and magnitude of results. The findings present mean costs for each outcome and associated sensitivity analyses. We adjusted cost estimates from different studies to the common currency and the price year of 2011 international dollar values in order to ensure comparability of costs; we report these values alongside the currency and price year presented in the original paper. We made these currency and price year adjustments using a web-based conversion tool, the 'CCEMG-EPPI-Centre Cost Converter', which uses conversion rates based on 'Purchasing Power Parities' (PPP) for gross domestic



product (GDP). This is available from the International Monetary Fund (IMF) World Economic Outlook database (see <http://epi.ioe.ac.uk/costconversion/default.aspx> (Shemilt 2010)). This data set contains 'PPP values' for 181 countries (currencies) from 1980 onwards and is updated biennially, in April and October. Further details on resource use and unit costs can be found in the [Appendices](#), although it is important to note that these costs represent the currency and price year presented in the original papers rather than the adjusted International dollar rate.

### Unit of analysis issues

It is possible that a clustering effect may have arisen due to the effect of training in groups. For example, the intervention group within included studies was typically composed of different parenting groups and, as such, each parenting group could potentially act in a more similar way than another parenting group in a different area. None of the included studies employed hierarchical linear modelling, which is currently the optimal analytical strategy for nested data (Mahwah 2002). Two studies (Hutchings 2007a; McGilloway 2009) controlled for the group effect by inserting group or area as a covariate in the analyses, which is an acceptable analytical procedure in this context (Hutchings 2007a). It was not possible to estimate the extent of the intra-cluster violation within included studies as we were unable to obtain an external estimate of an intra-cluster correlation coefficient (ICC) for group-based parenting programmes in our search of relevant resources (for example, Ukoumunne 1999; Campbell 2000; Health Services Research Unit 2011). We have no reason to believe that corrections would unduly alter the main conclusions. All results were reported at short-term follow-up (that is less than three months following the end of treatment).

### Dealing with missing data

If relevant missing data could not be obtained from study authors, we assessed the precise level of missing data within each study in the risk of bias tables by comparing the number of participants included in the final analysis with the proportion of all participants in each study (see [Characteristics of included studies](#)). We also provide the reasons for missing data in the narrative summary. Sensitivity analyses examined the impact of removing: i) studies without an ITT analysis and ii) studies with a level of attrition greater than 20% in either the intervention or control group if an ITT analysis was not conducted.

### Assessment of heterogeneity

We assessed clinical heterogeneity by comparing the distribution of important factors such as participant demographics, type of intervention and control comparators, quality of trials (randomisation, blinding, losses to follow-up) and outcomes measured across

studies. We assessed statistical heterogeneity visually and by examining the  $I^2$  statistic, a quantity which describes the approximate proportion of variation in point estimates that is due to heterogeneity rather than sampling error (Higgins 2002). With the  $I^2$  statistic, 30% to 60% may be interpreted as moderate heterogeneity; 50% to 90% as substantial heterogeneity; and 75% to 100% as considerable heterogeneity. This was supplemented by the  $\chi^2$  test, where a P value < 0.05 indicates heterogeneity of treatment effects. Sensitivity and subgroup analyses investigated any possible sources of heterogeneity.

As explained, we could not pool resource use and unit costs for the economic evaluations as they were too heterogeneous. We adjusted cost estimates from different economic studies to a common currency and price year (Shemilt 2008).

### Assessment of reporting biases

Due to the inclusion of more than 10 studies, we drew funnel plots for the outcome of parent-reported child conduct problems in order to investigate any relationship between effect size and standard error. Asymmetry may be due to publication or related biases, or to systematic differences between small and large studies. Where such a relationship is identified, the experimental diversity of the studies can be examined as a further possible explanation (Egger 1997).

### Data synthesis

We initially conducted data synthesis with RevMan 5 and subsequently with RevMan 5.1 (Review Manager 2011) when the programme was updated in March 2011. We have provided a narrative description of the study results when a meta-analysis was inappropriate.

### Subgroup analysis and investigation of heterogeneity

When there were sufficient studies, we undertook a series of subgroup analyses to ascertain the extent to which effect size might differ according to the following trial factors.

- Children with more severe behaviour problems pre-treatment (children with a clinical diagnosis of CD or ODD) versus children with less severe conduct problems pre-treatment (children scoring above the clinical cut-off point on a validated instrument).
- Socioeconomic disadvantage (for example, low income, low parent education or occupation) versus participants with a socioeconomic status comparable to population norms.
- Research versus service settings.
- Level of implementation fidelity of programme (that is: evidence of adherence to protocols, exposure, quality of delivery, training and supervision of facilitators delivering the programme, programme differentiation (Mihalic 2002)).

### Meta-regression: mediator or mechanisms of change analysis

Due to insufficient studies (that is, less than 10 studies within relevant outcomes), we were unable to conduct meta-regressions to examine whether changes in parental mental health and confidence or changes in positive or negative parenting skills acted as causal mechanisms within the interventions. It was necessary to distinguish positive and negative parenting skills in order to explore changes in parenting skill as a causal mechanism because changes in child behaviour could be due to: (i) an increase in positive parenting skills (for example, praise, positive affect, physical positive, play, talk, proactive discipline); (ii) a reduction in negative parenting practices (for example, criticism, yelling, threats, physical negative, negative command); (iii) both (i) and (ii); or (iv) none of these factors (Gardner 2010; Kling 2010). In future updates, we will examine how the outcome variable (the intervention effect) changes with a unit increase in the explanatory variable (that is positive or negative parenting skill or increased parental mental health and confidence). We will use a random-effects model meta-regression to allow for the residual heterogeneity among intervention effects not modelled by the explanatory variables. We will perform meta-regression using the 'metareg' macro available for the Stata statistical package but it will not be conducted when there are fewer than 10 studies in a meta-analysis (Deeks 2008).

### Sensitivity analysis

We performed sensitivity analyses to evaluate the robustness of the pooled effect sizes across various components of methodological quality, including:

- randomisation versus quasi-randomisation (removing studies with inadequate sequence generation or inadequate allocation concealment);
- removing studies without blind assessment of outcomes;
- removal of studies that have not achieved independent replication;
- exclusion of studies with attrition rates larger than 20% and exclusion of studies without an ITT analysis;
- changing how values are imputed for missing data, that is, replacing last observation carried forward (LOCF) method with mean values;
- standardised versus non-standardised measures of outcomes (standardised scales are those that are validated in a peer-reviewed journal or validated against other similar measures);
- exclusion of studies with risk of bias in any key domain of (i) inadequate randomisation, (ii) blinding or (iii) attrition

higher than 20%.

Previously, we specified that we would also: (1) conduct sensitivity analyses for short-term versus long-term follow-up for primary outcomes; and (2) remove studies that do not report on treatment fidelity. However, all included studies reported only short-term outcomes as well as information on treatment fidelity. Therefore, we will conduct these sensitivity analyses, where necessary, in future updates.

## RESULTS

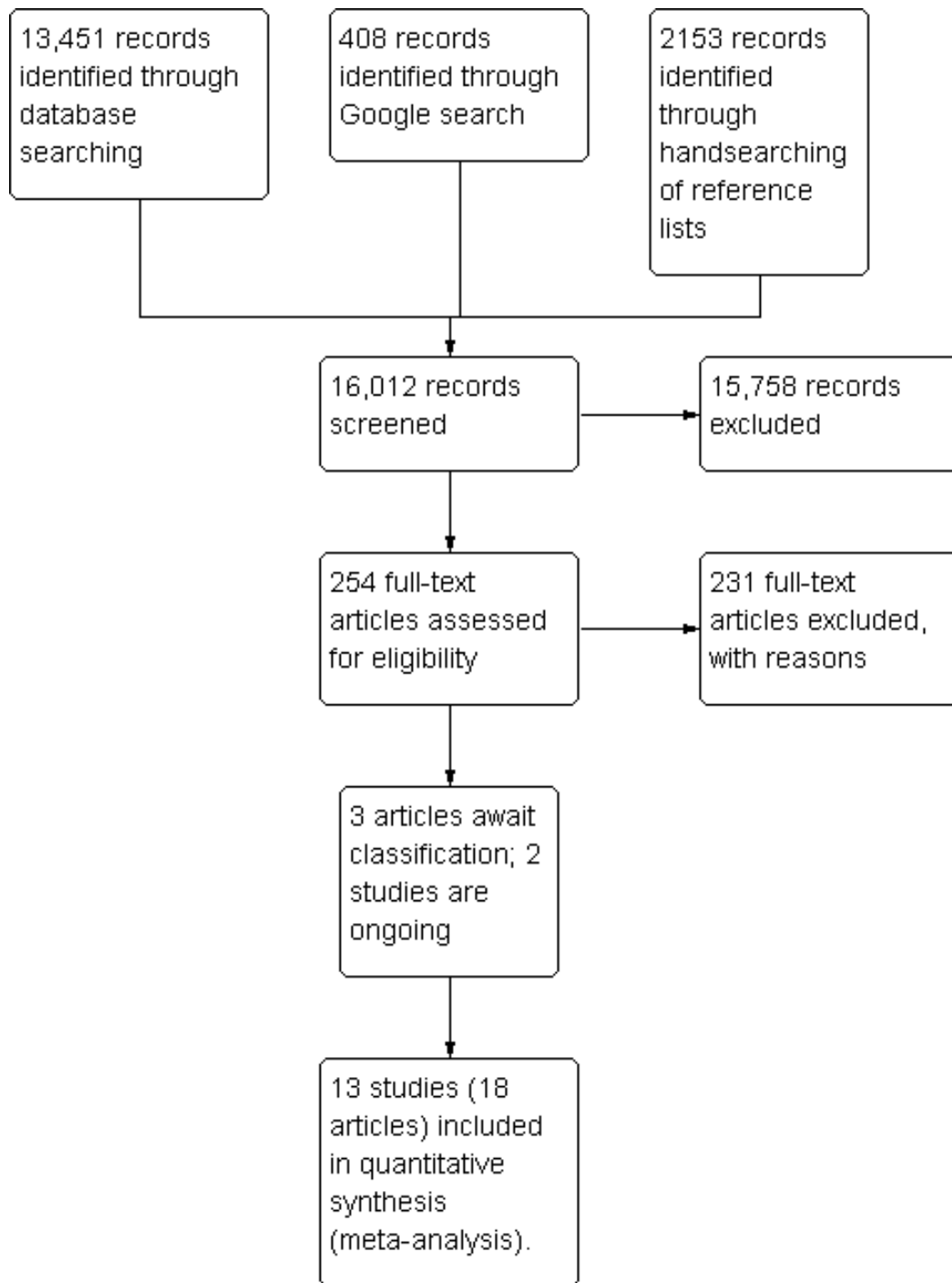
### Description of studies

See: [Characteristics of included studies](#); [Characteristics of excluded studies](#); [Characteristics of studies awaiting classification](#); [Characteristics of ongoing studies](#).

### Results of the search

Searches of electronic databases, which were carried out in February 2010 and updated in January 2011, yielded 13,859 abstracts. Handsearching of the reference lists within included studies and within previous reviews yielded 2153 references. There was substantial replication of records amongst databases. Two review authors (MF and TB) independently examined all titles and abstracts, identified 254 records as being potentially eligible and subsequently obtained a full copy of each paper. Following an examination of the full text of these papers and, in some cases, following further contact with study authors, we found 18 papers (reporting on 13 studies) that met the eligibility criteria. Two further potentially eligible studies are ongoing and not yet published (Matthys 2005; Ollendick 2009). It was not possible to ascertain the eligibility of three papers (two published articles and one unpublished dissertation) despite extensive efforts to obtain these reports. See [Characteristics of studies awaiting classification](#) and [Characteristics of ongoing studies](#) for further details. All articles in languages other than English had abstracts available in English. We excluded studies on the basis of information contained in the abstracts if eligibility could be assessed at this juncture. Nine studies (four German, two Portuguese, two Spanish and one Chinese) required translation, but all were subsequently deemed to be ineligible. See [Figure 1](#) for the study flow diagram.

**Figure 1. Study flow diagram.**





## Included studies

### Randomised controlled trials

Thirteen studies (Webster-Stratton 1984; Webster-Stratton 1988; Webster-Stratton 1997; Barkley 2000; Scott 2001a; Martin 2003; Webster-Stratton 2004a; Gardner 2006; Hutchings 2007a; Larsson 2008; Braet 2009; McGilloway 2009; Kling 2010) met the eligibility criteria for inclusion. The Larsson 2008 paper was related to two other separate published papers (Drugli 2006; Drugli 2007) and one unpublished report (Morch 2004) of the same trial; all of these papers were treated, therefore, as a single study by Larsson 2008. All of the studies were published in peer-reviewed journals except for McGilloway 2009, whose study has been accepted for publication at the time of writing (McGilloway *in press*). The data from this study were extracted from a peer-reviewed, published report (McGilloway 2009). The studies were conducted over an approximate 25-year period (1984 to 2010) and a behavioural group-based parenting programme was compared with a waiting-list control (WLC) group in all 13 cases. Whilst six of the studies involved an evaluation of more than one intervention (Webster-Stratton 1984; Webster-Stratton 1988; Webster-Stratton 1997; Barkley 2000; Webster-Stratton 2004a; Larsson 2008), none of these other interventions involved group-based parent training.

Nine of the included studies were full randomised controlled trials (RCTs) (Webster-Stratton 1984; Webster-Stratton 1988; Webster-Stratton 1997; Martin 2003; Webster-Stratton 2004a; Gardner 2006; Hutchings 2007a; McGilloway 2009; Kling 2010); two were quasi-randomised controlled trials (Scott 2001a; Braet 2009); one randomised trial (Barkley 2000) was seriously compromised by the need to move participants from the experimental to the control group during the study; whilst one did not provide enough information to permit judgement on the nature of the randomisation process (Larsson 2008).

There were some important differences between the studies. These, and the main study characteristics, are summarised below. Further details are provided in the [Characteristics of included studies](#) table.

### Sample sizes

There was considerable variation in sample size between studies. The number of participants (parent and index child pair) initially randomised per study ranged from 28 to 153; three studies included over 100 participants (Scott 2001a; Hutchings 2007a; McGilloway 2009), seven involved 50 to 100 participants (Webster-Stratton 1988; Barkley 2000; Webster-Stratton

2004a; Gardner 2006; Braet 2009; Larsson 2008; Kling 2010), whilst three studies were based on sample sizes of less than 50 (Webster-Stratton 1984; Webster-Stratton 1997; Martin 2003). Overall, there were 1078 participants (646 in the intervention group; 432 in the control group).

### Setting

Five studies were conducted in the USA, one of which was located in Massachusetts (Barkley 2000) and four in Seattle (Webster-Stratton 1984; Webster-Stratton 1988; Webster-Stratton 1997; Webster-Stratton 2004a). Seven studies were conducted in Europe, three in various locations in the UK (Scott 2001a; Gardner 2006; Hutchings 2007a), one in Ireland (McGilloway 2009), one in Belgium (Braet 2009), one in Norway (Larsson 2008) and one in Sweden (Kling 2010). One study was conducted in Australia (Martin 2003). Six of the studies were conducted in urban, university-based research clinics (Webster-Stratton 1984; Webster-Stratton 1988; Webster-Stratton 1997; Martin 2003; Webster-Stratton 2004a; Braet 2009) and seven were conducted within both urban and rural community-based agencies. With respect to the latter: Barkley 2000 delivered the intervention in a medical centre in Massachusetts; the study by Gardner 2006 was based in various Family Nurturing Network clinics in Oxford city and county; Hutchings 2007a conducted their study in 11 Sure Start Service areas within predominantly rural areas of North and Mid Wales; Kling 2010 delivered the intervention within routine social services in Stockholm; Larsson 2008 delivered the programme within two child psychiatric outpatient clinics in Trondheim and Tromsø; McGilloway 2009 was conducted in various community-based family support and psychology services in Dublin and Eastern Ireland and Scott 2001a delivered the intervention in a range of Child and Adolescent Mental Health Services (CAMHS) within London and West Sussex.

### Participants

Participants were predominantly Caucasian (80% to 100% across studies) and comprised primary caregiver-index child pairs. Within three studies the primary caregiver was the mother (Webster-Stratton 1984; Scott 2001a; Hutchings 2007a), whilst in six studies the primary caregiver was predominantly the mother but also involved the father in between 3% to 17% of the sample (Barkley 2000; Martin 2003; Gardner 2006; Braet 2009; McGilloway 2009; Kling 2010). Four of the studies obtained separate reports from both parents in cases where both parents were involved in parenting (Webster-Stratton 1988; Webster-Stratton 1997; Webster-Stratton 2004a; Larsson 2008). Parents ranged in age from 18 to 57 years, with a mean age of 33 years. Four of the

studies involved self-referred participants (Barkley 2000; Martin 2003; Braet 2009; Kling 2010); two involved professionally-referred participants (Scott 2001a; Larsson 2008); whilst the samples in the remaining seven studies included a mix of self- and professionally-referred participants, approximately one half to two thirds of whom were referred by professionals (Webster-Stratton 1984; Webster-Stratton 1988; Webster-Stratton 1997; Webster-Stratton 2004a; Gardner 2006; Hutchings 2007a; McGilloway 2009). The gender distribution of children, which was reported in all but one of the studies (Martin 2003), showed that 68.3% were boys ( $n = 707$  boys,  $n = 325$  girls). The mean age of the children across the studies was 64 months (five years and four months); children were aged between three and nine years in all but three of the studies where a small number of children (less than 10% of the samples) were just under three years old (Martin 2003; Gardner 2006; McGilloway 2009). The severity of conduct problems varied considerably between studies. In seven trials, all children at pre-treatment scored above the clinical cut-off point on a validated measure for conduct problems (Webster-Stratton 1988; Martin 2003; Gardner 2006; Hutchings 2007a; Braet 2009; McGilloway 2009; Kling 2010) whereas six studies reported that at pre-treatment all or most of the children were diagnosed with either Conduct Disorder (CD) or Oppositional Defiant Disorder (ODD) as well as scoring above the clinical cut-off point on a validated questionnaire (Webster-Stratton 1984; Webster-Stratton 1997; Barkley 2000; Scott 2001a; Webster-Stratton 2004a; Larsson 2008). Five studies reported a low level of comorbidity with Attention Deficit Hyperactive Disorder (ADHD) (Webster-Stratton 1984; Webster-Stratton 1997; Barkley 2000; Webster-Stratton 2004a; Larsson 2008). Seven studies were based on population samples characterised by high levels of socioeconomic disadvantage (Webster-Stratton 1984; Barkley 2000; Scott 2001a; Gardner 2006; Hutchings 2007a; Braet 2009; McGilloway 2009). All but one of the remainder included samples whose socioeconomic status was comparable to population norms (Webster-Stratton 1988; Webster-Stratton 1997; Martin 2003; Webster-Stratton 2004a; Kling 2010); one study did not provide any information in this respect (Larsson 2008).

All group-based parenting programmes were compared to a WLC condition. In six studies (Webster-Stratton 1984; Webster-Stratton 1988; Webster-Stratton 1997; Barkley 2000; Webster-Stratton 2004a; Larsson 2008) the intervention programmes were compared to the following additional study conditions: individual (non-group based) parent training (Webster-Stratton 1984; Webster-Stratton 1988); non-behavioural group discussion parenting intervention (Webster-Stratton 1988); a teacher training condition (Barkley 2000; Webster-Stratton 2004a); a parents plus teachers condition (Barkley 2000; Webster-Stratton 2004a); a child therapy group (Webster-Stratton 1997; Webster-Stratton 2004a); a parents plus child training group (Webster-Stratton 1997; Larsson 2008); and a combined parents, teachers and child training condition (Webster-Stratton 2004a). None of these

additional study conditions are reported in this review. Nine of the studies (Webster-Stratton 1984; Webster-Stratton 1988; Webster-Stratton 1997; Scott 2001a; Webster-Stratton 2004a; Gardner 2006; Hutchings 2007a; Larsson 2008; McGilloway 2009) involved an evaluation of the Incredible Years BASIC Parenting Programme, five of which were independent replications (Scott 2001a; Gardner 2006; Hutchings 2007a; Larsson 2008; McGilloway 2009). This programme consisted of brief videotaped vignettes of typical parent-child interactions, group discussions, role-plays and homework to promote positive parenting skills. Most of the studies of Incredible Years Parenting interventions comprised 9 to 16 weekly 2 to 2.5 hour sessions, although two studies provided 22 to 24 weekly two hour sessions (Webster-Stratton 1997; Webster-Stratton 2004a). Barkley 2000 devised and evaluated the effectiveness of the Barkley's Parent Training programme, which taught positive parenting skills and consisted of 10 weekly sessions followed by five monthly booster sessions. Braet 2009 devised and evaluated a Parenting Management Training (PMT) derived from the behavioural principles of the Parent Management Training, Oregon and the Incredible Years Parenting interventions. The programme involved 11 two hour fortnightly sessions and taught positive parenting skills as well as providing material on dealing with parent-related stress factors, social support, and other risk or protective factors. Kling 2010 devised and evaluated Comet Parent Management Training, Practitioner-assisted training (PMT-P), which included behavioural parent-training components based on the work of Barkley, Webster-Stratton, Bloomquist and Schnell. The intervention, which involved 11 weekly 2.5 hour sessions, consisted of video-clips, role-play, discussions and homework in teaching positive parenting skills. Martin 2003 devised and evaluated the Work Place Triple P Parenting Programme, which taught 17 core positive parenting and child management strategies using video modelling, practice, homework, feedback and goal setting. The intervention involved four weekly two hour sessions followed by four weekly 15 minute telephone calls. Group sizes across studies ranged from 5 to 15 parents, although most had 8 to 12 parents per group. The number of sessions attended by participants in each study also varied quite considerably, from 35% to 94%; hence, seven studies had 83% to 94% attendance (Webster-Stratton 1984; Webster-Stratton 1988; Webster-Stratton 1997; Martin 2003; Webster-Stratton 2004a; Larsson 2008; Kling 2010), five studies had 64% to 77% attendance (Scott 2001a; Gardner 2006; Hutchings 2007a; Braet 2009; McGilloway 2009) whilst Barkley 2000 reported only a 35% session attendance. Most studies reported a reasonably high level of implementation fidelity, to the extent that adherence to treatment protocols and checklists, quality of delivery, training of leaders and supervision were adequately covered. However, treatment integrity was compromised in two studies due to the very low levels of parental attendance in one (Barkley 2000) and the relatively low coverage of programme content (76%) in another (Kling 2010).

## Outcomes

### *Conduct problems*

All of the studies reported child conduct problems using continuous data from parent or self-reports. All but two of the studies (Martin 2003; Kling 2010) reported child conduct problems using continuous data from independent reports (that is home, clinic or classroom observations, teacher report, or clinical diagnostic interview), although data could not be used from Larsson 2008 due to missing information. Four studies reported child conduct problems using dichotomous data from parent reports (Webster-Stratton 1997; Martin 2003; Webster-Stratton 2004a; Larsson 2008) whilst the same number reported child conduct problems using dichotomous data from independent reports (Webster-Stratton 1997; Barkley 2000; Scott 2001a; Webster-Stratton 2004a).

### *Parental mental health*

Eight studies reported on parental mental health using continuous data from parent reports (Webster-Stratton 1988; Barkley 2000; Martin 2003; Gardner 2006; Hutchings 2007a; Larsson 2008; Braet 2009; McGilloway 2009).

### *Parenting practices*

Seven studies reported on positive parenting practices (for example, praise, play, positive affect) using continuous data from parent reports (Barkley 2000; Martin 2003; Webster-Stratton 2004a; Gardner 2006; Larsson 2008; Braet 2009; Kling 2010) whilst nine provided data on positive parenting practices using continuous data from independent reports (Webster-Stratton 1984; Webster-Stratton 1988; Webster-Stratton 1997; Scott 2001a; Webster-Stratton 2004a; Gardner 2006; Hutchings 2007a; Braet 2009; McGilloway 2009). Nine studies reported on negative parenting practices (for example, criticism, shouting, physical negative, negative commands) using continuous data from parent reports (Webster-Stratton 1984; Webster-Stratton 1988; Webster-Stratton 1997; Martin 2003; Webster-Stratton 2004a; Gardner 2006; Hutchings 2007a; Larsson 2008; Braet 2009) and the same number reported on negative parenting practices using continuous data from independent reports (Webster-Stratton 1984; Webster-Stratton 1988; Webster-Stratton 1997; Barkley 2000; Webster-Stratton 2004a; Gardner 2006; Hutchings 2007a; Braet 2009; McGilloway 2009), although data from two of these studies (Barkley 2000; Gardner 2006) were not used due to risk of bias. See [Characteristics of included studies](#) for more details.

### *Child emotional problems*

Three studies included data on the secondary outcome of child emotional problems using continuous data from parent and independent reports (Barkley 2000; Larsson 2008; Braet 2009). However, the independent data could not be used from Larsson 2008 due to missing information on the number of participants for the outcome. This last study (Larsson 2008) also reported on child emotional problems using dichotomous parent report whilst another study (Barkley 2000) included data on child emotional problems using dichotomous independent report.

### *Child educational and cognitive abilities*

Four studies (Webster-Stratton 1997; Barkley 2000; Larsson 2008; Braet 2009) reported on child educational and cognitive abilities, although the data from Larsson 2008 could not be used due to missing information.

### *Parental social support*

One study (Martin 2003) reported on parental social support. None of the studies included long-term outcomes in adolescence and adulthood (that is criminal justice involvement or unemployment), or reported on adverse outcomes linked to participation in the interventions (for example, financial and psychological burden associated with attending parent training, increased conflict within home due to introduction of new parenting techniques). Outcomes were assessed at baseline in all studies. Six (Webster-Stratton 1984; Barkley 2000; Martin 2003; Larsson 2008; Braet 2009; Kling 2010) involved an assessment of outcomes again immediately post-treatment; seven of the studies did not include an assessment of outcomes immediately post-treatment but instead were based on either a six month follow-up following baseline assessment, with the intervention delivered in the interim (Gardner 2006; Hutchings 2007a; McGilloway 2009), or an assessment within one to three months following the end of treatment (Webster-Stratton 1988; Webster-Stratton 1997; Scott 2001a; Webster-Stratton 2004a). All but three of the studies (Webster-Stratton 1988; Barkley 2000; Scott 2001a) incorporated longer-term assessments at between four to 18 month follow-up periods post-intervention, but there was no control group at these time-points as the WLC had also received the intervention by that stage. Thus, all of the outcomes involving both intervention and control conditions were short-term outcomes with no study assessing both conditions beyond three months post-intervention.

### *Economic evaluations*

Two cost-effectiveness studies (Edwards 2007; O' Neill 2011) met the eligibility criteria for inclusion. Both studies were full economic evaluations with cost-effectiveness analyses which were related to an eligible RCT: Edwards 2007 was related to the RCT of Hutchings 2007a (conducted in Wales) whilst the O' Neill 2011

study was undertaken as part of the [McGilloway 2009](#) RCT in Ireland. Both of these studies were based on data collected from the participants in the primary RCTs ([Hutchings 2007a](#); [McGilloway 2009](#)) who at baseline had scored above the clinical cut-off point on the Eyberg Child Behaviour Inventory (ECBI). In the case of [Edwards 2007](#), economic data were available for 116 parents (73 families in the intervention group, 43 families in the control group) of the 153 families randomised within the [Hutchings 2007a](#) study; whilst the data in the [O' Neill 2011](#) study were available for 112 parents (74 families in the parent training, 38 families in the control group) of the 149 families who were originally randomised by [McGilloway 2009](#). Within both costs studies, the families not included in the economic analyses were shown to be comparable at baseline to those who were included, in terms of their demographic characteristics and scores on the ECBI intensity scale. Both [Edwards 2007](#) and [O' Neill 2011](#) compared the cost-effectiveness of receiving the Incredible Years Parenting intervention in community-based settings versus a waiting-list control (WLC) of receiving services as usual (that is health, social and special educational services within their respective countries). The outcomes measured in both studies included: (i) costs of programme per parent; (ii) a comparison of service utilisation for the intervention and control conditions; and (iii) the calculation of an incremental cost-effectiveness ratio (ICER) to give the cost of obtaining a one unit decrease on the clinical outcome measure employed in the RCTs (that is the ECBI) when using the intervention versus an alternative. [O' Neill 2011](#) also conducted a long-term cost-benefit analysis based on the assumption that the intervention will have a differential impact on later costs, such as generating savings in relation to reduction in crime, unemployment and improvement in education. Both economic evaluations adopted a multi-agency, public sector, analytic perspective, including health, social and special educational services within their respective countries.

[Edwards 2007](#) reported results using 2003 to 2004 GBP (£) prices whilst the results from [O' Neill 2011](#) were based on 2009 Ireland EUR (EURO) prices. Both currencies were converted to 2011 international dollar (\$) values within the text of the review in order to facilitate like-with-like comparisons between the studies. The time horizons of costs and effects adopted in these two studies were within one year.

### Excluded studies

We obtained full text papers for 254 studies, 231 of which were subsequently excluded. Reasons for exclusion included: lack of a control group; comorbid severe physical and intellectual impairment; parenting skills forming only a minor element of a multi-component intervention; and participants not meeting the definition of conduct problems, as identified by a diagnosis of CD or ODD or scoring above the clinical cut-off point on an outcome measure of conduct problems. We excluded economic evaluations of parenting programmes if they included costs data based on non-eligible studies. See [Characteristics of excluded studies](#) for further details.

### Risk of bias in included studies

We sought further information from almost all authors in order to assess the risk of bias across included studies as there was considerable variation in the reporting of data. See [Characteristics of included studies](#) and also [Figure 2](#) for a summary of risk of bias within studies. Furthermore, given that the risk of bias associated with economic evaluations differs from that associated with standard RCTs, we used a modified version of the Drummond and Evers checklists ([Appendix 2](#)) rather than the 'risk of bias' tables typically employed for RCT studies. This information is presented at the end of the section under 'Economic evaluations'.

**Figure 2. Risk of bias summary: review authors' judgements about each risk of bias item for each included study.**

	Random sequence generation (selection bias)	Allocation concealment (selection bias)	Blinding (performance bias and detection bias)	Incomplete outcome data (attrition bias): self report outcomes	Incomplete outcome data (attrition bias): independent reports	Selective reporting (reporting bias)	Other bias
Barkley 2000	+	+	+	+	+	+	+
Braet 2009	+	+	?	+	+	+	+
Edwards 2007							
Gardner 2006	+	+	+	?	?	+	+
Hutchings 2007a	+	+	+	+	+	+	+
Kling 2010	+	+	+	+	?	+	+
Larsson 2008	?	?	?	?	?	+	+
Martin 2003	+	+	+	+	?	+	+
McGilloway 2009	+	+	+	+	+	+	+
O' Neill 2011							
Scott 2001a	+	+	+	+	+	+	+
Webster-Stratton 1984	+	+	+	?	?	+	+
Webster-Stratton 1988	+	+	+	+	+	+	+
Webster-Stratton 1997	+	+	+	+	+	+	+
Webster-Stratton 2004a	+	+	+	+	+	+	+



## Randomised controlled trials

### Allocation

Of the 13 included studies, nine were full RCTs (Webster-Stratton 1984; Webster-Stratton 1988; Webster-Stratton 1997; Martin 2003; Webster-Stratton 2004a; Gardner 2006; Hutchings 2007a; McGilloway 2009; Kling 2010). Sequence generation and allocation concealment were adequate in all of these nine RCTs. The randomisation process in four of the RCTs involved a computer random number generator and the sequence was concealed by using tamper-proof envelopes and an administrator who was not involved in the trial (central allocation) (Martin 2003; Gardner 2006; McGilloway 2009; Kling 2010). Hutchings 2007a carried out a block randomisation by area on a 2:1 basis, after stratification by sex and age, using a random number generator; whilst allocation was performed blindly by an administrator using concealed consent forms. Three studies (Webster-Stratton 1984; Webster-Stratton 1997; Webster-Stratton 2004a) used an uninvolved administrator to draw lots from a jar which contained numbers on concealed pieces of paper (thereby concealing participant identity), and one study (Webster-Stratton 1988) used an uninvolved administrator to randomly open tamper-proof envelopes which contained numbers (relating to participant identity). Barkley 2000 initially randomised their sample by the roll of a dice but then had to compromise their strict randomisation procedures by moving eight participants from the experimental group to the control group as these participants were unable to access the programme at that time. In addition, allocation concealment was inadequate in this study.

In relation to the two quasi-randomised controlled trials, Braet 2009 randomised their sample in order of application date and allocation was not concealed. Scott 2001a randomised their sample in order of date of receipt of the referral letter; that is during the first three months all referred participants were placed in the intervention group and in the second three months all were placed in the control group. However, the non-random sequence was concealed from assessors, referrers and patients at the time of entry to the trial.

### Blinding

In trials of parenting interventions, it is not possible to blind participants or those delivering the programme to study condition as they obviously know whether or not they have received, or implemented, the intervention. Bias can be minimised in such trials by blinding assessors to the study condition. Blinding of assessors was adequate for both parent and independent reports in nine studies (Webster-Stratton 1984;

Webster-Stratton 1988; Webster-Stratton 1997; Barkley 2000; Scott 2001a; Webster-Stratton 2004a; Gardner 2006; Hutchings 2007a; McGilloway 2009; Kling 2010). However, blinding was inadequate in Martin 2003 as one of the authors was also involved in programme delivery and therefore the author had knowledge of which participants were allocated to which condition. Braet 2009 and Larsson 2008 did not provide sufficient information to permit judgement on the nature of blinding within their studies and, therefore, the risk of bias is unclear.

### Incomplete outcome data

Details on incomplete outcome data in each study are provided in the Characteristics of included studies. To summarise this section: six studies dealt adequately with missing data for all outcomes (Webster-Stratton 1988; Webster-Stratton 1997; Barkley 2000; Webster-Stratton 2004a; Hutchings 2007a; Kling 2010); two studies (Scott 2001a; McGilloway 2009) dealt adequately with missing data from parent-report outcomes, but not from all independent reports; it was unclear in three studies (Webster-Stratton 1984; Gardner 2006; Larsson 2008) whether there was a risk of bias in relation to the adequate treatment of incomplete data; and two studies (Martin 2003; Braet 2009) did not deal adequately with missing data for any outcomes.

Sensitivity analyses were conducted that excluded studies which had any missing data and did not report an intention-to-treat (ITT) analysis.

### Adequate treatment of missing data for all outcomes

Six studies dealt adequately with missing data for all outcomes (Webster-Stratton 1988; Webster-Stratton 1997; Barkley 2000; Webster-Stratton 2004a; Hutchings 2007a; Kling 2010). Unusually, none of the participants dropped out in Barkley 2000 and all were available for follow-up data collection (confirmed by study authors). Although there were some missing data within Hutchings 2007a and Kling 2010, both studies conducted ITT analyses and imputation for missing data, and both studies provided reasons for loss to follow-up (for example, illness, clashed with other engagements, lack of motivation). Hutchings 2007a were unable to follow-up 17% (18/104) in the intervention group and 4% (2/49) in the control group; similar figures for Kling 2010 were 6% (5/58) and 5% respectively (2/40). Hutchings 2007a used the method of last observation carried forward (LOCF) (that is the score reported by the participant at baseline was imputed at the follow-up period). This is generally viewed as a conservative approach as even those participants who availed of the intervention, but who could not be successfully contacted at follow up, were assigned their baseline score. Kling 2010 used a multiple

imputation procedure whereby all participants in the study were included in the analysis. Thus, the effect sizes reported in both these studies, based on their respective ITT analyses, are likely to be conservative estimates.

Three studies ([Webster-Stratton 1988](#); [Webster-Stratton 1997](#); [Webster-Stratton 2004a](#)) dealt adequately with incomplete data for parent-report outcomes for mother participants despite conducting analyses only on programme completers as they each had a low rate of attrition, the reasons for which were unlikely to introduce systematic bias. In addition, sensitivity analyses revealed that removing these studies did not change the result of the meta-analyses across all outcomes. The details for these studies are as follows: [Webster-Stratton 1997](#) had no missing data for mother participants across parent-report and observational measures, whilst [Webster-Stratton 1988](#) and [Webster-Stratton 2004a](#) had low levels of missing data for mother participants. Hence, [Webster-Stratton 1988](#) lost 4% (1/28) in the intervention group and 7% (2/27) in the control group; [Webster-Stratton 2004a](#) lost 3% (1/31) in the intervention group and none in the control group. The low rate of attrition in these studies, due to circumstantial reasons, was unlikely to affect reported effect sizes to any substantial degree. Furthermore, reasonable explanations that were unlikely to produce systematic bias were provided in all three studies as to why both father and teacher-reports did not represent the full randomised sample; that is, not all fathers were involved in parenting and not all of the children were in school. There were also no 'drop-outs' amongst father or teacher-reports within these studies.

#### Adequate treatment of missing data for some outcomes

Two studies ([Scott 2001a](#); [McGilloway 2009](#)) dealt adequately with missing data from parent-report outcomes, but not from all independent reports. With regard to parent-report outcomes, both studies used an ITT analysis for imputing missing data. For example, [Scott 2001a](#) provided their raw data and an ITT analysis was carried out using the method of LOCF, as described in [Hutchings 2007a](#) above. Likewise, [McGilloway 2009](#) performed an ITT analysis using the same method to impute missing data at follow-up for parent-report outcomes. [Scott 2001a](#) reported attrition rates of 19% (17/90) in the intervention group and 27% (14/51) in the control group for parent-report outcomes; [McGilloway 2009](#) reported attrition rates of 8% (8/103) in the intervention group and 9% (4/46) in the control group for parent-report outcomes. Both studies indicated predominantly circumstantial reasons for attrition (for example, illness, move of address, inconvenient time), although two parents in the [McGilloway 2009](#) study also indicated that they disliked the ethos of the programme. Overall, as noted above in relation to [Hutchings 2007a](#) and [Kling 2010](#), this ITT strategy is likely to be a conservative estimate of the effect sizes reported within their studies.

However, ITT analyses were not conducted in relation to all independent reports within the studies. Due to resource constraints

in the [McGilloway 2009](#) study, it was not possible to administer the observational measure to 46% (47/103) of participants in the intervention group and 43% (20/46) in the control group. Participants who received the observational measure in [McGilloway 2009](#) were selected at random. For similar reasons, [Scott 2001a](#) randomly selected and observed 20 participants from each group when measuring the outcome of parenting practices; thus 78% (70/90) in the intervention group and 61% (31/51) in the control group were not assessed using the observational measure. Therefore, ITT analyses for (most) observational measures were not conducted in either study as not all of the originally allocated participants received an observational assessment. Although the results of the meta-analyses remained robust to most sensitivity analyses that removed these studies, it is likely that the high percentage of participants who did not receive an independent assessment could potentially impact on the effect estimates reported within these studies. Furthermore, the result did not remain robust in relation to the outcome of child conduct problems (independent report) as it reduced to statistical non-significance when these two studies were removed. Moreover, some of the randomised sample within [Scott 2001a](#) were not assessed using the diagnostic measure at follow-up as not all participants were diagnosed with Oppositional Defiant Disorder (ODD) at baseline. However, the decision not to retest asymptomatic children may introduce a bias into this measurement of child conduct problems.

#### Unclear risk of bias in treatment of missing data

It remains unclear in three studies ([Webster-Stratton 1984](#); [Gardner 2006](#); [Larsson 2008](#)) whether there was a risk of bias in relation to the adequate treatment of incomplete data. Attrition within these studies in the intervention and control groups ranged from 6% to 23% across different outcomes. The results of the meta-analyses remained robust to the sensitivity analyses that removed these studies across almost all outcomes; the one exception related to the outcome of positive parenting practices (parent-report), where the result was reduced to statistical non-significance. However, it is not known to what extent such missing data might impact on the effect estimates reported within these studies. Reasons for attrition were not detailed within [Gardner 2006](#) and [Larsson 2008](#); that is, they only reported that attritions were due to losses to follow-up. [Webster-Stratton 1984](#) reported circumstantial reasons (move of address, illness). Details on attrition rates within studies are as follows.

[Gardner 2006](#) reported 11% (5/44) of participants lost in the intervention group but none (32/32) in the control group. Parents were followed up regardless of whether they completed the intervention, although no imputation was made for those parents lost to follow-up. The rate of exclusion of participants across different outcomes was variable, with many outcomes in the intervention group reporting sample sizes denoting losses of 14% (6/44), 16% (7/44) and 23% (10/44). Similarly, many outcomes in the

control group reported sample sizes denoting losses of 6% (2/32), 9% (3/32), 12.5% (4/32) and 14% (6/32). The author reported that such exclusions were due to incomplete questionnaires. No reasons were reported for the five who dropped out of the study. [Larsson 2008](#) followed up with completers only. There was a reported loss of 12% (6/51) in the intervention group (although there was a loss of 16% (8/51) for two outcomes) and of 7% (2/30) in the control group, for mother participants. No ITT analysis was performed. [Webster-Stratton 1984](#) followed up with completers only, with a loss of 13% (2/15) for the intervention group and 15% (2/13) for the control group. An ITT analysis was not performed.

### Inadequate treatment of missing data

It is unlikely that two studies ([Martin 2003](#); [Braet 2009](#)) dealt adequately with missing data for any outcomes. Although the results of the meta-analyses remained robust to sensitivity analyses that removed these studies across almost all outcomes (with the single exception relating to the outcome of positive parenting practices, based on parent-report), it is probable that the very high rates of attrition across both the intervention and control groups could potentially have had a substantial impact on the effect estimates reported within these studies. In addition, [Braet 2009](#) did not provide reasons for the missing data. The details for the studies are as follows.

[Braet 2009](#) reported losses of 12% (4/34) in the intervention group and 37% (19/30) in the control group. However, there were also a number of exclusions, in addition to attritions, with outcomes showing missing data in 15% (5/34), 35% (12/34) and 38% (13/34) of the intervention group and missing data in 47% (14/30), 63% (19/30) and 67% (20/30) of the control group. No ITT analysis was performed and, although the author was contacted, no reasons were provided for attritions or exclusions (see [Appendix 3](#) for responses from contacted authors). [Martin 2003](#) reported losses of 30% (7/23) in the intervention group and of 50% (11/22) in the control group due to the fact that participants had other commitments which clashed with the parenting programme. No ITT analysis was performed in either study.

### Selective reporting

[Braet 2009](#) did not report on all prospectively stated outcomes: although the Methods section in their paper indicated that the measure of the Social Support List would be utilised, the results of this measure were not reported. No indication of reporting bias was apparent in the remaining studies, although in the absence of a protocol this can be difficult to detect.

### Other potential sources of bias

### Distribution of confounders

While the use of randomisation should, in theory, ensure that possible confounders are equally distributed between the trial conditions, the randomisation of small numbers of parents may result in an unequal distribution of confounding factors. Therefore, it is important that the distribution of known potential confounders is compared between the different study groups at baseline, or adjusted for at the analysis stage. All but two of the studies reported that there were no differences at baseline between the intervention and control groups for participant demographics or outcome measures. In [Webster-Stratton 1984](#), there were differences at baseline for some (unspecified) variables, but the authors used analysis of covariance (ANCOVA) to control for these baseline imbalances. [Martin 2003](#) reported no differences across study conditions for participant demographics or outcomes with the exception of the ECBI problem scale, on which the intervention group reported significantly fewer child conduct problems at baseline; however, ANCOVA was used to control for this imbalance at baseline.

### Economic evaluations

Completed checklists for risk of bias for each included economic evaluation are included in [Appendix 2](#).

The reliability of any economic evaluation is, at least in part, predicated on its use of reliable clinical data, including data on beneficial and adverse effects ([Shemilt 2008](#)). As indicated earlier, the two full economic evaluations included in this review ([Edwards 2007](#); [O' Neill 2011](#)) utilised clinical data (ECBI) collected as part of the included RCTs of [Hutchings 2007a](#) and [McGilloway 2009](#), respectively, both of which were judged as being 'low risk' studies (see [Figure 2](#)). Both cost studies involved a subsample of the total randomised sample in the RCT studies in that they calculated the incremental cost-effectiveness ratio (ICER) based on data collected from those parents who were available for follow-up and who had properly completed questionnaires (116/153 parents in [Edwards 2007](#); 112/149 parents in [O' Neill 2011](#)). There were no differences in participant demographics between the subsample and the overall randomised sample within the studies.

The available evidence would suggest that, overall, the methodological quality of the two economic evaluations is reasonable to good. Both studies reported the costs of running the programme per parent, and the utilisation of public sector services across intervention and control conditions for a six-month period, as well as calculating an ICER using a 1000 replication bootstrap to provide a confidence interval accompanied by appropriate sensitivity analyses. Both studies also used official sources to provide an estimate of unit costs. However, [O' Neill 2011](#), unlike [Edwards 2007](#), did not provide frequencies of resource use separate from unit costs for the outcome of cost of programme per parent ([Appendix 4](#)). Although not reported in their papers, both authors provided information upon request on the amount of resource use independent of their unit costs for the outcome of service utilisation ([Appendix](#)



5; Appendix 6). Neither cost analysis reported measures of variance for estimates of total mean costs for the outcome of cost of programme per parent (Appendix 4). O' Neill 2011, upon request, provided standard deviations for the outcome of service utilisation across the intervention and control groups over six months, but this information was not available for the Edwards 2007 study (Appendix 5; Appendix 6). Confidence intervals (95%) were reported for the outcome of the ICER using a 1000 replication bootstrap. Productivity costs (and benefits) for parents who attended the programme (for example, loss of wages or childcare costs in some cases) or for employment agencies were not discussed in either of the two studies.

Other limitations of the cost analysis reported by O' Neill 2011 involved the exclusion of non-recurrent 'start-up' costs for the parenting programme; the costs reported in this study represented the mean cost of running the programme once the staff had already been trained and had purchased necessary programme materials. Thus, it is likely that the study underestimated, to some extent, the total cost of the programme per parent. For instance, start-up costs represented 18% of total programme costs within Edwards 2007. Another possible limitation concerns the calculation of service utilisation costs across primary care, education, hospital and social care sectors using the Service Utilisation Questionnaire; this was less detailed than the Client Services Receipt Inventory (Beecham 1992) used by Edwards 2007 and did not include specific costs of, for example, numerous services within outpatient and inpatient care, or within educational settings such as school resource hours or the parent meeting with the teacher or school principal (compare Appendix 5 and Appendix 6). However, the exclusion of certain costs in O' Neill 2011 may reflect differing practices and services offered across different public health sectors. On the other hand, O' Neill 2011 may have over-estimated some costs to the extent that it was assumed that all visits to the doctor, for example, were paid for by the state; whereas in the Irish health system, those parents within the sample who were not socially disadvantaged (35%) would not have been in receipt of a medical card and would have had to pay for their general physician (GP) care on a private basis. By contrast, all parents in the UK health system, regardless of socioeconomic status, would benefit from state subsidy.

With regard to the Edwards 2007 study, there was some evidence of an imbalance at baseline, with the intervention condition reporting substantially higher mean costs of service utilisation than the control group (Appendix 5). In addition, the mean difference clinical score used in the ICER calculation was somewhat over-estimated in the subsample of 116 parents (mean difference of 27.29 on the ECBI intensity scale) when compared to the mean difference score derived from the total randomised sample of 153 parents in the Hutchings 2007a study (mean difference of 25.05 on the ECBI intensity scale). By contrast, O' Neill 2011 reported almost equivalent mean difference scores on the ECBI for the subsample of 112 parents (21.53 mean difference) and the total randomised sample of 149 parents (21.45 mean difference), which

denotes a low risk of bias in the calculation of costs.

The estimate of measure of benefit used in both incremental cost-effectiveness analyses was the ECBI, which is a standardised and valid instrument. However, the instrument is problem-specific and so the result obtained cannot be compared in terms of value with results from other programmes, as would be the case with cost-utility analysis that uses, for example, quality-adjusted life-years (QALYs) as a standard health-related outcome. However, the authors in both studies considered the QALY to be inappropriate for child outcomes as it measures aspects of health (for example, ability to wash self, mobility, perception of health) that are more appropriate to post-operative and drug interventions than to parenting programmes.

The comparison across both studies of public sector service utilisation was justified as these services are commonly used in the UK and Irish jurisdictions. However, public health systems may differ from one country to another in terms of the possible range of services and resources offered and the variable unit costs across settings. Thus, these figures may not provide a valid benchmark for comparison with similar work undertaken in other settings. No discounting of costs was reported as they were both completed within a one-year period.

## Effects of interventions

The results of this review are presented in two sections:

Section A: meta-analyses of the data for primary and secondary outcomes;

Section B: narrative summary of the results of the two cost-effectiveness studies.

The results are presented as effect sizes with 95% confidence intervals (CIs) and in the form of standardised mean differences (SMDs). Dichotomous measures (risk ratios) were converted into SMDs. For SMDs, a minus sign indicates that the result favour the intervention. Effect sizes smaller than 0.20 were interpreted as no evidence of effectiveness. Effect sizes above 0.20 were all treated as clinically meaningful but as small (0.20 to 0.40), moderate (0.40 to 0.75) or large (> 0.75), respectively, depending on the range within which they fell. Post-intervention or final scores have been used to calculate effect sizes rather than change scores (that is pre-scores to post-scores for each group). All of the results represent short-term outcomes as no study assessed outcomes beyond three months post-intervention. Authors were contacted, when necessary, where there were incomplete data for outcomes; see Appendix 3 for further details of response from contacted authors.

The interested reader is referred to Appendix 7 for a summary of the results from the individual studies for each of the primary and secondary outcomes. This appendix also provides details of those measures that were excluded from the meta-analyses.

### Section A: meta-analyses of primary and secondary outcomes

Meta-analyses were conducted on the three primary outcomes of child conduct problems, parental mental health and parenting practices, and on the two secondary outcomes of child emotional problems and child educational or cognitive abilities. All measures were short-term outcomes, ranging from immediate post-treatment to three months post-treatment. Separate meta-analyses were performed, where appropriate, for parent-reports and independent reports of outcomes because the literature on parent training suggests that results may differ depending on the type of outcome measure used (Barlow 2010); parent-reports are subjective mea-

asures but capture the parent's ongoing knowledge of the problem whereas independent reports are more objective, but based on only a short time period. Table 1 below presents the study outcomes that were entered into the meta-analysis. Across all meta-analyses, each sample contributed only one effect size to the meta-analysis (that is the average effect size and standard error for each outcome within a study). Sensitivity and subgroup analyses were conducted on all meta-analyses.

**Table 1: Study outcomes in meta-analyses**

Out-comes	Studies in meta-analyses												
Primary out-comes:	Barkley 2000	Braet 2009	Gardner 2006	Hutchings 2007	Kling 2010	Lars-son 2008	Mar-tin 2003	McGil-loway 2009	Scott 2001	Web-ster-Strat-ton 1984	Web-ster-Strat-ton 1988	Web-ster-Strat-ton 1997	Web-ster-Strat-ton 2004
Conduct problems (CP): parent-report	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CP:independent report	✓	✓		✓				✓	✓	✓	✓	✓	✓
Parental mental health: parent-report	✓	✓	✓	✓		✓	✓	✓			✓		
Posi-tive parent-ing prac-tices (PP): parent-report	✓	✓	✓		✓	✓	✓						✓

(Continued)

Posi- tive PP: in- depen- dent report		✓	✓	✓				✓	✓	✓	✓	✓	✓
Nega- tive PP: parent- report		✓	✓	✓		✓	✓			✓	✓	✓	✓
Nega- tive PP: in- depen- dent report		✓		✓				✓		✓	✓	✓	✓
<b>Sec- ondary out- comes:</b>													
Child emo- tional prob- lems (EP): parent- report	✓	✓				✓							
Child EP: in- depen- dent report	✓	✓											
Child cogni- tive: inde- pen- dent report	✓	✓										✓	

### A.1. Primary outcome: meta-analysis of child conduct problems

The outcome of child conduct problems was measured using continuous data, incorporating parent and independent reports. Dichotomous data were converted into continuous data. The results for the parent-reports are presented first, followed by the independent reports.

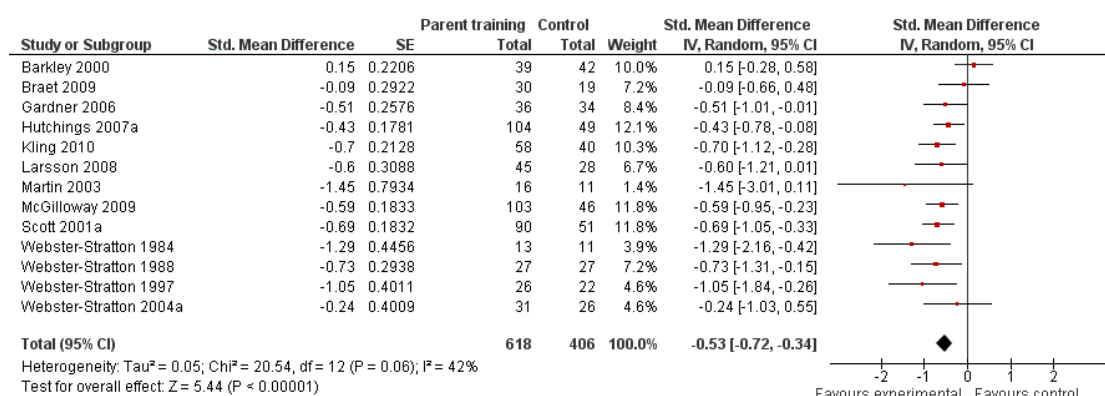
#### Child conduct problems: parent report

Thirteen studies (Webster-Stratton 1984; Webster-Stratton 1988; Webster-Stratton 1997; Barkley 2000; Scott 2001a; Martin 2003; Webster-Stratton 2004a; Gardner 2006; Hutchings 2007a; Larsson 2008; Braet 2009; McGilloway 2009; Kling 2010) measured the effectiveness of behavioural and cognitive-behavioural group-based parenting interventions in improving child conduct problems using parent report instruments, including, amongst others, the Eyberg Child Behaviour Inventory (ECBI), the Child Behaviour Checklist (CBCL), the Strengths and Difficulties Questionnaire (SDQ) and the Parent Daily report (PDR).

The 13 studies provided data for a total of 1024 participants (618 parent training and 406 control group). The overall effect for the meta-analysis favoured the parent training, indicating statistically significant moderate benefits, with confidence intervals (CI) indi-

cating a range of small to moderate effect sizes (SMD -0.53; 95% CI -0.72 to -0.34,  $P < 0.00001$ ; Analysis 7.1). The test of heterogeneity was not statistically significant:  $Q = 20.54$  (12),  $P = 0.06$ ,  $I^2 = 42\%$  (see Figure 3 for forest plot). We conducted sensitivity analyses to assess the impact of study quality on the result. The result of the meta-analysis remained robust across all sensitivity analyses, including removing studies that: (1) were quasi-randomised (SMD -0.62; 95% CI -0.79 to -0.44,  $P < 0.00001$ , Analysis 7.2;  $Q = 7.03$  (8),  $P = 0.53$ ,  $I^2 = 0\%$ ); (2) were inadequately blinded (SMD -0.53; 95% CI -0.76 to -0.34,  $P < 0.00001$ , Analysis 7.3;  $Q = 16.91$  (9),  $P = 0.05$ ,  $I^2 = 47\%$ ); (3) had not conducted an intention-to-treat (ITT) analysis (SMD -0.49; 95% CI -0.74 to -0.24,  $P = 0.0002$ , Analysis 7.4;  $Q = 13.33$  (6),  $P = 0.04$ ,  $I^2 = 55\%$ ); (4) changed how ITT values were imputed for Scott 2001a (SMD -0.50; 95% CI -0.76 to -0.24,  $P = 0.0002$ , Analysis 7.5;  $Q = 13.84$  (6),  $P = 0.03$ ,  $I^2 = 57\%$ ); (5) had attrition rates higher than 20% (SMD -0.55; 95% CI -0.74 to -0.35,  $P < 0.00001$ , Analysis 7.6;  $Q = 17.01$  (10),  $P = 0.07$ ,  $I^2 = 41\%$ ); (6) were not independently replicated (SMD -0.56; 95% CI -0.74 to -0.38,  $P < 0.00001$ , Analysis 7.7;  $Q = 1.12$  (4),  $P = 0.89$ ,  $I^2 = 0\%$ ); or had a risk of bias in any key domain (that is those studies without full randomisation, inadequate blinding, attrition higher than 20%) (SMD -0.60; 95% CI -0.77 to -0.43;  $P < 0.00001$ ; Analysis 7.8;  $Q = 6.06$  (7),  $P = 0.53$ ,  $I^2 = 0\%$ ).

**Figure 3. Forest plot of parent training versus control: meta-analysis of child conduct problems: parent-report**



Subgroup analyses were conducted with respect to the following four pre-specified factors: level of conduct problems, trial setting, socioeconomic status and level of implementation fidelity. Exploratory analyses indicated that there were no statistically significant differences between any of the the subgroups, with respect

to severity of conduct problems before treatment ( $Q = 0.01$  (1),  $P = 0.91$ ,  $I^2 = 0\%$ ; Analysis 7.9), trial setting ( $Q = 0.67$  (1),  $P = 0.41$ ,  $I^2 = 0\%$ ; Analysis 7.10), socioeconomic status ( $Q = 1.86$  (1),  $P = 0.17$ ,  $I^2 = 46.2\%$ ; Analysis 7.11) or level of implementation

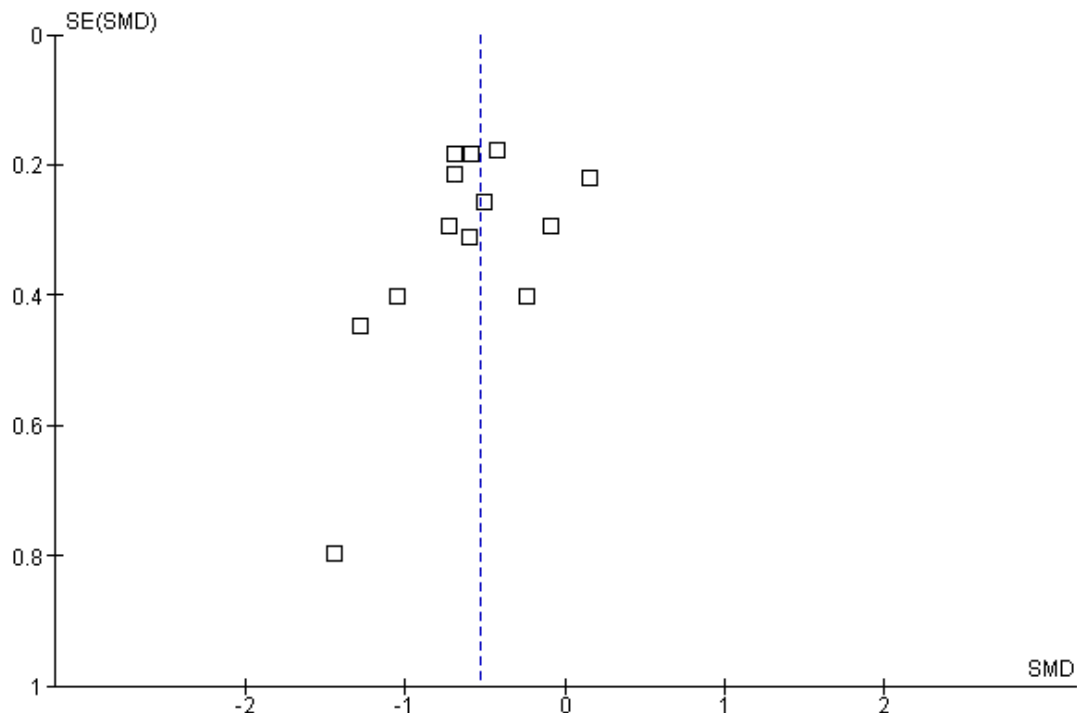
fidelity ( $Q = 0.49$  (1),  $P = 0.49$ ,  $I^2 = 0\%$ ; Analysis 7.12). Subgroups in relation to severity of conduct problems at pre-treatment, trial setting and socioeconomic status all produced moderate, statistically significant effect in favour of parent training. The results for the subgroups are as follows.

- Studies with more severe conduct problems at pre-treatment (SMD -0.56; 95% CI -0.98 to -0.14,  $P = 0.009$ , Analysis 7.9;  $Q = 15.30$  (5),  $P = 0.009$ ,  $I^2 = 67\%$ ); and those with less severe problems pre-treatment (SMD -0.54; 95% CI -0.71 to -0.36;  $P < 0.00001$ , Analysis 7.9;  $Q = 5.14$  (6),  $P = 0.53$ ,  $I^2 = 0\%$ ).
- Studies conducted in research settings (SMD -0.68; 95% CI -1.10 to -0.26;  $P = 0.001$ , Analysis 7.10;  $Q = 8.83$  (5),  $P = 0.12$ ,  $I^2 = 43\%$ ); and those conducted in service, community-based settings (SMD -0.48; 95% CI -0.70 to -0.27,  $P < 0.0001$ , Analysis 7.10;  $Q = 11.13$  (6),  $P = 0.08$ ,  $I^2 = 46\%$ ).
- Studies with socially disadvantaged participants (SMD -0.46; 95% CI -0.70 to -0.22,  $P = 0.0002$ , Analysis 7.11;  $Q = 15.07$  (7),  $P = 0.04$ ,  $I^2 = 54\%$ ); and studies with participants with a socioeconomic status comparable to population norms (SMD -0.72; 95% CI -1.00 to -0.43;  $P < 0.00001$ , Analysis 7.11;  $Q = 2.97$  (4),  $P = 0.56$ ,  $I^2 = 0\%$ ).
- Studies demonstrating a high level of implementation fidelity produced a moderate, statistically significant effect in favour of the intervention (SMD -0.58; 95% CI -0.78 to -0.42,  $P < 0.00001$ , Analysis 7.12;  $Q = 10.06$  (10),  $P = 0.44$ ,  $I^2 = 1\%$ ) whilst lower levels of implementation fidelity in relevant studies produced only a small, non-significant effect (SMD -0.28; 95%

CI -1.11 to 0.56;  $P = 0.51$ , Analysis 7.12;  $Q = 7.69$  (1),  $P = 0.006$ ,  $I^2 = 87\%$ ).

A funnel plot was drawn for the 13 studies to explore any evidence of publication bias. A visual inspection of Figure 4 suggests that there might be slight evidence of publication bias with a small level of asymmetry on the bottom right hand side of the graph. The three most statistically significant findings favouring the intervention group related to the smaller studies, with 24 participants in Webster-Stratton 1984, 27 participants in Martin 2003 and 48 participants in Webster-Stratton 1997. However, evidence for a strong publication bias is arguably undermined where small studies of just 49 participants in Braet 2009 and 81 participants in Barkley 2000 both indicated a statistically non-significant effect. The effect size for the remaining studies all regressed towards the mean effect size found in the meta-analysis, with sample sizes ranging from 54 to 153. It is possible that the lower methodological quality of the Martin 2003 study (that is with no blinding, high attrition and no ITT analysis) may have overestimated the effect size found within the study. Webster-Stratton 1997 had minimal attrition and was methodologically sound overall, which may justify the effect size found. It is unclear, though, whether the level of attrition in Webster-Stratton 1984 (between 10% to 20%) unduly influenced the reported effect size. Methodological quality was low in Braet 2009 (quasi-randomisation, high attrition and no ITT analysis), but this did not produce a positive effect. On balance, the evidence for publication bias is unclear in view of the considerable level of heterogeneity between studies.

**Figure 4. Funnel plot of parent training versus control: meta-analysis of child conduct problems, parent-report**



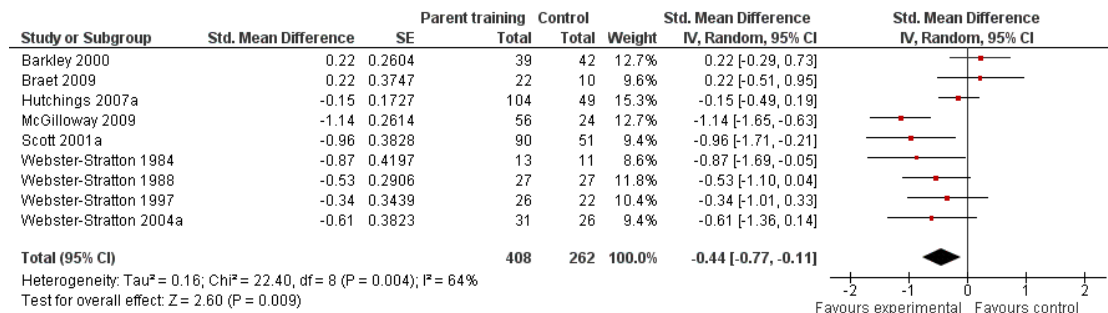
#### Child conduct problems: independent report

Nine studies (Webster-Stratton 1984; Webster-Stratton 1988; Webster-Stratton 1997; Barkley 2000; Scott 2001a; Webster-Stratton 2004a; Hutchings 2007a; Braet 2009; McGilloway 2009) measured the effectiveness of behavioural and cognitive-behavioural group-based parenting interventions in improving child conduct problems using independent report instruments, including the Dyadic Parent-child Interaction Coding System (DPICS), the Child Behaviour Checklist-Teacher Report Form (CBCL-TRF), the CBCL classroom observation (CBCL-DOF) and the Parent's Account of Clinical Symptoms (PACS) clinical interview. The nine studies provided data from a total of 670 participants (408 parent training and 262 control group). The overall effect for the meta-analysis using independent reports favoured parent training, indicating statistically significant moderate benefits, with confidence intervals (CI) indicating a range of small to large effect sizes, with considerable heterogeneity between studies (SMD -0.44; 95% CI -0.77 to -0.11,  $P = 0.009$ , Analysis 8.1;  $Q = 22.40$  (8),  $P = 0.004$ ,  $I^2 = 64\%$ ). (See Figure 5 for forest plot.) As above, we conducted sensitivity analyses to assess the impact of study quality on the results. The result remained robust to some sensi-

tivity analyses, including the removal of quasi-randomised studies (SMD -0.57; 95% CI -0.93 to -0.22,  $P = 0.001$ , Analysis 8.2;  $Q = 11.19$  (5),  $P = 0.05$ ,  $I^2 = 55\%$ ); inadequately blinded studies (SMD -0.51; 95% CI -0.85 to -0.16,  $P = 0.004$ , Analysis 8.3;  $Q = 19.66$  (7),  $P = 0.006$ ,  $I^2 = 64\%$ ); non-validated data from studies (SMD -0.44; 95% CI -0.77 to -0.11,  $P = 0.01$ , Analysis 8.8;  $Q = 22.24$  (8),  $P = 0.004$ ,  $I^2 = 64\%$ ); and studies without independent replication (SMD -0.72; 95% CI -1.43 to -0.00,  $P = 0.05$ , Analysis 8.7;  $Q = 11.53$  (2),  $P = 0.003$ ,  $I^2 = 83\%$ ). The result decreased to a statistically significant, small effect size in favour of parent training following the removal of studies with greater than 20% attrition (SMD -0.38; 95% CI -0.68 to -0.07,  $P = 0.01$ , Analysis 8.6;  $Q = 10.86$  (6),  $P = 0.009$ ,  $I^2 = 45\%$ ); and studies with a risk of bias in any key domain (that is those studies without full randomisation, inadequate blinding, attrition higher than 20%) (SMD -0.35; 95% CI -0.59 to -0.11,  $P = 0.004$ , Analysis 8.9;  $Q = 3.72$  (4),  $P = 0.44$ ,  $I^2 = 0\%$ ). The result further decreased to a small, non-significant effect size following the removal of studies without an ITT analysis (SMD -0.29; 95% CI -0.65 to 0.07,  $P = 0.12$ , Analysis 8.4;  $Q = 7.92$  (4),  $P = 0.09$ ,  $I^2 = 49\%$ ) and changing how values were imputed in the ITT analysis in Scott 2001a (SMD -0.29; 95% CI -0.65 to 0.07,  $P = 0.12$ , Analysis 8.5;  $Q =$

8.14 (4),  $P = 0.09$ ,  $I^2 = 51\%$ ).

**Figure 5. Forest plot of parent training versus control: meta-analysis of child conduct problems: independent report**



As above, we conducted subgroup analyses across four key factors (severity of conduct problems, trial setting, socioeconomic status and level of implementation fidelity). Exploratory analyses indicated that there were no statistically significant differences between the subgroups with respect to the severity of conduct problems before treatment ( $Q = 0.01$  (1),  $P = 0.92$ ,  $I^2 = 0\%$ ; Analysis 8.10), trial setting ( $Q = 0.03$  (1),  $P = 0.87$ ,  $I^2 = 0\%$ ; Analysis 8.11) or level of socioeconomic status ( $Q = 0.04$  (1),  $P = 0.83$ ,  $I^2 = 0\%$ ; Analysis 8.12). There was a statistically significant difference in relation to fidelity in favour of those studies with higher levels of implementation fidelity ( $Q = 5.91$  (1),  $P = 0.02$ ,  $I^2 = 83.1\%$ ; Analysis 8.13). The results for each subgroup are as follows.

- Studies with children with more severe conduct problems at pre-treatment (i.e. diagnosis of CD or ODD) (SMD -0.46; 95% CI -0.93 to 0.01,  $P = 0.06$ , Analysis 8.10;  $Q = 9.33$  (4),  $P = 0.05$ ,  $I^2 = 57\%$ ) and studies with children with less severe conduct problems at pre-treatment (i.e. no diagnosis but scoring above clinical cut-off point on validated instrument) (SMD -0.42; 95% CI -0.96 to 0.12,  $P = 0.13$ , Analysis 8.10;  $Q = 13.04$  (3),  $P = 0.005$ ,  $I^2 = 77\%$ ) both indicated a moderate, statistically non-significant effect size, with a trend favouring parent training.
- Trials conducted in research settings indicated a moderate, statistically significant effect in favour of parent training (SMD -0.42; 95% CI -0.75 to -0.09,  $P = 0.01$ , Analysis 8.11;  $Q = 4.51$  (4),  $P = 0.34$ ,  $I^2 = 11\%$ ) whereas studies conducted in service settings indicated a moderate, statistically non-significant effect size (SMD -0.48; 95% CI -1.09 to 0.13,  $P = 0.13$ , Analysis 8.11;  $Q = 17.80$  (3),  $P = 0.0005$ ,  $I^2 = 83\%$ ).
- Trials with socially disadvantaged participants produced a moderate, statistically non-significant effect size (SMD -0.42; 95% CI -0.91 to 0.06,  $P = 0.09$ , Analysis 8.12;  $Q = 21.65$  (5),  $P = 0.0006$ ,  $I^2 = 77\%$ ) whereas studies with a socioeconomic status

comparable to population norms produced a moderate, statistically significant effect size in favour of parent training (SMD -0.49; 95% CI -0.87 to -0.11,  $P = 0.01$ , Analysis 8.12;  $Q = 0.31$  (2),  $P = 0.86$ ,  $I^2 = 0\%$ ).

- Studies demonstrating a high level of implementation fidelity produced a moderate, statistically significant effect in favour of parent training (SMD -0.53; 95% CI -0.86 to -0.20,  $P = 0.001$ , Analysis 8.13;  $Q = 16.26$  (7),  $P = 0.002$ ,  $I^2 = 57\%$ ) whereas the single study with a lower level of implementation fidelity (Barkley 2000) produced a small, statistically non-significant effect size (SMD 0.22; 95% CI -0.29 to 0.73,  $P = 0.40$ , Analysis 8.13; heterogeneity not applicable for one study).

## A.2. Primary outcome: meta-analysis of parental mental health

Eight studies (Webster-Stratton 1988; Barkley 2000; Martin 2003; Gardner 2006; Hutchings 2007a; Larsson 2008; Braet 2009; McGilloway 2009) used parent-report instruments to measure parental mental health. The instruments included the Parenting Stress Index (PSI), the Beck Depression Inventory (BDI), the Depression-Anxiety-Stress Adjustment scale and the Work Stress Scale.

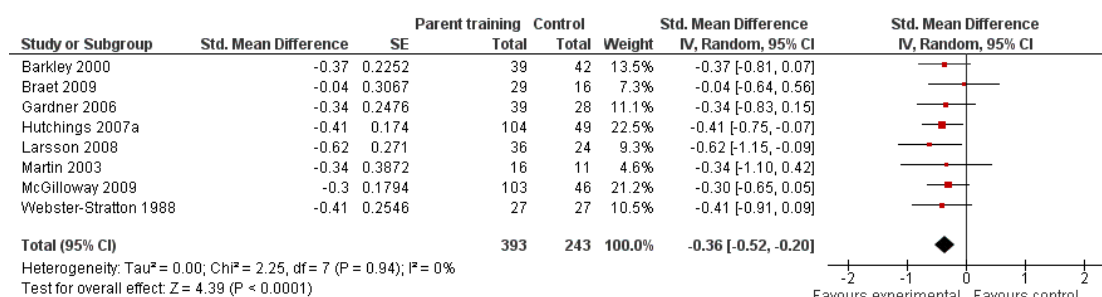
The eight studies provide data from a total of 636 participants (393 parent training and 243 control group). The overall effect for the meta-analysis for parental mental health using parent-reports favoured the parent training indicating a statistically significant, small improvement in mental health, with confidence intervals (CI) indicating a range of small to moderate effect sizes. There was no evidence of heterogeneity between studies (SMD -0.36; 95% CI -0.52 to -0.20,  $P < 0.0001$ , Analysis 9.1;  $Q = 2.25$  (7),



$P = 0.94$ ,  $I^2 = 0\%$ ). (See [Figure 6](#) for forest plot.) We conducted sensitivity analyses to assess the impact of study quality on results. The result of the meta-analysis indicating a moderate, statistically significant effect favouring parent training remained robust across all domains of study quality, including: (1) the removal of quasi-randomised studies (SMD -0.36; 95% CI -0.56 to -0.17,  $P = 0.0003$ , Analysis 9.2;  $Q = 0.24$  (4),  $P = 0.99$ ,  $I^2 = 0\%$ ); (2) the exclusion of inadequately blinded studies (SMD -0.36; 95% CI -0.55 to -0.18,  $P < 0.0001$ , Analysis 9.3;  $Q = 0.24$  (4),  $P = 0.99$ ,  $I^2 = 0\%$ ); (3) the removal of studies without an ITT analysis (SMD

-0.36; 95% CI -0.57 to -0.15,  $P = 0.001$ , Analysis 9.4;  $Q = 0.20$  (2),  $P = 0.91$ ,  $I^2 = 0\%$ ); (4) the removal of studies with more than 20% attrition (SMD -0.39; 95% CI -0.56 to -0.22,  $P < 0.00001$ , Analysis 9.5;  $Q = 1.04$  (5),  $P = 0.96$ ,  $I^2 = 0\%$ ); (5) the removal of studies without independent replication (SMD -0.39; 95% CI -0.59 to -0.19,  $P = 0.0001$ , Analysis 9.6;  $Q = 1.03$  (3),  $P = 0.80$ ,  $I^2 = 0\%$ ); and (6) the removal of studies with evidence of risk of bias in any key domains of inadequate randomisation and blinding, and attrition higher than 20% (SMD -0.36; 95% CI -0.56 to -0.26,  $P = 0.004$ , Analysis 9.7;  $Q = 0.24$  (3),  $P = 0.97$ ,  $I^2 = 0\%$ ).

**Figure 6. Forest plot of parent training versus control: meta-analysis of parental mental health: parent-report**



Subgroup analyses were conducted across various elements of study design. Exploratory analyses indicated that there were no statistically significant differences between any of the investigated subgroups, as follows: subgroup of level of conduct problems pre-treatment ( $Q = 0.51$  (1),  $P = 0.47$ ,  $I^2 = 0\%$ ; Analysis 9.8), trial setting ( $Q = 0.32$  (1),  $P = 0.57$ ,  $I^2 = 0\%$ ; Analysis 9.9); socioeconomic status ( $Q = 0.02$  (1),  $P = 0.89$ ,  $I^2 = 0\%$ ; Analysis 9.10); or level of implementation fidelity within study ( $Q = 0.00$  (1),  $P = 0.97$ ,  $I^2 = 0\%$ ; Analysis 9.11). The results for each subgroup are as follows.

- Studies with more severe conduct problems at pre-treatment indicated a moderate statistically significant effect size in favour of parent training (SMD -0.47; 95% CI -0.81 to -0.13,  $P = 0.006$ , Analysis 9.8;  $Q = 0.50$  (1),  $P = 0.48$ ,  $I^2 = 0\%$ ); and studies with less severe conduct problems at pre-treatment produced a small statistically significant effect size in favour of parent training (SMD -0.33; 95% CI -0.52 to -0.15,  $P = 0.0004$ , Analysis 9.8;  $Q = 1.23$  (5),  $P = 0.94$ ,  $I^2 = 0\%$ ).
- Studies conducted in research settings indicated a small, statistically non-significant effect size (SMD -0.28; 95% CI -0.62 to 0.07,  $P = 0.11$ , Analysis 9.9;  $Q = 0.90$  (2),  $P = 0.64$ ,  $I^2 = 0\%$ ) whilst studies conducted in service settings evidenced a small statistically significant effect size in favour of parent

training (SMD -0.39; 95% CI -0.57 to -0.20,  $P < 0.0001$ , Analysis 9.9;  $Q = 1.03$  (4),  $P = 0.90$ ,  $I^2 = 0\%$ ).

- Similarly, studies with non-disadvantaged participants indicated a small, statistically non-significant effect size, with a trend in favour of parent training (SMD -0.39; 95% CI -0.81 to 0.03,  $P = 0.07$ , Analysis 9.10;  $Q = 0.02$  (1),  $P = 0.88$ ,  $I^2 = 0\%$ ), and studies with socially disadvantaged participants produced a small, statistically significant effect size favouring parent training (SMD -0.36; 95% CI -0.53 to -0.18,  $P < 0.0001$ , Analysis 9.10;  $Q = 2.21$  (5),  $P = 0.82$ ,  $I^2 = 0\%$ ).

- Studies with a high level of implementation fidelity demonstrated a small statistically significant effect in favour of parent training (SMD -0.36; 95% CI -0.54 to -0.19,  $P < 0.0001$ , Analysis 9.11;  $Q = 2.25$  (6),  $P = 0.90$ ,  $I^2 = 0\%$ ) whilst the single study with a lower level of treatment integrity ([Barkley 2000](#)) produced a small, statistically non-significant effect size (SMD -0.37; 95% CI -0.81 to 0.07,  $P = 0.10$ , Analysis 9.11; heterogeneity not applicable).

### A.3. Primary outcome: meta-analysis of parenting practices

This meta-analysis provides separate reports on positive and negative parenting practices because the parenting literature (for ex-



ample, [Gardner 2006](#); [Kling 2010](#)) makes a qualitative distinction between a programme's capacity to (i) instil positive parenting skills (such as parental praise, positive affect and physical positives, proactive discipline, joint play and talk) and (ii) reduce negative parenting practices (such as yell, threaten, criticism, physical negative, flat or negative valence, negative command). The included studies provided parent and independent reports, which were reported separately.

### Positive parenting practices: parent report

Seven studies ([Barkley 2000](#); [Martin 2003](#); [Webster-Stratton 2004a](#); [Gardner 2006](#); [Larsson 2008](#); [Braet 2009](#); [Kling 2010](#)) incorporated a measure of the effectiveness of behavioural and cognitive-behavioural group-based parenting interventions in improving positive parenting practices using parent-report instruments, such as the Parenting Competency questionnaire, the Ghent parental behaviour measure, Parent sense of competence scale, Parent practices interview and the Problem-Setting Behaviour Checklist.

The seven studies provide data from a total of 429 participants (243 parent training and 186 control group). The overall effect for the meta-analysis for positive parenting practices based on parent reports, favoured the parent training, indicating statistically significant, moderate benefits, with confidence intervals (CI) indicating a range of small to large effect sizes, although there was considerable heterogeneity between studies (SMD -0.53; 95% CI -0.90 to -0.16,  $P = 0.005$ , Analysis 10.1;  $Q = 19.87$  (6),  $P = 0.003$ ,  $I^2 = 70\%$ ). The result of the meta-analysis remained robust to sensitivity analyses involving the removal of quasi-randomised studies (SMD -0.52; 95% CI -0.91, -0.13,  $P = 0.009$ , Analysis 10.2;  $Q = 6.10$  (3),  $P = 0.11$ ,  $I^2 = 51\%$ ); studies with more than 20% attrition (SMD -0.50; 95% CI -0.95, -0.04,  $P = 0.03$ , Analysis 10.5;  $Q = 17.07$  (4),  $P = 0.002$ ,  $I^2 = 77\%$ ); and studies with evidence of risk in any key domain (in randomisation, blinding or missing data) (SMD -0.41; 95% CI -0.80 to -0.03,  $P = 0.04$ , Analysis 10.7;  $Q = 3.73$  (2),  $P = 0.16$ ,  $I^2 = 46\%$ ). However, the result did not reach statistical significance across other sensitivity analyses. The removal of studies with inadequate blinding procedures (SMD -0.30; 95% CI -0.65 to 0.04,  $P = 0.08$ , Analysis 10.3;  $Q = 6.23$  (3),  $P = 0.10$ ,  $I^2 = 52\%$ ) and studies without an ITT analysis (SMD -0.37; 95% CI -1.04 to 0.31,  $P = 0.29$ , Analysis 10.4;  $Q = 4.92$  (1),  $P = 0.03$ ,  $I^2 = 80\%$ ) both produced a small, statistically non-significant result. The exclusion of studies without independent replication indicated a large, statistically non-significant result, with a trend in favour of parent training (SMD -0.88; 95% CI -1.84 to 0.08,  $P = 0.07$ , Analysis 10.6;  $Q = 6.21$  (1),  $P = 0.01$ ,  $I^2 = 84\%$ ). Exploratory analyses indicated that there were no statistically significant differences across any of the subgroups: subgroup of level of conduct problems pre-treatment ( $Q = 0.07$  (1),  $P = 0.80$ ,  $I^2 = 0\%$ ; Analysis 10.8), trial setting ( $Q = 0.25$  (1),  $P = 0.62$ ,  $I^2 = 0\%$ ; Analysis 10.9), socioeconomic status ( $Q = 0.03$  (1),  $P = 0.86$ ,  $I^2$

$= 0\%$ ; Analysis 10.10) or level of implementation fidelity within study ( $Q = 0.33$  (1),  $P = 0.57$ ,  $I^2 = 0\%$ ; Analysis 10.11). The results for each subgroup are as follows.

- Studies with children with less severe conduct problems pre-treatment produced a moderate statistically significant effect size favouring parent training (SMD -0.58; 95% CI -0.87 to -0.28,  $P = 0.0001$ , Analysis 10.8;  $Q = 3.50$  (3),  $P = 0.32$ ,  $I^2 = 14\%$ ); and studies with children with a diagnosis of CD or ODD pre-treatment indicated a highly heterogeneous, moderate, statistically non-significant result (SMD -0.46; 95% CI -1.30 to 0.37,  $P = 0.28$ , Analysis 10.8;  $Q = 15.32$  (2),  $P = 0.0005$ ,  $I^2 = 87\%$ ).

- Trials conducted in research settings indicated a statistically non-significant result (SMD -0.41; 95% CI -0.98 to 0.16,  $P = 0.16$ , Analysis 10.9;  $Q = 4.77$  (2),  $P = 0.09$ ,  $I^2 = 58\%$ ); and trials conducted in service settings produced a moderate statistically significant effect size in favour of parent training (SMD -0.61; 95% CI -1.13 to -0.08,  $P = 0.02$ , Analysis 10.9;  $Q = 14.20$  (3),  $P = 0.003$ ,  $I^2 = 79\%$ ).

- Similarly, studies with participants who were socially disadvantaged indicated a moderate, statistically non-significant result, with a trend in favour of parent training (SMD -0.50; 95% CI -1.06 to 0.06,  $P = 0.08$ , Analysis 10.10;  $Q = 13.70$  (3),  $P = 0.003$ ,  $I^2 = 78\%$ ); and non-disadvantaged participant studies produced a moderate statistically significant effect size in favour of parent training (SMD -0.57; 95% CI -1.14 to -0.01,  $P = 0.05$ , Analysis 10.10;  $Q = 5.84$  (2),  $P = 0.05$ ,  $I^2 = 66\%$ ).

- Studies demonstrating a high level of implementation fidelity produced a moderate statistically significant increase in positive parenting skills (SMD -0.61; 95% CI -1.11 to -0.11,  $P = 0.02$ , Analysis 10.11;  $Q = 14.12$  (4),  $P = 0.007$ ,  $I^2 = 72\%$ ); and the two studies ([Barkley 2000](#); [Kling 2010](#)) with a lower level of implementation fidelity produced a statistically non-significant moderate result (SMD -0.37; 95% CI -1.04 to 0.31,  $P = 0.29$ , Analysis 10.11;  $Q = 4.92$  (1),  $P = 0.03$ ,  $I^2 = 80\%$ ).

### Positive parenting practices: independent report

Nine studies ([Webster-Stratton 1984](#); [Webster-Stratton 1988](#); [Webster-Stratton 1997](#); [Scott 2001a](#); [Webster-Stratton 2004a](#); [Gardner 2006](#); [Hutchings 2007a](#); [Braet 2009](#); [McGilloway 2009](#)) used independent report instruments to measure positive parenting practices. These instruments included observational measures such as the DPICS, Gardner's observation scheme, Global Rating of Maternal Behaviour (GRMB) scheme and a FAST TRACK observational tool.

The nine studies provide data from a total of 524 participants (315 parent training and 209 control group). The overall effect for the meta-analysis for positive parenting practices based on independent observations favoured the parent training and indicated a statistically significant, moderate increase in positive parenting practices, with confidence intervals (CI) suggesting a range of small to

moderate effect sizes. There was no evidence of heterogeneity between studies (SMD -0.47; 95% CI -0.65 to -0.29,  $P < 0.00001$ , Analysis 11.1;  $Q = 5.02$  (8),  $P = 0.75$ ,  $I^2 = 0\%$ ). As before, we conducted sensitivity analyses to assess the impact of study quality on results. The result of the meta-analysis remained robust across all other domains of study quality, including the removal of studies that: were quasi-randomised (SMD -0.44; 95% CI -0.65 to -0.25,  $P < 0.00001$ , Analysis 11.2;  $Q = 3.73$  (6),  $P = 0.71$ ,  $I^2 = 0\%$ ); reported inadequate blinding (SMD -0.47; 95% CI -0.66 to -0.29,  $P < 0.00001$ ;  $Q = 5.02$  (7),  $P = 0.66$ ,  $I^2 = 0\%$ ; Analysis 11.3); did not involve an ITT analysis (SMD -0.48; 95% CI -0.75 to -0.21,  $P = 0.0004$ , Analysis 11.4;  $Q = 0.37$  (2),  $P = 0.83$ ,  $I^2 = 0\%$ ); had more than 20% attrition (SMD -0.45; 95% CI -0.67 to -0.24,  $P < 0.0001$ , Analysis 11.5;  $Q = 3.63$  (3),  $P = 0.60$ ,  $I^2 = 0\%$ ); were not independently replicated (SMD -0.48; 95% CI -0.71 to -0.25,  $P < 0.0001$ , Analysis 11.6;  $Q = 1.52$  (3),  $P = 0.68$ ,  $I^2 = 0\%$ ); and which showed evidence of risk of bias in any key domain of randomisation, blinding and attrition (SMD -0.45; 95% CI -0.65 to -0.24,  $P < 0.0001$ , Analysis 11.7;  $Q = 3.63$  (5),  $P = 0.60$ ,  $I^2 = 0\%$ ).

As above, subgroup analyses were conducted across various elements of study design. All included studies within this meta-analysis reported a high level of implementation fidelity. Exploratory analyses indicated that there were no statistically significant differences across the subgroups with respect to severity of conduct problems pre-treatment ( $Q = 1.84$  (1),  $P = 0.18$ ,  $I^2 = 45.5\%$ ; Analysis 11.8), trial setting ( $Q = 0.01$  (1),  $P = 0.94$ ,  $I^2 = 0\%$ ; Analysis 11.9) or socioeconomic status ( $Q = 0.50$  (1),  $P = 0.48$ ,  $I^2 = 0\%$ ; Analysis 11.10). The results for the subgroups are as follows.

- Studies with more severe conduct problems pre-treatment indicated a moderate statistically significant effect size favouring parent training (SMD -0.66; 95% CI -0.98 to -0.33,  $P < 0.0001$ , Analysis 11.8;  $Q = 2.16$  (3),  $P = 0.54$ ,  $I^2 = 0\%$ ); and studies with less severe conduct problems pre-treatment produced a small, statistically significant effect size favouring parent training (SMD -0.39; 95% CI -0.61 to -0.17,  $P = 0.0006$ , Analysis 11.8;  $Q = 1.03$  (4),  $P = 0.91$ ,  $I^2 = 0\%$ ).

- Trials conducted within research settings (SMD -0.46; 95% CI -0.76 to -0.17,  $P = 0.002$ , Analysis 11.9;  $Q = 3.50$  (4),  $P = 0.48$ ,  $I^2 = 0\%$ ) and service settings (SMD -0.48; 95% CI -0.71 to -0.25,  $P < 0.0001$ , Analysis 11.9;  $Q = 1.52$  (3),  $P = 0.68$ ,  $I^2 = 0\%$ ) both indicated a moderate statistically significant effect size favouring parent training.

- Trials involving socially disadvantaged participants indicated a moderate statistically significant effect size favouring parent training (SMD -0.51; 95% CI -0.73 to -0.30,  $P < 0.00001$ , Analysis 11.10;  $Q = 3.23$  (5),  $P = 0.66$ ,  $I^2 = 0\%$ ); and studies involving non-disadvantaged participants produced a small, statistically significant effect size favouring parent training (SMD -0.37; 95% CI -0.71 to -0.03,  $P = 0.03$ , Analysis 13.11;  $Q = 1.29$  (2),  $P = 0.52$ ,  $I^2 = 0\%$ ).

## Negative parenting practices: parent report

Nine studies (Webster-Stratton 1984; Webster-Stratton 1988; Webster-Stratton 1997; Martin 2003; Webster-Stratton 2004a; Gardner 2006; Hutchings 2007a; Larsson 2008; Braet 2009) used parent-report instruments to measure negative parenting practices. These instruments included the Ghent scales, the Parenting Scale, Parental Sense of Competence scale, Parent Practices Interview, the DDI critical verbal ratio scale and Parent Daily Report spanking subscale.

The nine studies provide data based on a total of 525 participants (314 parent training and 211 control group). The overall effect for the meta-analysis for negative parenting practices, based on parent-reports, favoured the parent training and indicated a statistically significant, large reduction in negative parenting practices, with confidence intervals (CI) indicating moderate to large effect sizes. There was no evidence of heterogeneity between studies (SMD -0.77; 95% CI -0.96 to -0.59,  $P < 0.00001$ , Analysis 12.1;  $Q = 3.86$  (8),  $P = 0.87$ ,  $I^2 = 0\%$ ). We conducted sensitivity analyses to assess the impact of study quality on results. The result of the meta-analysis indicating a large, statistically significant effect favouring parent training remained robust across all domains of study quality, including the removal of quasi-randomised studies (SMD -0.80; 95% CI -1.00 to -0.59,  $P < 0.00001$ , Analysis 12.2;  $Q = 2.95$  (6),  $P = 0.81$ ,  $I^2 = 0\%$ ); inadequately blinded studies (SMD -0.79; 95% CI -1.01 to -0.58,  $P < 0.00001$ , Analysis 12.3;  $Q = 2.95$  (5),  $P = 0.71$ ,  $I^2 = 0\%$ ); studies without an ITT analysis (SMD -0.80; 95% CI -1.07 to -0.53,  $P < 0.00001$ , Analysis 12.4;  $Q = 0.82$  (2),  $P = 0.66$ ,  $I^2 = 0\%$ ); studies with more than 20% attrition (SMD -0.80; 95% CI -1.00 to -0.60,  $P < 0.00001$ , Analysis 12.5;  $Q = 2.96$  (6),  $P = 0.81$ ,  $I^2 = 0\%$ ); studies without independent replication (SMD -0.82; 95% CI -1.08 to -0.56,  $P < 0.00001$ , Analysis 12.6;  $Q = 0.80$  (2),  $P = 0.67$ ,  $I^2 = 0\%$ ); and studies with evidence of risk of bias in any key domain of randomisation, blinding and attrition (SMD -0.79; 95% CI -1.01 to -0.58,  $P < 0.00001$ , Analysis 12.7;  $Q = 2.95$  (5),  $P = 0.71$ ,  $I^2 = 0\%$ ).

Subgroup analyses were conducted across various elements of study design. All included studies within this meta-analysis reported a high level of implementation fidelity. Exploratory analyses indicated that there were no statistically significant differences across any of the subgroup analyses, including the subgroups of severity of conduct problems pre-treatment ( $Q = 0.05$  (1),  $P = 0.82$ ,  $I^2 = 0\%$ ; Analysis 12.8), trial setting ( $Q = 0.25$  (1),  $P = 0.62$ ,  $I^2 = 0\%$ ; Analysis 12.9) or socioeconomic status ( $Q = 0.29$  (1),  $P = 0.59$ ,  $I^2 = 0\%$ ; Analysis 12.10). All results across subgroup analyses of trial setting, severity of conduct problems and socioeconomic status produced moderate to large statistically significant effect sizes in favour of parent training, with zero heterogeneity. The results are as follows.

- Studies with more severe conduct problems pre-treatment (SMD -0.80; 95% CI -1.10 to -0.50,  $P < 0.00001$ , Analysis 12.8;  $Q = 2.09$  (3),  $P = 0.55$ ,  $I^2 = 0\%$ ); and less severe conduct problems pre-treatment (SMD -0.76; 95% CI -0.99 to -0.53,  $P$

< 0.00001, Analysis 12.8;  $Q = 1.72$  (4),  $P = 0.79$ ,  $I^2 = 0\%$ ).

- Studies conducted in research settings (SMD -0.72; 95% CI -0.99 to -0.46,  $P < 0.00001$ , Analysis 12.9;  $Q = 2.81$  (5),  $P = 0.73$ ,  $I^2 = 0\%$ ); and studies conducted in service settings (SMD -0.82; 95% CI -1.08 to -0.56,  $P < 0.00001$ , Analysis 12.9;  $Q = 0.80$  (2),  $P = 0.67$ ,  $I^2 = 0\%$ ).

- Studies with socially disadvantaged participants (SMD -0.81; 95% CI -1.04 to -0.58,  $P < 0.00001$ , Analysis 12.10;  $Q = 3.41$  (4),  $P = 0.49$ ,  $I^2 = 0\%$ ); and trials involving non-disadvantaged participants (SMD -0.70; 95% CI -1.01 to -0.40,  $P < 0.00001$ , Analysis 12.10;  $Q = 0.16$  (3),  $P = 0.98$ ,  $I^2 = 0\%$ ).

### Negative parenting practices: independent report

Eight studies (Webster-Stratton 1984; Webster-Stratton 1988; Webster-Stratton 1997; Barkley 2000; Webster-Stratton 2004a; Hutchings 2007a; Braet 2009; McGilloway 2009) used independent report instruments to measure negative parenting practices. Six studies used the DPICS observational instrument within the home setting; Barkley 2000 used the Mother-Child interaction free play clinic observation and Braet 2009 used the GRMB coding scheme.

The eight studies provided data from a total of 502 participants (297 parent training and 205 control group). The overall effect for the meta-analysis for negative parenting practices using independent observations favoured the parent training, indicating a statistically significant, moderate reduction in negative parenting practices, with confidence intervals (CI) indicating a range between small to moderate effect sizes. There was a medium level of heterogeneity between studies (SMD -0.42; 95% CI -0.67 to -0.16;  $P = 0.001$ , Analysis 13.1;  $Q = 11.96$  (7),  $P = 0.10$ ,  $I^2 = 41\%$ ). We conducted sensitivity analyses to assess the impact of study quality on results. The result of the meta-analysis indicating a moderate, statistically significant effect favouring parent training remained robust with the removal of quasi-randomised studies (SMD -0.53; 95% CI -0.74 to -0.32;  $P < 0.00001$ , Analysis 13.2;  $Q = 4.94$  (5),  $P = 0.42$ ,  $I^2 = 0\%$ ); studies with inadequate blinding (SMD -0.46; 95% CI -0.72 to -0.20;  $P = 0.0005$ , Analysis 13.3;  $Q = 10.24$  (6),  $P = 0.11$ ,  $I^2 = 41\%$ ); studies with more than 20% attrition (SMD -0.40; 95% CI -0.67 to -0.13,  $P = 0.004$ , Analysis 13.5;  $Q = 8.00$  (5),  $P = 0.16$ ,  $I^2 = 37\%$ ); studies without independent replication (SMD -0.52; 95% CI -0.93 to -0.12,  $P = 0.01$ , Analysis 13.6;  $Q = 1.88$  (1),  $P = 0.17$ ,  $I^2 = 47\%$ ); studies with non-standardised measures (SMD -0.50; 95% CI -0.73 to -0.26,  $P < 0.0001$ , Analysis 13.7;  $Q = 7.36$  (6),  $P = 0.29$ ,  $I^2 = 18\%$ ); and studies with evidence of risk of bias in any key domain of randomisation, blinding and attrition (SMD -0.48; 95% CI -0.71 to -0.24,  $P < 0.0001$ , Analysis 13.8;  $Q = 3.82$  (4),  $P = 0.43$ ,  $I^2 = 0\%$ ). However the result was reduced to a small, statistically significant effect size when studies without an ITT analysis were removed (SMD -0.27; 95% CI -0.50 to -0.05,  $P = 0.02$ , Analysis 13.4;  $Q = 2.83$  (3),  $P = 0.42$ ,  $I^2 = 0\%$ ).

Subgroup analyses were conducted across various elements of study design. Exploratory analyses indicated that there were no statistically significant differences across the subgroups of severity of conduct problems pre-treatment ( $Q = 0.00$  (1),  $P = 0.97$ ,  $I^2 = 0\%$ ; Analysis 13.9), trial setting ( $Q = 0.27$  (1),  $P = 0.61$ ,  $I^2 = 0\%$ ; Analysis 13.10) or socioeconomic status ( $Q = 0.08$  (1),  $P = 0.78$ ,  $I^2 = 0\%$ ; Analysis 13.11). There was a statistically significant difference at the level of implementation fidelity, in favour of studies with higher levels of fidelity ( $Q = 4.52$  (1),  $P = 0.03$ ,  $I^2 = 77.9\%$ ; Analysis 13.12). The results for these subgroup analyses are as follows.

- Studies with more severe conduct problems pre-treatment indicated a moderate, statistically non-significant effect size, with a trend in favour of parent training (SMD -0.43; 95% CI -0.91 to 0.04,  $P = 0.07$ , Analysis 13.9;  $Q = 7.53$  (3),  $P = 0.06$ ,  $I^2 = 60\%$ ); and studies with less severe conduct problems pre-treatment produced a moderate, statistically significant effect size favouring parent training (SMD -0.44; 95% CI -0.74 to -0.15,  $P = 0.003$ , Analysis 13.9;  $Q = 4.03$  (3),  $P = 0.26$ ,  $I^2 = 26\%$ ).

- Similarly, studies conducted in service settings indicated a small, statistically non-significant effect size (SMD -0.35; 95% CI -0.76 to 0.07,  $P = 0.10$ , Analysis 13.10;  $Q = 5.84$  (2),  $P = 0.05$ ,  $I^2 = 66\%$ ); and studies conducted in research settings indicated a moderate, statistically significant effect size in favour of parent training (SMD -0.49; 95% CI -0.84 to -0.14,  $P = 0.006$ , Analysis 13.10;  $Q = 5.48$  (4),  $P = 0.24$ ,  $I^2 = 27\%$ ).

- Studies with socially disadvantaged participants (SMD -0.40; 95% CI -0.81 to -0.00,  $P = 0.05$ , Analysis 13.11;  $Q = 11.49$  (4),  $P = 0.02$ ,  $I^2 = 65\%$ ) and trials involving non-disadvantaged participants (SMD -0.48; 95% CI -0.82 to -0.14,  $P = 0.006$ , Analysis 13.11;  $Q = 0.14$  (2),  $P = 0.93$ ,  $I^2 = 0\%$ ) both produced moderate, statistically significant effect size in favour of parent training.

- Studies with higher levels of implementation fidelity indicated a moderate, statistically significant effect size favouring parent training (SMD -0.50; 95% CI -0.73 to -0.26,  $P < 0.0001$ , Analysis 13.12;  $Q = 7.36$  (6),  $P = 0.29$ ,  $I^2 = 18\%$ ) whereas studies with lower levels of implementation fidelity indicated a very small, statistically non-significant effect size (SMD 0.04; 95% CI -0.40 to 0.48,  $P = 0.86$ , Analysis 13.12; heterogeneity not applicable).

### A.4. Secondary outcome: meta-analysis of child emotional problems

Child emotional problems were measured using parent independent reports and one child-report, based on continuous data.

### Child emotional problems: parent report

Three studies (Barkley 2000; Larsson 2008; Braet 2009) used the internalising or anxiety subscales of the parent-report, the CBCL, to measure child emotional problems.

The three studies provide data from a total of 190 participants (104 parent training and 86 control group). The overall effect for the meta-analysis for child emotional problems using parent-reports indicated a small, statistically non-significant effect size, with wide confidence intervals (CI) indicating small potential benefit as well as moderate potential harm. Heterogeneity between studies was quite low at 18% (SMD 0.16; 95% CI -0.18 to 0.50,  $P = 0.36$ , Analysis 14.1;  $Q = 2.44$  (2),  $P = 0.29$ ,  $I^2 = 18\%$ ). Two of the studies (Barkley 2000; Braet 2009) were quasi-randomised, with Larsson 2008 at unclear risk of bias in this respect. The result of the meta-analysis remained robust across the other sensitivity analysis, including the removal of studies without blinding (SMD 0.31; 95% CI -0.13 to 0.75,  $P = 0.17$ , Analysis 14.2; heterogeneity not applicable); without an ITT analysis (SMD 0.31; 95% CI -0.13 to 0.75,  $P = 0.17$ , Analysis 14.3; heterogeneity not applicable); with more than 20% attrition (SMD 0.07; 95% CI -0.50 to 0.63,  $P = 0.82$ , Analysis 14.4;  $Q = 2.17$  (1),  $P = 0.14$ ,  $I^2 = 54\%$ ); and without independent replication (SMD -0.27; 95% CI -0.90, 0.36,  $P = 0.40$ , Analysis 14.5; heterogeneity not applicable).

Subgroup analyses were conducted across various elements of study design. Two of the studies (Barkley 2000; Braet 2009) involved socially disadvantaged participants and we had no information from Larsson 2008 to indicate socioeconomic status within their trial. Exploratory analyses indicated that there were no statistically significant differences across any of the subgroup analyses, including the subgroups of severity of conduct problems pre-treatment ( $Q = 0.33$  (1),  $P = 0.57$ ,  $I^2 = 0\%$ ; Analysis 14.6), trial setting ( $Q = 0.33$  (1),  $P = 0.57$ ,  $I^2 = 0\%$ ; Analysis 14.7) or level of implementation fidelity ( $Q = 0.59$  (1),  $P = 0.44$ ,  $I^2 = 0\%$ ; Analysis 14.8). All of the results for each subgroup indicated very small to small, statistically non-significant effect sizes, with very wide CIs. The results are as follows.

- Studies with more severe conduct problems pre-treatment (SMD 0.07; 95% CI -0.50 to 0.63,  $P = 0.82$ , Analysis 14.6;  $Q = 2.17$  (1),  $P = 0.14$ ,  $I^2 = 54\%$ ); and studies with less severe conduct problems pre-treatment (SMD 0.30; 95% CI -0.27 to 0.87,  $P = 0.30$ , Analysis 14.6; heterogeneity not applicable).
- Studies conducted in research settings (SMD 0.30; 95% CI -0.27 to 0.87,  $P = 0.30$ , Analysis 14.7; heterogeneity not applicable); and studies conducted in service settings (SMD 0.07; 95% CI -0.50 to 0.63,  $P = 0.82$ , Analysis 14.7;  $Q = 2.17$  (1),  $P = 0.14$ ,  $I^2 = 54\%$ ).
- Studies with a high level of implementation fidelity (SMD -0.03; 95% CI -0.53 to 0.59,  $P = 0.91$ , Analysis 14.8;  $Q = 1.72$  (1),  $P = 0.19$ ,  $I^2 = 42\%$ ); and the study (Barkley 2000) with a lower level of implementation fidelity (SMD 0.31; 95% CI -0.13 to 0.75,  $P = 0.17$ , Analysis 14.8; heterogeneity not applicable).

## Child emotional problems: independent report

Two studies (Barkley 2000; Braet 2009) used the CBCL teacher report form and the CBCL DOF classroom observation tool to measure child emotional problems. The CBCL teacher report included anxiety and internalising subscales (Braet 2009) whilst the CBCL classroom observation included only the internalising subscale (Barkley 2000).

The two studies provided data for 130 participants (69 parent training and 61 control group). The overall effect for the meta-analysis for child emotional problems using independent reports indicated a very small, statistically non-significant effect size, with wide confidence intervals (CI) indicating large potential benefit as well as large potential harm (SMD 0.08; 95% CI -0.83 to 0.98,  $P = 0.87$ , Analysis 15.1;  $Q = 1.77$  (1),  $P = 0.18$ ,  $I^2 = 44\%$ ). We conducted sensitivity analyses to assess the impact of study quality on results. Both studies were quasi-randomised and both were evaluated by the programme developer. The removal of the study (Braet 2009) without blinding (SMD -0.62; 95% CI -1.97 to 0.73,  $P = 0.37$ , Analysis 15.2; heterogeneity not applicable), the removal of the study (Braet 2009) without an ITT analysis (SMD -0.62; 95% CI -1.97 to 0.73,  $P = 0.37$ , Analysis 15.3; heterogeneity not applicable) and the removal of the study (Braet 2009) with more than 20% attrition (SMD -0.62; 95% CI -1.97 to 0.73,  $P = 0.37$ , Analysis 15.4; heterogeneity not applicable) all indicated statistically non-significant effect sizes.

Subgroup analyses were conducted across various elements of study design. Both studies (Barkley 2000; Braet 2009) involved socially disadvantaged participants. Exploratory analyses indicated that there were no statistically significant differences across any of the other subgroups, including the subgroups of severity of conduct problems pre-treatment ( $Q = 1.77$  (1),  $P = 0.18$ ,  $I^2 = 43.6\%$ ; Analysis 15.5), trial setting ( $Q = 1.77$  (1),  $P = 0.18$ ,  $I^2 = 43.6\%$ ; Analysis 15.6) or level of implementation fidelity ( $Q = 1.77$  (1),  $P = 0.18$ ,  $I^2 = 43.6\%$ ; Analysis 15.7). Results for each subgroup produced small to moderate statistically non-significant effect sizes, as follows.

- The study with more severe conduct problems pre-treatment (SMD -0.62; 95% CI -1.97 to 0.73,  $P = 0.37$ , Analysis 15.5; heterogeneity not applicable); and the study with less severe conduct problems pre-treatment (SMD 0.38; 95% CI -0.20 to 0.96,  $P = 0.20$ , Analysis 15.5; heterogeneity not applicable).
- The study conducted in research settings (SMD 0.38; 95% CI -0.20 to 0.96,  $P = 0.20$ , Analysis 15.6; heterogeneity not applicable); and the study conducted in service settings (SMD -0.62; 95% CI -1.97 to 0.73,  $P = 0.37$ , Analysis 15.6; heterogeneity not applicable).
- The study with a lower level of implementation fidelity (SMD -0.62; 95% CI -1.97 to 0.73,  $P = 0.37$ , Analysis 15.7; heterogeneity not applicable); and the study with a high level of implementation fidelity (SMD 0.38; 95% CI -0.20 to 0.96,  $P = 0.20$ , Analysis 15.7; heterogeneity not applicable).



### A.5. Secondary outcome: meta-analysis of child educational and cognitive abilities

Three studies (Webster-Stratton 1997; Barkley 2000; Braet 2009) measured child educational and cognitive abilities using independent reports based on continuous data. The instruments included the Woodcock Johnson Psychoeducational Test Battery, the Social Skills Rating Scale (SSRS) (a teacher report) and the Wally Problem-Solving task (a clinic report).

The three studies provide data from a total of 161 participants (86 parent training and 75 control group). The overall effect for the meta-analysis for child educational and cognitive abilities using independent reports indicated a very small, statistically non-significant effect size (SMD 0.07; 95% CI -0.35 to 0.50,  $P = 0.73$ , Analysis 16.1;  $Q = 4.17$  (2),  $P = 0.12$ ,  $I^2 = 52\%$ ). None of the studies were independently replicated. All sensitivity analyses marginally improved the result to a very small to small, statistically non-significant effect size. The results were as follows: removing quasi-randomised studies (SMD -0.21; 95% CI -0.78 to 0.36,  $P = 0.47$ , Analysis 16.2; heterogeneity not applicable); studies with inadequate blinding (SMD -0.13; 95% CI -0.48 to 0.22,  $P = 0.47$ , Analysis 16.3;  $Q = 0.13$  (1),  $P = 0.72$ ,  $I^2 = 0\%$ ); without an ITT analysis (SMD -0.13; 95% CI -0.48 to 0.22,  $P = 0.47$ , Analysis 16.4;  $Q = 0.13$  (1),  $P = 0.72$ ,  $I^2 = 0\%$ ); more than 20% attrition (SMD -0.13; 95% CI -0.48 to 0.22,  $P = 0.47$ , Analysis 16.5;  $Q = 0.13$  (1),  $P = 0.72$ ,  $I^2 = 0\%$ ); and studies at risk of bias in any risk domain (SMD -0.21; 95% CI -0.78 to 0.36,  $P = 0.47$ , Analysis 16.6; heterogeneity not applicable).

Subgroup analyses were conducted across various elements of study design. Exploratory analyses indicated that there were no statistically significant differences across the subgroups of trial setting ( $Q = 0.32$  (1),  $P = 0.57$ ,  $I^2 = 0\%$ ; Analysis 16.8), socioeconomic status ( $Q = 0.98$  (1),  $P = 0.32$ ,  $I^2 = 0\%$ ; Analysis 16.9) or level of implementation fidelity ( $Q = 0.32$  (1),  $P = 0.57$ ,  $I^2 = 0\%$ ; Analysis 16.10). The result for the subgroup of severity of conduct problems was statistically significant, in favour of studies with more severe conduct problems at pre-treatment ( $Q = 4.05$  (1),  $P = 0.04$ ,  $I^2 = 75.3\%$ ; Analysis 16.7). The results for each subgroup produced very small to moderate, statistically non-significant effect sizes, as follows.

- Studies with more severe conduct problems pre-treatment (SMD -0.13; 95% CI -0.48 to 0.22,  $P = 0.47$ , Analysis 16.7;  $Q = 0.13$  (1),  $P = 0.72$ ,  $I^2 = 0\%$ ); and studies with less severe conduct problems pre-treatment (SMD 0.52; 95% CI -0.01 to 1.05,  $P = 0.05$ , Analysis 16.7; heterogeneity not applicable).
- Studies conducted in research settings (SMD 0.16; 95% CI -0.55 to 0.88,  $P = 0.66$ , Analysis 16.8;  $Q = 3.41$  (1),  $P = 0.06$ ,  $I^2 = 71\%$ ); and studies conducted in service settings (SMD -0.08; 95% CI -0.52 to 0.36,  $P = 0.72$ , Analysis 16.8; heterogeneity not applicable).
- Studies conducted with non-disadvantaged participants (SMD -0.21; 95% CI -0.78 to 0.36,  $P = 0.47$ , Analysis 16.9; heterogeneity not applicable); and studies with socially

disadvantaged participants (SMD 0.29; 95% CI -0.39 to 0.79,  $P = 0.50$ , Analysis 16.9;  $Q = 2.93$  (1),  $P = 0.09$ ,  $I^2 = 66\%$ ).

- Studies with a lower level of implementation fidelity (SMD -0.08; 95% CI -0.52 to 0.36,  $P = 0.72$ , Analysis 16.10; heterogeneity not applicable); and studies with a high level of implementation fidelity (SMD 0.16; 95% CI -0.55 to 0.88,  $P = 0.66$ , Analysis 16.8;  $Q = 3.41$  (1),  $P = 0.06$ ,  $I^2 = 71\%$ ).

### Section B: narrative summary of the economic evaluations

We converted costs within both economic studies (Edwards 2007; O' Neill 2011) to 2011 international dollar (\$) values to facilitate like-with-like comparisons, which were presented alongside the price year and costs reported in the original paper.

#### B.1. Economic data - costs per parent of running programme

The overall mean cost of the Incredible Years' Parenting programme per parent within Edwards 2007 was \$3407.51 (2003/4 GBP 1933.56). A measure of variance was not reported for this total mean cost, although standard deviations were reported for individual cost items, such as variation in time and staff costs in preparing and delivering the programme (Appendix 4). This overall mean cost was conservative in that it included both non-recurrent start-up costs (for example, training of programme facilitators, programme materials) and recurrent costs (for example, staff wages in preparing and delivering programme, supervision, refreshments, transport, crèche facilities and managerial overheads, such as venue rental) and was based on a conservative estimate of only eight parents per group. Non-recurrent costs were \$595.83 (2003/4 GBP 338.10) per parent. A breakdown of recurrent costs indicates that staff costs were \$2334.25 (2003/4 GBP 1324.55) per parent; transport and crèche costs and venue rental costs were \$232.96 (2003/4 GBP 132.19) and \$244.43 (2003/4 GBP 138.70) per parent, respectively. The unit cost of each resource was reported separately from the frequency of resource utilisation and is reported in considerable detail within the study (Appendix 4). Edwards 2007 conducted a sensitivity analysis to examine the overall mean cost of the programme based on 12 parents per group, which amounted to \$2271.60 (2003/4 GBP 1289). The mean cost of the programme based on eight parents per group and excluding non-recurrent start-up costs was \$2810.87 (2003/4 GBP 1595) and amounted to \$1875.09 (2003/4 GBP 1064) based on 12 parents per group.

The mean cost of the Incredible Years' Parenting programme per parent within the O' Neill 2011 study was \$1615.22 (2009 Ireland EUR 1463). A measure of variance was not reported for this total mean cost. In addition, unit cost of each resource was not reported separately from frequency of resource utilisation. This mean cost did not include non-recurrent start-up costs, but was based instead only on recurrent costs. The mean cost was based on 11 parents per group, which was the average group size within the

study. Recurrent costs for staff time in preparing and delivering programme, travel expenses and supervision were \$1446.30 (2009 Ireland EUR 1310) per parent and costs of transport, crèche and refreshment facilities for parents were combined with administrative costs to give a mean cost of \$168.92 (2009 Ireland EUR 153) per parent. More detail can be found in [Appendix 4](#).

## **B.2. Utilisation of health, social care and special education services by children and parents over six months**

Within both studies, the intervention group received the parent training plus usual services across health, educational and social sectors within their respective countries whereas the control group received only usual services. Within [Edwards 2007](#), the increase in mean costs of overall service utilisation per index child was \$3511.01 (2003/4 GBP 1993) for the intervention group (including the cost of the programme) and \$86.60 (2003/4 GBP 49.14) for the control group over six months. Thus the net change in costs in providing the parenting programme was \$3424.41 (2003/4 GBP 1943.15). Measures of variance were not reported. Within [O' Neill 2011](#), the increase in mean costs of overall service utilisation per index child for the intervention group over six months was \$1325.96 (2009 Ireland EUR 1201), whereas mean costs per index child for the control group over the 6 months decreased by \$353.14, SD \$216.15 (2009 Ireland EUR 319.86, SD EUR 195.78). Thus the net change in costs in providing the parenting intervention was \$1678.15 (2009 Ireland EUR 1520). Measures of variance were provided for service utilisation across health, educational and social sectors for both intervention and control groups but not for the parenting intervention (See [Appendix 5](#) and [Appendix 6](#) for overall costs and for more detail on the breakdown of frequency and unit cost of the many resources within health, educational and social sectors within both studies).

## **B.3. Incremental cost-effectiveness ratio (ICER) of the parenting programme versus services as usual**

Within [Edwards 2007](#), the bootstrapped incremental cost-effectiveness ratio (ICER) point estimate was \$128.65 (2003/4 GBP 73) per point improvement in ECBI intensity score, with 95% CI \$74.02 to \$264.72 (2003/4 GBP 95% CI £42 to £140). Sensitivity analyses examined whether cost-effectiveness varied with the intensity of conduct problems at baseline. It would cost \$9667.98 (2003/4 GBP 5486) to bring the child with the highest intensity score to within the non-clinical limits of the intensity score, and \$2368.53 (2003/4 GBP 1344) for the average child in the intervention group. For a ceiling ratio of £100 per point improvement on the ECBI, 2003/4 GBP price (\$176.23), there was an 83.9% chance of the intervention being cost-effective. Excluding initial non-recurrent costs, the ICER was \$105.74 (2003/4 GBP 60) per point improvement on the ECBI intensity score, with 95% CI \$56.39 to \$209.71 (2003/4 GBP 32 to 119).

Within [O' Neill 2011](#), the bootstrapped incremental cost-effectiveness ratio (ICER) point estimate was \$79.49 (2009 Ireland EUR 72) per point improvement in the ECBI intensity score, with 95% CI \$36.43 to \$162.30 (2009 Ireland EUR 95% CI 33 to 147). It would cost \$8664.57 (2009 Ireland EUR 7848) to bring the child with the highest intensity score to within the non-clinical limits of the intensity score, and \$2464.24 (2009 Ireland EUR 2232) to return the average child in the intervention group to the non-clinical range.

# **DISCUSSION**

## **Summary of main results**

Overall, behavioural and cognitive-behavioural group based parenting interventions appear to be effective in reducing child conduct problems and in improving parenting skills and parental mental health. There is also some evidence for the cost-effectiveness of these interventions in reducing clinical levels of conduct problems to non-clinical levels. However, there is currently insufficient information to assess the effectiveness of the interventions with respect to child emotional problems and educational and cognitive abilities.

## **Child conduct problems**

With regard to the outcome of child conduct problems, both parent and independent reports produced moderate clinically statistically significant effects in favour of parent training. Both parent and independent assessments reported low to medium levels of heterogeneity. The results of the meta-analyses for child conduct problems (based on parent-report) were robust to all sensitivity analyses that removed those studies at high risk of bias. However, there was some variability within sensitivity analyses based on independent reports; although the result remained robust to most sensitivity analyses, a statistically non-significant result was produced when studies without an intention-to-treat analysis were removed. In addition, the effect size was reduced from a moderate to a small statistically significant effect size when studies with higher attrition rates were removed. The series of subgroup analyses indicated that there were no statistical differences in relation to severity of conduct problems at pre-treatment, trial setting or socioeconomic status for both parent and independent reports. However, there was a statistical difference in favour of studies demonstrating high levels of implementation fidelity when based on independent report. There was also a trend in favour of studies with higher levels of implementation fidelity, based on parent-reports, although this result did not reach statistical significance. The importance of implementation fidelity has been reported in other research ([Webster-Stratton 1985](#); [Hutchings 2004a](#); [Eames 2009](#)). These results disagree with two recent reviews ([Lundahl](#)

2006; Reyno 2006) which found that lower socioeconomic status reduced the effectiveness of parenting programmes. However, the results are consistent with other research (for example, Gardner 2010) that indicates that positive results may also be achieved for interventions delivered in service settings to parents of lower socioeconomic status.

### Parental mental health

Behavioural group-based parenting interventions achieved a small statistically significant effect size in improving parental mental health, with zero heterogeneity between studies. The result remained robust to all sensitivity analyses and all subgroup analyses.

### Parenting practices

With regard to the outcome of parenting skills, three of the measures (positive parenting practices using parent and independent reports, and negative parenting practices using independent reports) produced moderate, statistically significant effect sizes in favour of parent training whilst the measure of negative parenting practices, based on parent-reports, produced a large statistically significant effect size in favour of parent training. The results remained robust to almost all of the sensitivity analyses within three of the measures of parenting practices (positive parenting skills using independent reports, negative parenting skills using parent and independent reports), with one exception related to removing studies without an ITT analysis (within negative parenting skills, using independent report), which reduced the result to a small effect size in favour of parent training. However, the outcome of positive parenting skills, based on parent-reports, demonstrated a substantial level of heterogeneity and the removal of studies with inadequate blinding, without an intention-to-treat analysis, and without independent replication reduced the moderate statistically significant result to a statistically non-significant effect. Thus, the result from the meta-analysis relating to positive parenting practices, using parent-reports, should be interpreted with some caution as sensitivity analyses within some risk domains revealed that high risk studies elevated the effect size. On the other hand, independent reports, which are generally viewed as being more robust than self-report measures, produced strong evidence in favour of parent training in improving both positive and negative parenting practices. There were no statistically significant differences on this outcome between subgroups relating to level of conduct problems pre-treatment, trial setting or socioeconomic status. However, studies with higher levels of implementation fidelity were statistically significantly better than those with lower levels of fidelity in reducing negative parenting practices (based on independent reports).

### Child emotional problems and child cognitive and education abilities

The results for the outcomes of child emotional problems and child cognitive abilities both indicated statistically non-significant effect sizes. However, these results should be interpreted with extreme caution as only three studies measured these outcomes. Furthermore, two of the studies (Barkley 2000; Braet 2009) demonstrated a high risk of bias and there is a high level of heterogeneity between studies. Moreover, research (Melhuish 2008; Griffith 2011) indicates that improvements in educational attainment often emerge in the longer term and thus could not have been measured within the included studies, as they all had a short follow-up period of three months or less.

### Economic outcomes

There is some evidence, taking the methodological limitations and the focus on public sector service utilisation into account, that behavioural and cognitive-behavioural group-based parenting interventions (the Incredible Years' Parenting programme in this case) delivered in Sure Start or community-based settings can reduce clinical levels of conduct problems to non-clinical levels for a modest cost of \$2368.53 for the average child within the UK and for a cost of \$2464.24 for the average child within Ireland. The variations observed across studies in terms of the mean costs of delivering the programme per parent and in mean service utilisation costs are likely to reflect variations in local unit costs, and in the apportionment of those costs, as well as other features relating to the local and national context including clinical practice, organisation, delivery of care and economies of scale. These variations may also be attributable, to some extent, to the exclusion of non-recurrent costs in O' Neill 2011. Overall, these costs, which are associated with strong clinical effects, suggest that the Incredible Years Parenting intervention may represent good value for money in terms of public spending, and particularly if positive outcomes can be maintained in the longer term, as potential benefits of the intervention exceed the costs of delivery by several orders of magnitude. For instance, research indicates that the lifetime cost per case of people who have CD from childhood is approximately \$355,100 (2008/9 GBP 225,000) and that the lifetime costs per case for those with sub-diagnosis conduct problems from childhood is approximately \$118,350 (2008/9 GBP 75,000) (Sainsbury Centre for Mental Health 2009). Scott 2001b and Fergusson 2005 have reported similar long-run costs associated with childhood CD and subthreshold conduct problems. Thus, the cost per case of delivering the parenting intervention (\$2368.53 to \$2464.24) is offset considerably by the potential long-run economic benefits to society in terms of savings in crime-related costs and higher earnings for participants (\$118,350 to \$355,100). Indeed, the return on investment is likely to be underestimated as economic analyses typically do not examine wider societal benefits, including the generalisation of positive effects to other family members and the potential societal benefits of improved parental depression (Aos 2004; Nilsson 2008).



## Overall completeness and applicability of evidence

Most included studies reported on specified primary outcomes of interest and were based more on parent than on independent reports. It was not possible to include missing data where authors did not provide the required information (see [Appendix 3](#) and [Appendix 7](#) for more details). No study reported on long-term or adverse outcomes related to participation in parent training (for example, increased conflict within the home due to introduction of new parenting techniques: [Mockford 2004](#)). There were limited data on parental social support, child emotional problems and child cognitive abilities, whilst dichotomous outcomes were not commonly reported. It was not possible either, to conduct the pre-specified meta-regression for putative causal mechanisms due to insufficient outcomes reported in included studies. Our review only assessed those costs studies that were conducted alongside included RCTs and did not examine any economic models that were not associated with included RCTs. In addition, the two economic evaluations were incomplete to the extent that they did not conduct ICERs for the outcome of parental mental health, which is an additional benefit of participation in parent training. Furthermore, we failed to obtain three studies (of which one was an unpublished dissertation) and their eligibility for inclusion in the review is, therefore, unknown (See [Characteristics of studies awaiting classification](#)). While we carried out comprehensive searches and there was extensive duplication of records, it is also possible that we did not locate some relevant unpublished studies.

It should be noted that nine of the 13 included studies evaluated the effectiveness of the Incredible Years intervention. Thus, the results are most applicable to studies of interventions that share components similar to the Incredible Years programme. The large proportion of Incredible Years studies may, arguably, represent a limitation of the review. However, the Incredible Years studies undertaken by the programme developer ([Webster-Stratton 1984](#); [Webster-Stratton 1988](#); [Webster-Stratton 1997](#); [Webster-Stratton 2004a](#)) generally demonstrated a low risk of bias, whilst the remaining five of the nine studies ([Scott 2001a](#); [Gardner 2006](#); [Hutchings 2007a](#); [Larsson 2008](#); [McGilloway 2009](#)) were independent replications of the Incredible Years (to the extent that the programme developer was not involved in collecting or analysing the data). Nonetheless, readers should be aware that the programme developer has links with some of the authors within these replicated studies (albeit mostly in relation to the delivery and fidelity aspects of the programme). In addition, two of the included studies ([Hutchings 2007a](#); [McGilloway 2009](#)) were conducted by some of the authors of the current review. Thus, the potential for conflict of interest should be noted.

Results are applicable only to behavioural and cognitive-behavioural group-based parenting interventions and not to parenting interventions based on a different theoretical model, or delivered on an individual or self-administered basis. Furthermore,

this review did not include parenting interventions which involve children as participants in treatment, or where adjunctive components (for example, marital training) are added to parent training. Results may not be directly applicable to children with any serious comorbidities (for example, severe physical or intellectual impairment) as any studies which included such participants were excluded. In addition, the results may not apply to children with a subclinical level of conduct problems, or to children outside the 3 to 12 years age range. The studies were conducted in developed countries and it is unknown whether the programmes could be replicated in other settings. The results are applicable to programmes delivered in either research or service settings and to both self-referred or professionally referred participants who score above the clinical cut-off point on a validated measure of conduct problems. With regard to the results of the economic data, it would be advisable to assess the extent to which the comparator of public sector services applies to other settings. Nonetheless, the transferability of the findings is enhanced across settings for service utilisation costs through the provision of a comprehensive breakdown of resources and unit cost of resources in [Appendix 5](#) and [Appendix 6](#), for both studies. [Edwards 2007](#) also provides a detailed breakdown of mean costs of running the programme per parent in [Appendix 4](#).

## Quality of the evidence

The overall quality of included studies was variable, ranging from fair to very good. Most had adequate randomisation and blinding procedures, although a few studies did not ([Barkley 2000](#); [Scott 2001a](#); [Martin 2003](#); [Braet 2009](#)); the study by [Larsson 2008](#) demonstrated an unclear risk of bias in these domains. Eight studies ([Webster-Stratton 1988](#); [Webster-Stratton 1997](#); [Barkley 2000](#); [Scott 2001a](#); [Webster-Stratton 2004a](#); [Hutchings 2007a](#); [McGilloway 2009](#); [Kling 2010](#)) dealt adequately with missing data based on parent-reports, but two ([Martin 2003](#); [Braet 2009](#)) demonstrated a high risk of bias and a further three showed an unclear risk of bias ([Webster-Stratton 1984](#); [Gardner 2006](#); [Larsson 2008](#)). Only five studies ([Webster-Stratton 1988](#); [Webster-Stratton 1997](#); [Barkley 2000](#); [Webster-Stratton 2004a](#); [Hutchings 2007a](#)) dealt adequately with missing data based on independent reports, with three studies at high risk of bias ([Scott 2001a](#); [Braet 2009](#); [McGilloway 2009](#)) due to conducting analyses on completers only, or conducting observations on a relatively small proportion of the randomised sample. Three studies were at unclear risk of bias ([Webster-Stratton 1984](#); [Gardner 2006](#); [Larsson 2008](#)) due to high levels of attrition (10% to 20%) and the fact that an ITT analysis was not conducted. A further two studies ([Martin 2003](#); [Kling 2010](#)) did not use any independent reports. See [Figure 2](#) for a risk of bias summary and [Characteristics of included studies](#). Only [Braet 2009](#) produced evidence of selective reporting. In general, the results of the meta-analyses remained robust to sensitivity analyses, although a moderate statistically sig-

nificant result reduced to statistical non-significance within child conduct problems (based on independent report) when studies without an ITT analysis were removed.

Studies with a lower level of implementation fidelity (Barkley 2000; Kling 2010) may affect the interpretation of the results. In such cases, we cannot know whether the intervention in itself was ineffective or whether poor results reflected poor implementation (Mihalic 2002; Hutchings 2007b). In addition, eight of the studies (Webster-Stratton 1984; Webster-Stratton 1988; Webster-Stratton 1997; Barkley 2000; Martin 2003; Webster-Stratton 2004a; Braet 2009; Kling 2010) were conducted by the programme developer, which may arguably constitute a potential conflict of interest. Furthermore, as indicated above, most of the independent replications of the Incredible Years (Scott 2001a; Gardner 2006; Hutchings 2007a; Larsson 2008; McGilloway 2009) may have received advice from the programme developer with regard to delivery and fidelity issues. However, it should also be noted that not all studies (Barkley 2000; Braet 2009) evaluated by the programme developer produced statistically significant results in favour of the intervention. In addition, five studies evaluated by the programme developer (Webster-Stratton 1984; Webster-Stratton 1988; Webster-Stratton 1997; Webster-Stratton 2004a; Kling 2010) and the independent replications of the Incredible Years programmes (Scott 2001a; Gardner 2006; Hutchings 2007a; Larsson 2008; McGilloway 2009) generally demonstrated low risk of bias. Only one study (Martin 2003) evaluated by the programme developer reported positive results where the risk of bias may undermine the validity of these outcomes.

### Potential biases in the review process

The review was conducted in line with criteria specified in the published protocol and we have clearly indicated any deviances or additions to the protocol within this review. Any potential for conflict of interest has been noted above. Comprehensive searches were carried out to identify relevant studies. Where it was unclear from the text as to whether or not a study was eligible for inclusion, we successfully made contact with the authors to subsequently exclude such studies with confidence. In addition, we made contact with most authors of the included studies and obtained a reasonable amount of missing information that was not reported in the published papers (see Appendix 3). Lastly, this review was funded by the Health Research Board (HRB) in Ireland and was conducted independently of funding from any interested party.

### Agreements and disagreements with other studies or reviews

The results of this review are broadly consistent with the findings of other recent reviews conducted within the fields of child mental health and parenting programmes, which point towards

the effectiveness and cost effectiveness of behavioural and cognitive-behavioural group-based parenting interventions in reducing child conduct problems (Brestan 1998; Farmer 2002; NICE 2006; Dretzke 2009). Brestan 1998 and Farmer 2002 evaluated studies against recognised criteria of well-established treatments, such as those developed by the Division 12 Task Force on Promotion and Dissemination of Psychological Procedures (Task Force 1995), and found that parent training programmes were the most well-established treatments for conduct problems. Both the NICE 2006 and Dretzke 2009 reviews conducted statistical meta-analyses on a limited number of outcomes and both showed, using parent and independent reports, that parenting interventions improved conduct problems by a moderate, statistically significant effect size similar to those seen in the current review. However, the reviews differ in one respect; that is, the NICE 2006 review found a statistically non-significant result in relation to parental mental health whereas we found a small effect size favouring parent training for the same outcome. Neither NICE 2006 nor Dretzke 2009 reported sensitivity analyses testing the robustness of their results. In addition, it should be noted that the inclusion criteria within the current review differed from previous reviews so that the findings across studies are not directly comparable. For instance, Brestan 1998 included studies which involved children with conduct problems that were comorbid with any other difficulties, as well as parenting programmes with adjunctive treatments; Farmer 2002 restricted their search to the period 1985 to 2000, to just two electronic databases and to English language studies only, as well as including only studies with children aged 6 to 12 years old. The NICE 2006 and Dretzke 2009 reviews included children with comorbid difficulties and pooled results from group-based and individual-based parenting interventions. Other differences were outlined earlier in the Background section to this review.

With regard to the two economic studies, the findings from other reviews also indicate modest costs for behavioural and cognitive-behavioural group-based parenting interventions. However, these reviews included cost analysis studies which were not eligible for inclusion in the current review. For example, Foster 2007 combined data from six Incredible Years trials (including two studies which did not have a control group) and found that the cost per parent of running the Incredible Years Parenting programme, based on a conservative estimate of just six parents per group, was \$1880.32 using 2011 values (\$1579, 2003 price values in the original paper). This figure is comparable to the mean cost reported in O' Neill 2011 of \$1615.22, but is lower than the mean cost per parent of \$3407.51 reported in Edwards 2007. Foster 2007 did not include costs of venue rental, but did include all other non-recurrent and recurrent costs reported in Edwards 2007. However, it is likely that some of the additional costs reported in Edwards 2007 may be attributed to high weekly supervision costs, including substantial travel expenses. The Triple P- Positive parenting programmes also conducted costs analyses of running all levels of the Triple P intervention, including Group Triple P (Mihalopoulos 2007;

Foster 2008). Similarly, costs of running the group were modest, but the calculations were based on participants who may not have had a clinical level of conduct problems at baseline. Dretzke 2005 calculated an ICER which indicated that the mean cost per child, assuming a 50% success rate of reducing clinically significant conduct problems to non-clinical levels, was \$2598 (£1438, 2003 GBP price values) for group-based parenting interventions delivered in the community and \$1818 (£1006, 2003 GBP price values) for group-based parenting interventions delivered within the clinic. These ICERs are roughly comparable to the costs indicated in Edwards 2007 and O' Neill 2011 where it cost \$2369 and \$2464, respectively, to bring the average child behaviour to non-clinical levels. The ICER calculations within Dretzke 2005 were based on studies which were not eligible for inclusion in the current review (Siegart 1980; Cunningham 1995) so the results are not directly comparable; for instance, screening for conduct problems in the former was descriptive only whilst the latter evaluated a programme which also involved children who took part in a social skills programme at the same time as the parents received the parenting intervention. See [Characteristics of excluded studies](#).

## AUTHORS' CONCLUSIONS

### Implications for practice

Behavioural and cognitive-behavioural group-based parenting interventions appear to be effective in improving clinically significant conduct problems, parental mental health and parenting practices, with most outcomes achieving a moderate effect size. Although there were only two included costs studies, they showed that the Incredible Years Parenting programmes can reduce clinical levels of conduct problems to non-clinical levels for modest costs, as indicated above. These costs are modest, especially when juxtaposed with the potential economic benefits relating to savings of \$118,350 to \$355,100 per case in offsetting the long-term health, social, educational and legal costs associated with CD and conduct problems (Sainsbury Centre for Mental Health 2009). Clinicians should be aware that the costs within O' Neill 2011 did not include non-recurrent start-up costs, including programme materials and training of group facilitators. These non-recurrent costs comprised 18% of the total costs of running a parenting programme in the Edwards 2007 study. In addition, it is recommended that practitioners check whether the comparator of public sector services applies to their own setting. See [Appendix 4](#), [Appendix 5](#) and [Appendix 6](#) for a breakdown of resources and the unit cost of resources.

Parenting programmes appear effective for parents regardless of socioeconomic status, trial setting and severity of conduct problems at baseline (that is diagnosed with CD or ODD, or scored above

the clinical cut-off point on a validated measure of conduct problems). However, practitioners should note that faithful implementation of the programme appears to be an important component of clinical effectiveness and, thus, they should consider whether their organisation is willing to provide sufficient resources so that they can deliver the intervention with fidelity.

Practitioners should also note that this review could not find any long-term measures of outcomes which compared the intervention and control groups within studies; all outcomes were measured either immediately post-treatment or up to three months post-treatment. The lack of long-term assessment compromises the likelihood of finding an improvement in educational abilities, as these outcomes typically emerge in the longer-term (Melhuish 2008), whilst this also means that we cannot be sure that the benefits did not fade significantly after the three-month follow-up period. In relation to this last point, some long-term research has been conducted on group-based parenting programmes for the intervention group alone, which indicates the maintenance of treatment gains at 12 and 18 month follow-ups (Bywater 2009; McGilloway 2011) and up to eight to 12 years later (Webster-Stratton 2010). However, other research has found poor maintenance of outcomes for a substantial number of treatment completers at one year follow-up (Stewart-Brown 2004). These findings are useful, although it is difficult to draw conclusions, at this stage, in the absence of control groups against which to compare the results.

Finally, these results are only generalisable to group-based parenting interventions, based on social learning theory, and to children aged 3 to 12 years with a clinical level of conduct problems at baseline.

### Implications for research

This review has demonstrated that several quality trials have been conducted in this area. However, there is a need for more large-scale, well designed trials to address areas of risk around randomisation procedures, high attrition, intention-to-treat analyses, sample size and level of implementation fidelity. It would also be helpful if independent measures were more commonly reported as they have been shown to provide a more robust measure of outcomes. Furthermore, it would be useful if study authors reported the level of conduct problems within their trials, using a validated instrument, as descriptive screening tends to be insufficient for the purposes of methodologically rigorous research. Moreover, given that parenting trials generally involve several different parenting groups within the intervention arm, studies might explore analysing their data using hierarchical linear modelling, which currently is the optimal analytical strategy for nested data (Mahwah 2002). Where possible, study authors might make their individual data for outcomes available for others to allow them to conduct ITT analyses, or other statistical operations, when these have not been conducted within the original trial. Lastly, it would be beneficial if future RCTs in this field considered examining in more detail the

effectiveness of group-based parenting interventions in relation to outcomes about which we know relatively little, such as child emotional problems, child cognitive abilities, parental social support, any potential adverse outcomes (for example, any financial or psychological burden associated with attending a parenting programme), long-term measurement of outcomes and evidence of cost-effectiveness.

Unfortunately, economic evaluations within RCTs are rare. Perhaps future costs analyses could adopt a 'complex intervention approach' whereby the wider costs of delivering the intervention (for example, adverse reactions to attendance, productivity costs for parents or employment agencies in attending the programme) are examined in more detail, as well as the wider benefits to society, including generalised benefits to other family members, the positive economic effects of improvements in parental mental health and other long-run educational and occupational outcomes (Aos 2004; Charles 2011). Reportage within economic evaluations could be enhanced across a number of key areas. For example, the quality of costs data and cost-effectiveness analyses could be improved by: reporting measures of variance for all parameters; clearly delineating resource use from unit costs; by providing a more detailed description of the comparator and associated costs; by carefully selecting outcome measures that can be compared with previous published studies (Charles 2011); and by a more thorough calculation of explicit and implicit costs involved in both the intervention and the comparator conditions.

The lack of long-term outcomes has long been lamented within this field. Within the current review, the absence of long-term assessment compromises the likelihood of finding positive effects for educational improvements (Melhuish 2008) and undermines our confidence that positive benefits will not fade after a short time. One of the primary (and compelling) reasons for the lack of long-term assessment of control groups appears to be related to the practice of offering the intervention to the control group once the first follow-up data have been collected, as it is considered unethical to withhold a possibly efficacious treatment from the control group (for example, McGilloway 2009). Arguably, however, we also need to consider whether it is ethical to invest public monies in interventions that potentially produce little or no evidence of long-term effectiveness. Although evaluations have been conducted on the intervention group alone at longer-term follow up (for example, Stewart-Brown 2004; Bywater 2009; Webster-Stratton 2010; McGilloway 2011), the findings are equivocal, with some studies suggesting the likely long-term maintenance of positive outcomes and reduced service reliance (Bywater 2009; Webster-Stratton 2010; McGilloway 2011) and others suggesting relapse and a need for aftercare for a substantial subset of parents (Stewart-Brown 2004). However, whilst very useful, these non-randomised controlled trials arguably do not provide sufficient evidence of the long-term effectiveness and cost-effectiveness of these parenting programmes. Indeed, longer-term outcomes for both the control

and intervention groups are critical for informing cost studies as these may need to include the possible extra costs of providing aftercare for relapsed parents as well as examining the additional long-term benefits that may accrue to society from maintained outcomes. Researchers might consider how parents can be retained within the control group whilst offering them a (non-confounding) service in order to facilitate proper long-term assessments of outcomes. For example, one possible solution might be to provide the control group with standard treatment (for example, Child and Adolescent Mental Health services (CAMHS)) throughout the study, as performed by Hutchings 2004b, or to provide the control group with standard treatment once the first follow-up has been conducted. Alternatively, but perhaps a less feasible option from an ethical perspective, long-term assessments could be conducted with the control group if they were not offered any treatment, as was the case in Hahlweg 2010. Unfortunately, neither of these two long-term studies (four year follow-up and two year follow-up, respectively) were eligible for inclusion in this review. See [Characteristics of excluded studies](#).

The results indicate that there were no statistical differences between subgroups of severity of conduct problems at pre-treatment, trial setting or level of socioeconomic status. These findings attest to the success of organisations in translating evidence-based programmes into 'real life' service settings, which often serve a high proportion of professionally referred, socially disadvantaged participants (Hutchings 2007a; Gardner 2010). However, there was some evidence that studies with higher levels of implementation fidelity achieved more positive results. It is likely that continued success in implementing evidence-based programmes will depend on, amongst other things, fidelity issues such as therapist adherence to programme protocols, the quality of therapist training, delivery, ongoing supervision and organisational support (Weisz 1995; Mihalic 2002; Webster-Stratton 2009). Future research might investigate areas related to fidelity including, for example, how to improve rates of retention in order to increase the dosage of the programme received by parents. Future research might also investigate the effectiveness of behavioural/cognitive-behavioural group-based parenting interventions within undeveloped countries and with non-Caucasian participants (Coard 2007; Dionne 2009).

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## REFERENCES

### References to studies included in this review

#### **Barkley 2000** {published and unpublished data}

Barkley RA, Shelton TL, Crosswait C, Moorehouse M, Fletcher K, Barrett S, et al. Multi-method psycho-educational intervention for preschool children with disruptive behavior: preliminary results at post-treatment. *Journal of Child Psychology and Psychiatry* 2000;**41**(3): 319–32.

#### **Braet 2009** {published and unpublished data}

Braet C, Meerschaert T, Merlevede E, Bosmans G, Van Leeuwen K, De Mey W. Prevention of antisocial behaviour: evaluation of an early intervention programme. *European Journal of Developmental Psychology* 2009;**6**(2):223–40.

#### **Edwards 2007** {published and unpublished data}

Edwards RT, O’Ceilleachair A, Bywater T, Hughes DA, Hutchings J. Parenting programme for parents of children at risk of developing conduct disorder: cost effectiveness analysis. *BMJ* 2007;**334**(7595):683–8.

#### **Gardner 2006** {published and unpublished data}

Gardner F, Burton J, Klimes I. Randomised controlled trial of a parenting intervention in the voluntary sector for reducing child conduct problems: outcomes and mechanisms of change. *Journal of Child Psychology and Psychiatry* 2006;**47**(11):1123–32.

#### **Hutchings 2007a** {published and unpublished data}

Hutchings J, Bywater T, Daley D, Gardner F, Whitaker C, Jones K, et al. Parenting intervention in Sure Start services for children at risk of developing conduct disorder: pragmatic randomised controlled trial. *BMJ* 2007;**334**(7595):678.

#### **Kling 2010** {published and unpublished data}

Kling A, Forster M, Sundell K, Melin L. A randomised controlled effectiveness trial of parent management training with varying degrees of therapist support. *Behavior Therapy* 2010;**41**(4):530–42.

#### **Larsson 2008** {published and unpublished data}

\*Larsson B, Fossum S, Clifford G, Drugli MB, Handegard BH, Mørch WT. Treatment of oppositional defiant and conduct problems in young Norwegian children: results of a randomized controlled trial. *European Child & Adolescent Psychiatry* 2009; Vol. 18, issue 1:42–52.  
Drugli MB, Larsson B. Children aged 4–8 years treated with parent training and child therapy because of child conduct problems: generalisation effects to day-care and school

settings. *European Child and Adolescent Psychiatry* 2006;**15**(7):392–9.

Drugli MB, Larsson B, Clifford G. Changes in social competence in young children treated because of conduct problems as viewed by multiple informants. *European Child and Adolescent Psychiatry* 2007;**16**(6):370–8.

Mørch WT, Clifford G, Larsson B, Rypdal P, Tjeflaat T, Lurie J, et al. The Norwegian Webster-Stratton Programme. Department of Psychology, University of Tromsø, Norway 2004.

#### **Martin 2003** {published and unpublished data}

Martin AJ, Sanders MR. Balancing work and family: a controlled evaluation of the Triple P-Positive Parenting Program as a work-site intervention. *Child and Adolescent Mental Health* 2003;**8**(4):161–9.

#### **McGilloway 2009** {published and unpublished data}

McGilloway S, Bywater T, Ni Mhaille G, Furlong M, Leckey Y, Kelly P, et al. Proving the power of positive parenting: a randomised controlled trial to investigate the effectiveness of the Incredible Years BASIC Parent Training Programme in an Irish context (short-term outcomes). Report produced for Archways, Department of Psychology, NUI Maynooth, Ireland. See [www.iyirelandstudy.ie](http://www.iyirelandstudy.ie) 2009.

#### **O’Neill 2011** {published and unpublished data}

O’Neill D, McGilloway S, Donnolly M, Bywater T, Kelly P. A cost-effectiveness analysis of the Incredible Years Parenting Programme in reducing childhood health inequalities. *European Journal of Health Economics*, available “Online First” at <http://www.springerlink.com/openurl.asp?genre=article&cid=doi:10.1007/s10198-011-0342-y> 2011.

#### **Scott 2001a** {published and unpublished data}

Scott S, Spencer Q, Doolan M, Jacobs B, Aspland H. Multicentre controlled trial of parenting groups for childhood antisocial behaviour in clinical practice. *BMJ* 2001;**323**(7306):194.

#### **Webster-Stratton 1984** {published and unpublished data}

Webster-Stratton C. Randomised trial of two parent-training programs for families with conduct-disordered children. *Journal of Consulting and Clinical Psychology* 1984;**52**(4):666–78.

#### **Webster-Stratton 1988** {published and unpublished data}

Webster-Stratton C, Kolpacoff M, Hollinsworth T. Self-administered videotape therapy for families with conduct-problem children: comparison with two cost-effective treatments and a control group. *Journal of Consulting and Clinical Psychology* 1988;**56**(4):558–66.

- Webster-Stratton 1997** *{published and unpublished data}*  
Webster-Stratton C, Hammond M. Treating children with early-onset conduct problems: a comparison of child and parent training interventions. *Journal of Consulting and Clinical Psychology* 1997;**65**(1):93–109.
- Webster-Stratton 2004a** *{published and unpublished data}*  
Webster-Stratton C, Jamila Reid M, Hammond M. Treating children with early-onset conduct problems: intervention outcomes for parent, child, and teacher training. *Journal of Clinical Child and Adolescent Psychology* 2004;**33**(1): 105–24.

## References to studies excluded from this review

- Adesso 1981** *{published data only}*  
Adesso VJ, Lipson JW. Group training of parents as therapists for the children. *Behavior Therapy* 1981;**12**(5): 625–33.
- Baydar 2004** *{published data only}*  
Baydar N, Reid JM, Webster-Stratton C. Halting the development of conduct problems in head start children: the effects of parent training. *Journal of Clinical Child and Adolescent Psychology* 2004;**33**(2):279–91.
- Beelman 2003** *{published data only}*  
Beelmann A. Effectiveness of behavioral parent-training programs: results of two pilot studies on the prevention of antisocial behavior [Effektivität behavioraler elernttrainingsprogramme: ergebnisse zweier pilotstudien zur prävention dissozialen verhaltens]. *Psychologie in Erziehung und Unterricht* 2003;**50**(3):310–23.
- Behan 2001** *{published data only}*  
Behan J, Fitzpatrick C, Sharry J, Carr A, Waldron B. Evaluation of the Parenting Plus Programme. *Irish Journal of Psychology* 2001;**22**(3-4):238–56.
- Brotman 2008** *{published data only}*  
Brotman LM, Gouley KK, Huang KY, Rosenfelt A, O' Neal C, Klein RG, et al. Preventive intervention for preschoolers at high risk for antisocial behavior: long-term effects on child physical aggression and parenting practices. *Journal of Clinical Child and Adolescent Psychology* 2008;**37**(2): 386–96.
- Bywater 2009** *{published data only}*  
Bywater T, Hutchings J, Daley D, Whitaker C, Yeo ST, Jones K, et al. Long-term effectiveness of a parenting intervention for children at risk of developing conduct disorder. *The British Journal of Psychiatry* 2009;**195**(4): 318–24.
- Chadwick 2001** *{published data only}*  
Chadwick O, Momč ilović N, Rossiter R, Stumbles E, Taylor E. A randomised trial of brief individual versus group parent training for behaviour problems in children with severe learning disabilities.. *Behavioural and Cognitive Psychotherapy* 2001;**29**(2):151–67.
- Chamberlain 2008** *{published data only}*  
Chamberlain P, Price J, Leve LD, Laurent H, Landsverk JA, Reid JB. Prevention of behavior problems for children in foster care: outcomes and mediation effects. *Prevention Science* 2008;**9**(1):17–27.
- Chao 2006** *{published data only}*  
Chao P-C, Bryan T, Burstein K, Ergul C. Family-centered intervention for young children at-risk for language and behavior problems. *Early Childhood Education Journal* 2006;**34**(2):147–53.
- Chartier 2010** *{published data only}*  
Chartier KG, Negroni LK, Hesselbrock MN. Strengthening family practices for Latino families. *Journal of Ethnic & Cultural Diversity in Social Work* 2010;**19**(1):1–17.
- Christensen 1980** *{published data only}*  
Christensen A, Johnsonb SM, Phillipsb S, Glasgow RE. Cost effectiveness in behavioral family therapy. *Behavior Therapy* 1980;**11**(2):208–26.
- Coard 2007** *{published data only}*  
Coard SI, Foy-Watson S, Zimmer C, Wallace A. Considering culturally relevant parenting practices in intervention development and adaptation: a randomised controlled trial of the Black Parenting Strengths and Strategies (BPSS) Program. *Counseling Psychologist* 2007;**35**(6):797–820.
- Connolly 2001** *{published data only}*  
Connolly L, Sharry J, Fitzpatrick C. Evaluation of a group treatment programme for parents of children with behavioural disorders. *Child and Adolescent Mental Health* 2001;**6**(4):159–65.
- Coughlin 2009** *{published data only}*  
Coughlin M, Sharry J, Fitzpatrick C, Guerin S, Drumm M. A controlled clinical evaluation of the Parents Plus Children's Programme: a video-based programme for parents of children aged 6 to 11 with behavioural and developmental problems. *Clinical Child Psychology and Psychiatry* 2009;**14**(4):541–58.
- Cunningham 1995** *{published data only}*  
Cunningham CE, Bremner Rebecca, Boyle M. Large group community-based parenting programs for families of preschoolers at risk for disruptive behaviour disorders: utilization, cost effectiveness, and outcome. *Journal of Child Psychology and Psychiatry* 1995;**36**(7):1141–59.
- Daly 1985** *{published data only}*  
Daly RM, Holland CJ, Forrest PA, Fellbaum AG. Temporal generalization of treatment effects over a three-year period for a parent training program: Directive Parental Counseling (DPC). *Canadian Journal of Behavioural Science* 1985;**17**(4):379–88.
- Dawson-McClure 2005** *{published data only}*  
Dawson-McClure SR. Does a parent-focused intervention attenuate the relation between conduct problems and parenting?. *Dissertation Abstracts International: Section B: The Sciences and Engineering* 2005;**66**(2-B):1165.
- DeGarmo 2007** *{published data only}*  
DeGarmo DS, Forgatch MS. Efficacy of parent training for stepfathers: from playful spectator and polite stranger to effective stepfathering. *Parenting: Science and Practice* 2007; **7**(4):331–55.

**Dionne 2009 {published data only}**

Dionne R, Davis B, Sheeber L, Madrigal L. Initial evaluation of a cultural approach to implementation of evidence-based parenting interventions in American Indian communities. *Journal of Community Psychology* 2009;**37**(7):911–21.

**Dishion 1995 {published data only}**

Dishion TJ, Andrews DW. Preventing escalation in problem behaviors with high-risk young adolescents: immediate and 1-year outcomes. *Journal of Consulting and Clinical Psychology* 1995;**63**(4):538–48.

**Drugli 2009 {published data only}**

Drugli MB, Larsson B, Fossum S, Morch W. Five- to six-year outcome and its prediction for children with ODD/CD treated with parent training. *Journal of Child Psychology and Psychiatry, and Allied Disciplines* 2010; Vol. 51, issue 5:559–66.

**Eichelberger 2010 {published data only}**

Eichelberger I, Pluck J, Hanisch C, Hautmann C, Janen N, Dopfner M. Effects of the universal parent training program Triple P on child behavior problems, parenting strategies, and psychological distress. *Zeitschrift für Klinische Psychologie und Psychotherapie* 2010;**39**(1):24–32.

**Eyberg 1980b {published data only}**

Eyberg SM, Matarazzo RG. Training parents as therapists: a comparison between individual parent-child interaction training and parent group didactic training. *Journal of Clinical Psychology* 1980;**36**(2):492–9.

**Firestone 1980 {published data only}**

Firestone P, Kelly MJ, Fike S. Are fathers necessary in parent training groups?. *Journal of Clinical Child Psychology* 1980;**9**(1):44–7.

**Forgatch 2009 {published data only}**

Forgatch MS, Patterson GR, Degarmo DS, Beldavs ZG. Testing the Oregon delinquency model with 9-year follow-up of the Oregon Divorce Study. *Development and Psychopathology* 2009;**21**(2):637–60.

**Foster 2007 {published data only}**

Foster ME, Olchowski AE, Webster-Stratton CH. Is stacking intervention components cost-effective? An analysis of the Incredible Years program.. *Journal of the American Academy of Child and Adolescent Psychiatry* 2007;**46**(11):1414–24.

**Foster 2008 {published data only}**

Foster ME, Prinz RJ, Sanders MR, Shapiro CJ. The costs of a public health infrastructure for delivering parenting and family support. *Children and Youth Services Review* 2008;**30**(5):493–501.

**Gallart 2005 {published data only}**

Gallart SC, Matthey S. The effectiveness of Group Triple P and the impact of the four telephone contacts. *Behaviour Change* 2005;**22**(2):71–80.

**Griffin 2009 {published data only}**

Griffin C, Guerin S, Sharry J, Drumm M. A multi-centre controlled study of an early intervention parenting programme for young children with behavioural and

developmental difficulties. *International Journal of Clinical and Health Psychology* 2010;**10**(2):279–94.

**Hahlweg 2010 {published data only}**

Hahlweg K, Heinrichs N, Kuschel A, Bertram H, Naumann S. Long-term outcome of a randomised controlled universal prevention trial through a positive parenting program: is it worth the effort?. *Child and Adolescent Psychiatry and Mental Health* 2010;**4**(14):1–14.

**Hampel 2010 {published data only}**

Hampel OA, Schaadt AK, Hasmann SE, Petermann F, Holl R, Hasmann R. Evaluation of Stepping Stones Triple P: interim analysis of the Stepping-Stones-SPC-Multicentric Study. *Klinische Padiatrie* 2010;**222**(1):18–25.

**Hanisch 2010 {published data only}**

Hanisch C, Freund-Braier I, Hautmann C, Jänen N, Plück J, Brix G, et al. Detecting effects of the Indicated Prevention Programme for externalising problem behaviour (PEP) on child symptoms, parenting, and parental quality of life in a randomised controlled trial. *Behavioural and Cognitive Psychotherapy* 2010;**38**(1):95–112.

**Harrington 2000 {published data only}**

Harrington R, Peters S, Green J, Byford S, Woods J, McGowan R. Randomised comparison of the effectiveness and costs of community and hospital based mental health services for children with behavioural disorders. *BMJ* 2000;**321**(7268):1047–50.

**Hartung 2010 {published data only}**

Hartung D, Hahlweg K. Strengthening parent well-being at the work-family interface: a German trial on workplace Triple P. *Journal of Community and Applied Social Psychology* 2010;**20**(5):404–18.

**Hoath 2002 {published data only}**

Hoath FE, Sanders MR. A feasibility study of Enhanced Group Triple P - Positive Parenting Program for parents of children with attention deficit hyperactivity disorder. *Behaviour Change* 2002;**19**(4):191–206.

**Hutchings 2002 {published data only}**

Hutchings J, Appleton P, Smith M, Lane E, Nash S. Evaluation of two treatments for children with severe behaviour problems: child behaviour and maternal mental health outcomes. *Behavioural and Cognitive Psychotherapy* 2002;**30**(3):279–95.

**Hutchings 2004b {published data only}**

Hutchings J, Lane E, Kelly J. Comparison of two treatments for children with severely disruptive behaviours: a four-year follow-up. *Behavioural and Cognitive Psychotherapy* 2004;**32**(1):15–30.

**Ialongo 2001 {published data only}**

Ialongo N, Poduska J, Werthamer L, Kellam S. The distal impact of two first-grade preventive interventions on conduct problems and disorder in early adolescence. *Journal of Emotional and Behavioral Disorders* 2001;**9**(3):146–60.

**Irvine 1999 {published data only}**

Irvine AB, Biglan A, Smolkowski K, Metzler CW, Ary DV. The effectiveness of a parenting skills program for parents



- of middle school students in small communities. *Journal of Consulting and Clinical Psychology* 1999;**67**(6):811–25.
- Karoly 1977** *{published data only}*  
Karoly P, Rosenthal M. Training parents in behavior modification: effects on perceptions of family interaction and deviant child behavior. *Behavior Therapy* 1977;**8**(3): 406–10.
- Kazdin 1992** *{published data only}*  
Kazdin AE, Siegel TC, Bass D. Cognitive problem-solving skills training and parent management training in the treatment of antisocial behavior in children. *Journal of Consulting and Clinical Psychology* 1992;**60**(5):733–47.
- Kim 2008** *{published data only}*  
Kim E, Cain KC, Webster-Stratton C. The preliminary effect of a parenting program for Korean American mothers: a randomised controlled experimental study. *International Journal of Nursing Studies* 2008;**45**(9):1261–73.
- Kjøbli 2009** *{published data only}*  
Kjøbli J, Ogden T. Gender differences in intake characteristics and behavior change among children in families receiving parent management training. *Children and Youth Services Review* 2009;**31**(8):823–30.
- Lauth 2007** *{published data only}*  
Lauth GW, Grimm K, Otte AT. Behavior training exercises for parents: a study of effectiveness [Verhaltensübungen im elterntaining: eine studie zur differenzierten wirksamkeit im elterntaining]. *Zeitschrift für Klinische Psychologie und Psychotherapie: Forschung und Praxis* 2007;**36**(1):26–35.
- Lavigne 2008** *{published data only}*  
Lavigne JV, LeBailly SA, Gouze KR, Cicchetti C, Pochyly J, Arend R, et al. Treating oppositional defiant disorder in primary care: a comparison of three models. *Journal of Pediatric Psychology* 2008;**33**(5):449–61.
- Letarte 2010** *{published data only}*  
Letarte MJ, Normandeau S, Allard J. Effectiveness of a parent training program “Incredible Years” in a child protection service. *Child Abuse & Neglect* 2010;**34**:253–61.
- Leung 2009** *{published data only}*  
Leung C, Tsang S, Heung K, Yiu I. Effectiveness of Parent-Child Interaction Therapy (PCIT) among Chinese families. *Research on Social Work Practice* 2009;**19**(3):304–13.
- MacDonald 2005** *{published data only}*  
Macdonald G, Turner W. An experiment in helping foster-carers manage challenging behaviour. *British Journal of Social Work* 2005;**35**(8):1265–82.
- Magen 1994** *{published data only}*  
Magen RH, Rose SD. Parents in groups - problem-solving versus behavioral skills training. *Research on Social Work Practice* 1994;**4**(2):172–91.
- McIntyre 2008** *{published data only}*  
McIntyre LL. Parent training for young children with developmental disabilities: randomised controlled trial. *American Journal on Mental Retardation* 2008;**113**(5): 356–68.
- Mihalopoulos 2007** *{published data only}*  
Mihalopoulos C, Sanders MR, Turner KMT, Murphy-Brennan M, Carter R. Does the Triple P-Positive Parenting Program provide value for money?. *Australian and New Zealand Journal of Psychiatry* 2007;**41**(3):239–46.
- Mullin 1994** *{published data only}*  
Mullin E, Quigley K, Glanville B. A controlled evaluation of the impact of a parent training programme on child behaviour and mothers’ general well-being. *Counselling Psychology Quarterly* 1994;**7**(2):167–80.
- Muntz 2004** *{published data only}*  
Muntz R, Hutchings J, Edwards RT, Hounsborne B, O’Céilleachair A. Economic evaluation of treatments for children with severe behavioural problems. *Journal of Mental Health Policy and Economics* 2004;**7**(4):177–89.
- Nicholson 1999** *{published data only}*  
Nicholson JM, Sanders MR. Randomised controlled trial of behavioral family intervention for the treatment of child behavior problems in stepfamilies. *Journal of Divorce & Remarriage* 1999;**30**(3–4):1–23.
- Nixon 2004** *{published data only}*  
Nixon RDV, Sweeney L, Erickson DB, Touyz SW. Parent-Child Interaction Therapy: one- and two-year follow-up of standard and abbreviated treatments for oppositional preschoolers. *Journal of Abnormal Child Psychology* 2004;**32**(3):263–71.
- Ogden 2008** *{published data only}*  
Ogden T, Hagen KA. Treatment effectiveness of parent management training in Norway: a randomised controlled trial of children with conduct problems. *Journal of Consulting and Clinical Psychology* 2008;**76**(4):607–21.
- Patterson 2002b** *{published data only}*  
Patterson J, Barlow J, Mockford C, Klimes I, Pyper C, Stewart-Brown S. Improving mental health through parenting programmes: block randomised controlled trial. *Archives of Disease in Childhood* 2002;**87**(6):472–7.
- Pfiffner 1990** *{published data only}*  
Pfiffner LJ, Jouriles EN, Brown MM, Etscheidt MA, Kelly JA. Effects of problem-solving therapy on outcomes of parent training for single-parent families. *Child & Family Behavior Therapy* 1990;**12**(1):1–11.
- Pitts 2001** *{unpublished data only}*  
Pitts RP. The effectiveness and acceptability of the modified effective Black parenting program with children exhibiting severe conduct problems. Dissertation Abstracts International: Section B: The Sciences and Engineering 2001; Vol. 62, issue 4–B:2115.
- Plant 2007** *{published data only}*  
Plant KM, Sanders MR. Reducing problem behavior during care-giving in families of preschool-aged children with developmental disabilities. *Research in Developmental Disabilities* 2007;**28**(4):362–85.
- Price 2008** *{published data only}*  
Price JM, Chamberlain P, Landsverk J, Reid JB, Leve LD, Laurent H. Effects of a foster parent training intervention

- on placement changes of children in foster care. *Child Maltreatment* 2008;**13**(1):64–75.
- Prinz 1994** *{published data only}*  
Prinz RJ, Miller GE. Family-based treatment for childhood antisocial behavior: experimental influences on dropout and engagement. *Journal of Consulting and Clinical Psychology* 1994;**62**(3):645–50.
- Quinn 2007** *{published data only}*  
Quinn M, Carr A, Carroll L, O'Sullivan D. Parents Plus programmes I: evaluation of its effectiveness for pre-school children with developmental disabilities and behavioural problems. *Journal of Applied Research in Intellectual Disabilities* 2007;**20**(4):345–59.
- Sanders 2000** *{published data only}*  
Sanders MR, McFarland M. Treatment of depressed mothers with disruptive children: a controlled evaluation of cognitive behavioral family intervention. *Behavior Therapy* 2000;**31**(1):89–112.
- Sanders 2004** *{published data only}*  
Sanders MR, Pidgeon AM, Gravestock F, Connors MD, Brown S, Young RW. Does parental attributional retraining and anger management enhance the effects of the Triple P-positive parenting program with parents at risk of child maltreatment?. *Behavior Therapy* 2004;**35**(3):513–35.
- Sanders 2008** *{published data only}*  
Sanders MR, Ralph A, Sofronoff K, Gardiner P, Thompson R, Dwyer S, et al. Every family: a population approach to reducing behavioral and emotional problems in children making the transition to school. *The Journal of Primary Prevention* 2008;**29**(3):197–222.
- Scott 2005** *{published data only}*  
Scott S. Do parenting programmes for severe child antisocial behaviour work over the longer term, and for whom? One year follow-up of a multi-centre controlled trial. *Behavioural and Cognitive Psychotherapy* 2005;**33**(4):403–21.
- Scott 2010a** *{published data only}*  
Scott S, Sylva K, Doolan M, Price J, Jacobs B, Crook C, et al. Randomised controlled trial of parent groups for child antisocial behaviour targeting multiple risk factors: the SPOKES project. *Journal of Child Psychology and Psychiatry* 2010;**51**(1):48–57.
- Scott 2010b** *{published data only}*  
Scott S, O'Connor TG, Futh A, Matias C, Price J, Doolan A. Impact of a parenting program in a high-risk, multi-ethnic community: the PALS trial. *Journal of Child Psychology and Psychiatry, and Allied Disciplines* 2010; Vol. 51, issue 12:1331–41.
- Sharry 2005** *{published data only}*  
Sharry J, Guerin S, Griffin C, Drumm M. An evaluation of the Parents Plus Early Years Programme: a video-based early intervention for parents of pre-school children with behavioural and developmental difficulties. *Clinical Child Psychology and Psychiatry* 2005;**10**(3):319–36.
- Sheeber 1994** *{published data only}*  
Sheeber LB, Johnson JH. Evaluation of a temperament-focused, parent-training program. *Journal of Clinical Child Psychology* 1994;**23**(2):249–59.
- Siebert 1980** *{published data only}*  
Siebert FE, Yates BT. Behavioral child-management cost-effectiveness. A comparison of individual in-office, individual in-home, and group delivery systems. *Evaluation and the Health Professions* 1980;**3**(2):123–52.
- Solis Camera 2004** *{published data only}*  
Solís-Cámara R, Pedro I, Salcido PC, Romero MD, Aguirre BI, Rivera S. Multidimensional effects of a parenting program on the reciprocal interaction between parents and their young children with behavior problems [Efectos multidimensionales de un programa de crianza en la interacción recíproca entre padres y sus niños pequeños con problemas de comportamiento]. *Psicología Conductual Revista Internacional de Psicología Clínica de la Salud* 2004;**12**(1):197–214.
- Spaccarelli 1992** *{published data only}*  
Spaccarelli S, Cotler S, Penman D. Problem-solving skills training as a supplement to behavioral parent training. *Cognitive Therapy and Research* 1992;**16**(1):1–17.
- Stewart-Brown 2004** *{published data only}*  
Stewart-Brown S, Patterson J, Mockford C, Barlow J, Klimes I, Pyper C. Impact of a general practice based group parenting programme: quantitative and qualitative results from a controlled trial at 12 months. *Archives of Disease in Childhood* 2004;**89**(6):519–25.
- Taylor 1998** *{published data only}*  
Taylor TK, Schmidt F, Pepler D, Hodgins C. A comparison of eclectic treatment with Webster-Stratton's parents and children series in a children's mental health centre: a randomised controlled trial. *Behavior Therapy* 1998;**29**(2):221–40.
- Thompson 1996** *{published data only}*  
Thompson RW, Ruma PR, Schuchmann LF, Burke RV. A cost-effectiveness evaluation of parent training. *Journal of Child and Family Studies* 1996;**5**(4):415–29.
- Thorell 2009** *{published data only}*  
Thorell LB. The Community Parent Education Program (COPE): treatment effects in a clinical and a community-based sample. *Clinical Child Psychology and Psychiatry* 2009;**14**(3):373–87.
- Tolan 2009** *{published data only}*  
Tolan PH, Gorman-Smith D, Henry D, Schoeny M. The benefits of booster interventions: evidence from a family-focused prevention program. *Prevention Science* 2009;**10**(4):287–97.
- Tremblay 1991** *{published data only}*  
Tremblay RE, McCord J, Boileau H, Charlebois P, Gagnon C, Le Blanc M, et al. Can disruptive boys be helped to become competent?. *Psychiatry* 1991;**54**(2):148–61.

**Tulloch 1997** *{unpublished data only}*

Tulloch EA. Effectiveness of parent training on perception of parenting skill and reduction of preschool problem behaviours utilizing an ethnically diverse population. Dissertation Abstracts International: Section B: The Sciences and Engineering 1997; Vol. 58, issue 4–B:2143.

**Turner 2007** *{published data only}*

Turner KMT, Richards M, Sanders MR. Randomised clinical trial of a group parent education programme for Australian indigenous families. *Journal of Paediatrics and Child Health* 2007;**43**(6):429–37.

**van den Hoofdakker 2005** *{published data only}*

van den Hoofdakker BJ, van der Veen-Mulders L, Sytema S, Emmelkamp PMG, Nauta MH. Effectiveness of behavioral parent training for children with ADHD in routine clinical practice: a randomised controlled study. *Journal of the American Academy of Child and Adolescent Psychiatry* 2007; **46**(10):1263–71.

**Verduyn 2003** *{published data only}*

Verduyn C, Barrowclough C, Roberts J, Tarrier N, Harrington R. Maternal depression and child behaviour problems: randomised placebo-controlled trial of a cognitive-behavioural group intervention. *British Journal of Psychiatry* 2003;**183**(4):342–8.

**Webster-Stratton (press)** *{unpublished data only}*

Webster-Stratton C, Reid MJ, Beauchaine TP. Combining parent and child training for young children with ADHD. *Journal of Clinical Child and Adolescent Psychology* in press.

**Webster-Stratton 1982** *{published data only}*

Webster-Stratton C. Teaching mothers through videotape modelling to change their children's behavior. *Journal of Pediatric Psychology* 1982;**7**(3):279–94.

**Webster-Stratton 1985** *{published data only}*

Webster-Stratton C. Predictors of treatment outcome in parent training for conduct disordered children. *Behavior Therapy* 1985;**16**(2):223–43.

**Webster-Stratton 1989a** *{published data only}*

Webster-Stratton C. Systematic comparison of consumer satisfaction of three cost-effective parent training programs for conduct problem children. *Behavior Therapy* 1989;**20** (1):103–15.

**Webster-Stratton 1989b** *{published data only}*

Webster-Stratton C, Hollinsworth T, Kolpacoff M. The long-term effectiveness and clinical significance of three cost-effective training programs for families with conduct-problem children. *Journal of Consulting and Clinical Psychology* 1989;**57**(4):550–3.

**Webster-Stratton 1990** *{published data only}*

Webster-Stratton C. Long-term follow up of families with young conduct problem children: from preschool to grade school. *Journal of Clinical Child Psychology* 1990;**19**(2): 144–9.

**Webster-Stratton 1994** *{published data only}*

Webster-Stratton C. Advancing videotape parent training: a comparison study. *Journal of Consulting and Clinical Psychology* 1994;**62**(3):583–93.

**Webster-Stratton 2008** *{published data only}*

Webster-Stratton Carolyn, Herman KC. The impact of parent behavior-management training on child depressive symptoms. *Journal of Counseling Psychology* 2008;**55**(4): 473–84.

**Webster-Stratton 2010** *{published data only}*

Webster-Stratton C, Rinaldi J, Reid JM. Long-term outcomes of Incredible Years Parenting Program: predictors of adolescent adjustment. *Child and Adolescent Mental Health* 2010 Sep 14 [Epub ahead of print].

**Wiggins 2009** *{published data only}*

Wiggins TL, Sofronoff K, Sanders MR. Pathways Triple P-positive parenting program: effects on parent-child relationships and child behavior problems. *Family Process* 2009;**48**(4):517–30.

**Wolchik 2002** *{published data only}*

Wolchik SA, Sandler IN, Millsap IN, Plummer BA, Greene SM, Anderson ER, et al. Six-year follow-up of preventive interventions for children of divorce: a randomized controlled trial. *JAMA* 2002;**288**(15):1874–81.

**Zubrick 2005** *{published data only}*

Zubrick SR, Ward KA, Silburn SR, Lawrence DW, Anwen A, Blair E, et al. Prevention of child behavior problems through universal implementation of a group behavioral family intervention. *Prevention Science* 2005;**6**(4):287–304.

## References to studies awaiting assessment

**Farzadfard 2008** *{published data only}*

Farzadfard SZ, Hooman HA. The role of child rearing training skills in reducing mothers' stress and children's behavioral problems. *Journal of Iranian Psychologists* 2008;**4** (15):16 pages.

**Jalali 2008** *{published data only}*

Jalali M, Pourahmadi E, Tahmassian K, Shaeiri M. The effectiveness of the Triple P-Positive Parenting Program on psychological well being of mothers of children with oppositional defiant disorder (ODD). *Journal of Family Research* 2008;**4**(4):353–68.

**Steiman 2005** *{unpublished data only}*

Steiman M. Parent training with children with conduct problems: the role of the marital relationship and parental adjustment. Dissertation Abstracts International: Section B: The Sciences and Engineering 2005; Vol. 65, issue 7–B: 3727.

## References to ongoing studies

**Matthys 2005** *{unpublished data only}*

Matthys W, Raaijmakers M, Posthumus J, van Hout B, de Kruif I, Böcker K, et al. Parent management training with preschool children at risk for disruptive behavior disorders.

The Incredible Years Library, 2005. Available from [www.incredibleyears.com](http://www.incredibleyears.com) (and personal correspondence).

**Ollendick 2009** *[unpublished data only]*

Ollendick TH. Comparison of two psychosocial therapies for treating children with Oppositional-Defiant Disorder. Available from ClinicalTrials.gov (identifier NCT00510120).

**Additional references**

**Aos 2004**

Aos AR, Lieb J, Mayfield M, Miller, Pennucci P. Benefits and costs of prevention and early intervention programs for youth. Available at <http://www.wsipp.wa.gov/rptfiles/04-7-3901.pdf>. Olympia, Washington State Institute for Public Policy, 2004.

**Azar 2006**

Azar S, Wolfe D. Child physical abuse and neglect. In: Mash E, Barkley R editor(s). *Treatment of Childhood Disorders*. 3rd Edition. New York: Guilford Press, 2006: 595–646.

**Bandura 1986**

Bandura A. *Social foundations of thought and action: a social cognitive theory*. Englewood Cliffs, NJ: Prentice-Hall, 1986.

**Barlow 2000**

Barlow J, Stewart-Brown S. Review article: behaviour problems and parent-training programmes. *Journal of Developmental Behavioural Pediatrics* 2000;**5**(21):356–70.

**Barlow 2001**

Barlow J, Stewart-Brown S. Understanding parenting programmes: parents' views. *Primary Health Care Research and Development* 2001;**2**:117–30.

**Barlow 2010**

Barlow J, Smailagic N, Ferriter M, Bennett C, Jones H. Group-based parent-training programmes for improving emotional and behavioural adjustment in children from birth to three years old. *Cochrane Database of Systematic Reviews* 2010, Issue 3. [DOI: 10.1002/14651858.CD003680.pub2]

**Beecham 1992**

Beecham J, Knapp M. Costing psychiatric interventions: a four year follow up. *Behaviour and Cognitive Psychotherapy* 1992;**32**:15–30.

**Brestan 1998**

Brestan EV, Eyberg SM. Effective psychosocial treatments of conduct-disordered children and adolescents: 29 years, 82 studies and 5,272 kids. *Journal of Clinical Child Psychology* 1998;**27**(2):180–9.

**Broidy 2003**

Broidy LM, Nagin DS, Tremblay RE, Bates JE, Brame B, Dodge KA, et al. Developmental trajectories of childhood disruptive behaviours and adolescent delinquency: a six site, cross-national study. *Developmental Psychology* 2003;**39**(2): 222–45.

**Burke 2002**

Burke J, Loeber R, Birmaher B. Oppositional defiant disorder and conduct disorder: a review of the past 10

years, part II. *Journal of the American Academy of Child and Adolescent Psychiatry* 2002;**41**(11):1275–93.

**Campbell 1997**

Campbell SB. Behaviour problems in preschool children: developmental and family issues. In: Ollendick TH, Prinz RJ editor(s). *Advances in Clinical Child Psychology*. Vol. 9, New York: Plenum, 1997:1–26.

**Campbell 2000**

Campbell M, Grimshaw J, Steen N. Sample size calculations for cluster randomised trials. *Journal of Health Services Research and Policy* 2000;**5**:12–16.

**Carey 2000**

Carey G. Victims, victimology and victim impact statements. *Irish Criminal Law Journal* 2000;**10**(3):8–13.

**Charles 2011**

Charles JM, Bywater T, Edwards RT. Parenting interventions: a systematic review of the economic evidence. *Child: Care, Health and Development* 2011;DOI: 10.1111/j.1365-2214.2011.01217.x:1–13.

**Deeks 2008**

Deeks JJ, Higgins JPT, Altman DG. Chapter 9: analysing data and undertaking meta-analyses. In: Higgins JPT, Green S editor(s). *Cochrane Handbook for Systematic Reviews of Interventions*. Chichester: John Wiley & Sons, 2008: 243–335.

**Dimond 1999**

Dimond C, Hyde C. Parent education programmes for children's behaviour problems, medium to long term effectiveness: a West Midlands development and evaluation service report. Department of Public Health and Epidemiology. University of Birmingham.

**Dretzke 2005**

Dretzke J, Frew E, Davenport C, Barlow J, Stewart-Brown S, Sandercock J, et al. The effectiveness and cost-effectiveness of parent training/education programmes for the treatment of conduct disorder, including oppositional defiant disorder, in children. *Health Technology Assessment* 2005;**9**(50):1–250.

**Dretzke 2009**

Dretzke J, Davenport C, Frew E, Barlow J, Stewart-Brown S, Bayliss S, et al. The clinical effectiveness of different parenting programmes for children with conduct problems: a systematic review of randomised controlled trials. *Child and Adolescent Psychiatry and Mental Health* 2009;**3**(1):7.

**Drugli 2006**

Drugli MB, Larsson B. Children aged 4-8 years treated with parent training and child therapy because of child conduct problems: generalisation effects to day-care and school settings. *European Child and Adolescent Psychiatry* 2006;**15**(7):392–9.

**Drugli 2007**

Drugli MB, Larsson B, Clifford G. Changes in social competence in young children treated because of conduct problems as viewed by multiple informants. *European Child and Adolescent Psychiatry* 2007;**16**(6):370–8.

**DSM-IV 2000**

American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision*. Washington DC: American Psychiatric Association, 2000.

**Eames 2009**

Eames C, Daley D, Hutchings J, Whitaker CJ, Jones K, Hughes JC, et al. Treatment fidelity as a predictor of behaviour change in parents attending group-based parent training. *Child: Care, Health and Development* 2009;**35**(5): 603–12.

**Egger 1997**

Egger M, Davey-Smith G, Schneider M, Minder C. Bias in meta-analysis detected by a simple graphical test. *BMJ* 1997;**315**(7109):629–34.

**Eyberg 1980a**

Eyberg SM. Eyberg Child Behaviour Inventory. *Journal of Clinical Child Psychology* 1980;**9**:27.

**Farmer 2002**

Farmer EMZ, Compton SN. Review of the evidence base for treatment for childhood psychopathology. *Journal of Consulting and Clinical Psychology* 2002;**70**(6):1267–302.

**Farrington 1999**

Farrington D, Loeber R. Transatlantic replicability of risk factors in the development of delinquency. In: Cohen P, Slomkowski C, Robins LN editor(s). *Historical and Geographical Influences on Psychopathology*. Mahwah, New Jersey: Lawrence Erlbaum, 1999:299–329.

**Farrington 2002**

Farrington D. Developmental Criminology and Risk focused Prevention. In: Maguire M, Morgan R, Reiner R editor(s). *The Oxford Handbook of Criminology*. Oxford: Oxford University Press, 2002.

**Farrington 2007**

Farrington D, Welsh BC. *Saving children from a life of crime: early risk factors and effective interventions*. New York: Oxford University Press, 2007.

**Fergusson 2005**

Fergusson D, Horwood L, Ridder E. Show me the child at seven: the consequences of conduct problems in childhood for psychosocial learning in adulthood. *Journal of Child Psychology and Psychiatry* 2005;**46**(8):837–49.

**Frick 2004**

Frick PJ, Morris AS. Temperament and developmental pathways to severe conduct problems. *Journal of Clinical Child and Adolescent Psychology* 2004;**33**(1):54–68.

**Furlong in press**

Furlong M, McGilloway S. The *Incredible Years Parenting program* in Ireland: a qualitative analysis of the experience of disadvantaged parents. *Clinical Child Psychology and Psychiatry*.

**Gardner 2004**

Gardner FG, Lane E, Hutchings J. Making evidence-based intervention work. In: Farrington D, Sutton C, Utting D editor(s). *Support from the start: working with young children*

and their families to reduce the risks of crime and antisocial behaviour. London: DFES, 2004.

**Gardner 2010**

Gardner F, Hutchings J, Bywater T, Whitaker C. Who benefits and how does it work? Moderators and mediators of outcome in an effectiveness trial of a parenting intervention. *Journal of Clinical Child and Adolescent Psychology* 2010;**39**(4):568–80.

**Gregg 1999**

Gregg P, Machin S. Childhood disadvantage and success or failure in the labour market. In: Blanchflower D, Freeman R editor(s). *Youth Employment and Joblessness in Advanced Countries*. Cambridge, MA: National Bureau of Economic Research, 1999.

**Griffith 2011**

Griffith N, Hutchings J, Bywater T. Evaluating the Incredible Years Toddler parenting programme with parents of high-risk children living in disadvantaged areas of Wales. Paper presented at the Society for prevention research 19th Annual Meeting, Washington D.C. 2011.

**Health Services Research Unit 2011**

Health Services Research Unit. Database of ICCs: spreadsheet of empirical estimates of ICCs from changing professional practice studies. Available from <http://www.abdn.ac.uk/hsru/research.shtml> (accessed October 30th 2011).

**Higgins 2002**

Higgins JPT. Quantifying heterogeneity in a meta-analysis. *Statistics in Medicine* 2002;**21**(11):1539–58.

**Higgins 2008a**

Higgins JPT, Altman DG. Chapter 8: assessing risk of bias in included studies. In: Higgins JPT, Green S editor(s). *Cochrane Handbook for Systematic Reviews of Interventions*. Chichester: John Wiley & Sons, 2008:187–243.

**Hogan 2002**

Hogan D, Halpenny AM, Greene S. *Children's Experiences of Parental Separation*. Dublin: The Children's Research Centre, TCD, 2002.

**Hutchings 2004a**

Hutchings J, Gardner F, Lane E. Making evidence based interventions work in clinical settings: common and specific therapy factors and implementation fidelity. In: Farrington D, Sutton C, Utting D editor(s). *Support from the Start: Working with Young Children and their Families to Reduce the Risks of Crime and Antisocial Behaviour (Research Report)*. London: DFES, 2004.

**Hutchings 2006**

Hutchings J, Bywater T, Davies C, Whitaker C. Do crime rates predict the outcome of parenting programmes for parents of 'high risk' preschool children?. *Educational and Child Psychology* 2006;**23**(2):15.

**Hutchings 2007b**

Hutchings F, Bywater T, Daley D. A pragmatic randomised controlled trial of a parenting intervention in Sure Start services for preschool children at risk of developing Conduct

Disorder: how and why did it work?. *Journal of Children's Services* 2007;**2**(2):4–14.

**Lipsey 1998**

Lipsey MW, Derzon JH. Predictors of violent or serious delinquency in adolescence and early adulthood: a synthesis of longitudinal research. In: Loeber R, Farrington D editor (s). *Serious and Violent Juvenile Offenders: Risk Factors and Successful Interventions*. Thousand Oaks, California: Sage, 1998:86–105.

**Loeber 2000**

Loeber R, Burke J, Lahey B, Winters A, Zera M. Oppositional and defiant and conduct disorder: a review of the past 10 years, Part 1. *Journal of the American Academy of Child and Adolescent Psychiatry* 2000;**39**(12):1468–84.

**Loeber 2001**

Loeber R, Farrington DP. *Child Delinquents: Development, Intervention and Service Needs*. Thousand Oaks, CA: Sage, 2001.

**Long 2008**

Long CE, Gurka MJ, Blackman JA. Family stress and children's language and behaviour problems. *Topics in Early Childhood Special Education* 2008;**28**(3):148–57.

**Lundahl 2006**

Lundahl B, Risser H, Lovejoy MC. A meta-analysis of parent training: moderator and follow up effects. *Clinical Psychology Review* 2006;**26**:86–104.

**Macdonald 2004**

Macdonald G, Ramchandani P, Higgins J, Jones DPH. Cognitive-behavioural interventions for sexually abused children (Protocol for a Campbell Review). Available online: <http://www.campbellcollaboration.org/frontend2.asp?ID=40> (Last accessed 6 February 2009) The Campbell Collaboration 2004.

**Mahwah 2002**

Mahwah NJ, Erlbaum L. *Multilevel analysis. Techniques and applications*. Verlag Vans Huber, 2002.

**Mash 1983**

Mash EJ, Johnston C. Parental perceptions of child behaviour problems, parenting self-esteem and mother's reported stress in younger and older hyperactive and normal children. *Journal of Consulting and Clinical Psychology* 1983;**51**(1):86–99.

**McGilloway 2011**

McGilloway S, Leckey Y, Ni Mhaille G, Furlong M, Kelly P, Bywater T, et al. Proving the power of positive parenting - 12 months on: an evaluation of the longer-term effectiveness of the Incredible Years BASIC parent training programme in Ireland. Dublin: Archways 2011.

**McGilloway in press**

McGilloway S, Ni Mhaille G, Bywater T, Leckey Y, Kelly P, Furlong M, et al. Parenting intervention for childhood behavioral problems: a randomised controlled trial in disadvantaged community-based settings. *Journal of Consulting and Clinical Psychology*.

**McGroder 2009**

McGroder SM, Hyra A. Developmental and economic effects of parenting programmes for expectant parents and parents of preschool-age children. Partnership for America's Economic Success issue Issue Paper 10:70 pages.

**Melhuish 2008**

Melhuish E, Belsky J, Leyland AH, Barnes J. Effects of fully-established Sure Start local programmes on 3-year-old children and their families living in England: a quasi-experimental observational study. *Lancet* 2008;**372**(9650):1641–47.

**Mihalic 2002**

Mihalic S, Fagan M, Irwin K, Ballard D, Elliot D. *Blueprints for Violence Prevention Replications: Factors for Implementation Success*. Colorado: Boulder, Centre for the Study and Prevention of Violence, University of Colorado, 2002.

**Mockford 2004**

Mockford C, Barlow J. Parenting programmes: some unintended consequences. *Primary Health Care Research and Development* 2004;**5**:219–27.

**Moffitt 1993**

Moffitt TE. Adolescence-limited and life course persistent antisocial behaviour: a developmental taxonomy. *Psychological Review* 1993;**100**(4):674–701.

**Morch 2004**

Morch WT, Clifford G, Larsson B, Rypdal P, Tjeflaat T, Lurie J, et al. The Norwegian Webster-Stratton Programme. Department of Psychology, University of Tromsø, Norway 2004.

**NICE 2006**

NICE (National Institute for Health and Clinical Excellence). *Parent-Training/Education Programmes in the Management of Children with Conduct Disorders*. NICE Technology Appraisal TA102. London: NHS, 2006.

**Nilsson 2008**

Nilsson I, Wadeskog A. Focus on the individual: an ounce of prevention is better than a pound of cure [Det är bättre att stämma i bäcken än i än: Att värdera de ekonomiska effekterna av tidiga och samordnade insatser kring barn och unga]. Available at [skandia@strd.se](mailto:skandia@strd.se) 2008.

**O' Connor 2002**

O'Connor TG. The effects of parenting reconsidered: findings, challenges and applications. *Journal of Child Psychology and Psychiatry* 2002;**43**(5):555–72.

**Odgers 2008**

Odgers CL, Caspi A, Poulton R, Harrington HL, Thomson WM, Broadbent JM, et al. Female and male antisocial trajectories: from childhood origins to adult outcome. *Development and Psychopathology* 2008;**20**(2):673–716.

**Offord 1989**

Offord DR, Boyle MH, Racine Y. Ontario Child Health Study: correlates of disorder. *Journal of the American Academy of Child and Adolescent Psychiatry* 1989;**28**(6):850–60.

**Osofsky 2000**

Osofsky JD, Thompson D. Adaptive and maladaptive parenting: perspectives on risk and protective factors. In: Shondoff JP, Meisels SJ editor(s). *Handbook of Early Childhood Intervention*. 2nd Edition. Cambridge: Cambridge University Press, 2000:54–75.

**Patterson 1995**

Patterson GR, Forgatch MS. Predicting future clinical adjustment from treatment outcome and process variables. *Psychological Assessment* 1995;7(3):275–85.

**Patterson 2002a**

Patterson GR, Yoerger K. A developmental model for early- and late-onset delinquency. In: Reid JB, Patterson GR, Snyder JJ editor(s). *Antisocial Behaviour in Children and Adolescents: A Developmental Analysis and Model for Intervention*. Washington DC: American Psychological Association, 2002:147–72.

**Patterson 2005**

Patterson J, Mockford C, Stewart-Brown S. Parents' perceptions of the value of the Webster-Stratton Parenting Programme: a qualitative study of a general practice based initiative. *Child: Care, Health and Development* 2005;31(1):53–64.

**Reid 2002**

Reid JB, Patterson GR, Snyder JJ. *Antisocial Behaviour in Children and Adolescents: A Developmental Analysis and Model for Intervention*. Washington DC: American Psychological Association, 2002.

**Review Manager 2011**

Review Manager (RevMan) [Computer program]. Version 5.1. Copenhagen: The Nordic Cochrane Centre, The Cochrane Collaboration, 2011.

**Reyno 2006**

Reyno SM. Predictors of parent training efficacy for child externalising behaviour problems - a meta-analytic review. *Journal of Child Psychology and Psychiatry* 2006;47(1):99–111.

**Robins 1999**

Robins L. A 70 year history of conduct disorder. Variations in definition, prevalence and correlates. In: Cohen P editor (s). *Historical and Geographical Influence on Psychopathology*. Mahwah, NJ: Lawrence Erlbaum Associates Inc, 1999:37–56.

**Sainsbury Centre for Mental Health 2009**

Sainsbury Centre for Mental Health. The chance of a lifetime: preventing early conduct problems and reducing crime. Sainsbury Centre for Mental Health: Policy. Available at: [www.scmh.org.uk](http://www.scmh.org.uk) 2009.

**Scott 2001b**

Scott S, Knapp M, Henderson J, Maughan B. Financial cost of social exclusion: follow up study of antisocial children into adulthood. *BMJ* 2001;323(7306):191.

**Scottish Executive 2001**

Scottish Executive. *Scottish Executive Publications List*. Edinburgh: The Stationary Office Bookshop, 2001.

**Seligman 1990**

Seligman L. *Selecting Effective Treatments: A Comprehensive, Systematic Guide to Treating Adult Mental Disorders*. San Francisco: Jossey-Bass, 1990.

**Shaw 1994**

Shaw DS, Vondra JI, Dowdell Hommerding K, Keenan, Dunn M. Chronic family adversity and early child behaviour problems: a longitudinal study of low income families. *Journal of Child Psychology and Psychiatry* 1994;35(6):1109–22.

**Shemilt 2008**

Shemilt I, Mugford M, Byford S, Drummond M, Eisenstein E, Knapp M, et al. Chapter 15: incorporating economics evidence. In: Higgins PT, Green S editor(s). *Cochrane Handbook for Systematic Reviews of Interventions*. Chichester: John Wiley & Sons, 2008.

**Shemilt 2010**

Shemilt I, Mugford M, Vale L, Marsh K, Donaldson C, Drummond M. Evidence synthesis, economics and public policy. *Research Synthesis Methods* 2010;1(2):126–35.

**Task Force 1995**

Task Force on Promotion and Dissemination of Psychological Procedures. Training in and dissemination of empirically-validated treatments: report and recommendations. *The Clinical Psychologist* 1995;48(1):3–23.

**Task Force 2006**

Task Force. *Tackling antisocial behaviour and its causes*. Home Office (UK), Dept. of Justice Affairs, 2006.

**Ukoumunne 1999**

Ukoumunne OC, Gulliford MC, Chinn S, Sterne JA, Burney PG. Methods for evaluating area-wide and organisation-based interventions in health and health care: a systematic review. *Health Technology Assessment* 1999;3:5.

**Webster-Stratton 1998**

Webster-Stratton C, Hancock L. Training for parents of young children with conduct problems: content, methods and therapeutic processes. In: Schaefer CE, Briesmeister JM editor(s). *Handbook of Parent Training*. New York: John Wiley, 1998.

**Webster-Stratton 2000**

Webster-Stratton C. *The Incredible Years Training Series*. New York: Office of Justice Programmes, 2000.

**Webster-Stratton 2004b**

Webster-Stratton CL. Quality training, supervision, ongoing monitoring and agency support: key ingredients to implementing the Incredible Years Program with fidelity. [www.incredibleyears.com](http://www.incredibleyears.com) (accessed 4 February 2009).

**Webster-Stratton 2009**

Webster-Stratton C. Affirming diversity: multi-cultural collaboration to deliver the incredible years parent programs. *International Journal of Child Health and Human Development* 2009;2(1):17–32.



**Weisz 1995**

Weisz JR, Donenberg GR, Han SS, Weiss B. Bridging the gap between laboratory and clinic in child and adolescent psychotherapy. Special section: efficacy and effectiveness in studies of child and adolescent psychotherapy. *Journal of Consulting and Clinical Psychology* 1995;**63**(5):688–701.

**WHO 2009**

World Health Organization. *International Statistical Classification of Disease and Related Health Problems*. 10th Edition. Washington DC: WHO, 2009.

\* Indicates the major publication for the study

## CHARACTERISTICS OF STUDIES

### Characteristics of included studies [ordered by study ID]

#### Barkley 2000

Methods	Randomised controlled trial (matched for gender, roll of a dice)
Participants	<p>Participants were 158 parents with a child with conduct problems above the 93rd percentile on the conduct problems items on the screening instrument, the Conners Parent Rating Scale-Revised. Alternatively, children had to have scores exceeding the recommended DSM-III-R clinical diagnostic thresholds for the ADHD and ODD items on the scale. Participants were recruited from a kindergarten registration process in Worcester. Mean age was 58 months. The sample comprised 66.5% boys, 33.5% girls. Parents were 83.7% Caucasian, 6.8% African-American, 5.4% Puerto Rican, 1.5% Asian, 0.5% American Indian, and 1.4% other. Referred families came from an urban school district, predominated by low-income families, and had a Hollingshead Index of Social Position mean score of 30, indicating social disadvantage</p>
Interventions	<p><b>Intervention: Barkley's Parent Training Programme (N=39)</b>  Barkley's parenting programme is a group-based parenting programme and is comprised of sessions teaching parents: (1) causes of defiant behavior; (2) positive attending skills and praising; (3) attending to child compliance and improving parental command effectiveness; (4) rewarding children for non-disruptive behavior; (5) setting up a home token system; (6) time out and response cost; and (7) managing children in public places with think aloud-think ahead strategies. The programme consisted of 10 weekly sessions, which were then followed by monthly booster sessions for five months. All parent training groups were conducted by the same child psychologist who was trained by the first author, who had five years' experience in this treatment programme. The intervention was delivered in a medical centre (p.322)</p> <p><b>Intervention: Special treatment classroom only (N=37)</b>  Teachers received extensive training from a child psychologist and a Master Teacher in conducting the behavioural intervention in the two special treatment classrooms. Behavioral interventions included an intensive token system, response cost, time out, group cognitive-behavioral self-control, social skills and anger training. An accelerated curriculum was delivered, placing more emphasis on reading, spelling, handwriting, math skills, logic skills and computer skills (p.322)</p> <p><b>Intervention: Parent training combined with special treatment classroom (N=40)</b>  The parent training and classroom components outlined above were combined</p> <p><b>Control group: No treatment control (N=42).</b></p>
Outcomes	<p>All outcomes were measured at pretreatment and immediately posttreatment. Treatment lasted nine months</p> <p><b>Outcome 1: Child conduct problems</b>, measured by:</p> <ul style="list-style-type: none"> <li>(i) Child Behavior Checklist, parent report of child conduct problems. Clinical cut off score is 60. Higher score = more behaviour problems/disimprovement;</li> <li>(ii) Home Situations Questionnaire, parent report of number and severity of child behaviour at home and in public settings. Scores were rated on a Likert scale of 1 to 9. High score = poorer behaviour/disimprovement;</li> <li>(iii) Child Behavior Checklist Teacher Report Form, teacher report of child behavior in</li> </ul>

school settings. Clinical cut off score is 60. High score = poorer behaviour/disimprovement;

(iv) School Situations Questionnaire, teacher report of child behavior in school settings. Scores were rated on a Likert scale of 1 to 9. High score = poorer behaviour/disimprovement;

(v) Social Skills Rating Scale, teacher report of child behavior in school settings. Three domains assessing social skills, behavior problems and academic competence. The behavior problems subscale was utilised. High score = poorer behavior/disimprovement;

(vi) Child Behaviour Checklist - Direct Observation Form, behavioural observation of child problem behaviour in classroom. High score = poorer behaviour/disimprovement. Interrater score of .80 for externalising score;

(vii) Clinical Diagnostic Interview, The printed Diagnostic Interview Schedule for Children-Parent (DISC-P) Version 2.1 used in DSM-IV field trials for Disruptive Behaviour Disorders. This particular interview collected information for childhood disorders of Conduct Disorder and Oppositional Defiant disorder. The interview required that both the parent and interviewer provide separate estimates of the child's global assessment of functioning scale using a range of 0 to 100 with lower scores reflecting lower global functioning

**Outcome 2: Parental mental health**, measured by:

(i) Parenting Stress Index-short form. Parent report of own stress and quality of relationship with child. Clinical cut off score = 90. Higher score = more stress/disimprovement

**Outcome 3: Parenting practices**, measured by:

(i) Parent Sense of Competence Scale. Parent report of parent's perceived competency in parenting practices and satisfaction in their role as a parent. No cut off score. Higher score = greater sense of competence/improvement;

(ii) Parenting Practices Scale, parent report of common parenting strategies. Higher score = greater sense of competence/improvement

**Outcome 4 (secondary outcome): Child internalising behaviour**; measured by:

(i) Child Behavior Checklist, parent report of child anxiety problems. Clinical cut off score is 60. Higher score = more anxiety/disimprovement;

(ii) Child Behavior Checklist - teacher report form, teacher report of child anxiety. Clinical cut off score is 60. Higher score = more anxiety/disimprovement;

(iii) Child Behavior Checklist - Direct Observation Form, behavioural observation of child anxiety in classroom. High score = more anxiety/disimprovement. Interrater score of .80 for externalising score;

(iv) Clinical Diagnostic Interview, The printed Diagnostic Interview Schedule for Children-Parent (DISC-P) Version 2.1 used in DSMIV field trials for Disruptive Behaviour Disorders. This particular interview collected information for childhood disorders of anxiety and depression. The interview required that both the parent and interviewer provide separate estimates of the child's global assessment of functioning scale using a range of 0 to 100 with lower scores reflecting lower global functioning

**Outcome 5 (secondary outcome): Child academic/cognitive performance**; measured by:

(i) Social Skills Rating Scale - academic subscale, teacher report of child academic ability within school setting;

(ii) Woodcock Johnson Psychoeducational Test Battery, psycho-educational test that assesses cognitive abilities, as well as examining academic knowledge and skills. Standard scores were produced for each subtest. Only the academic knowledge and skills tests were used in assessing treatment effects

Notes	(i) <i>Treatment integrity</i> : Programme providers used the manualised Barkley’s parenting programme (p.322). Whether checklists were completed was unspecified. Attendance: 35% of parents did not attend the parent training and 3.3 mean sessions were attended per parent out of the 10 sessions (p.326). Poor attendance was attributed to parents not seeking out the programme (p.328) and not perceiving themselves to be in need of help (pp.326-7). The second author was trained by the programme developer (first author) and both had five years’ experience in delivering the programme. The nature of supervision, if it occurred, was not specified. Parental responsiveness to the programme was not assessed (ii) This RCT is not an independent replication as the programme was devised and evaluated by the author (iii) This study did not conduct a sample size calculation, and thus there may be a greater risk of a Type 2 error	
<i>Risk of bias</i>		
Bias	Authors’ judgement	Support for judgement
Random sequence generation (selection bias)	High risk	Quote: “Randomization within gender was done to insure that relatively equal numbers of each sex were assigned to each treatment group... Randomization had to be violated in eight cases due to several circumstances. In one case, the project had to insure that one set of twins participating in the same cohort be assigned to the same treatment condition given the need for parental participation in the same condition across the twins. In a second case, the same problem arose for one set of siblings in which one sibling and the parent had already participated in an early cohort. And in six cases of children assigned to the STCs, busing could not be provided to children. This was because of their location within the city on unpaved streets where school district busing was not provided to any children residing on these streets. The latter children were assigned to the no treatment control group if originally placed in the STC group or, if initially offered the combined treatment, they were assigned to the PT group.” (p. 322) Comment: Randomisation was violated in eight cases so there is risk of bias
Allocation concealment (selection bias)	High risk	Email contact quote: “It was not concealed.”

Blinding (performance bias and detection bias) All outcomes	Low risk	Quote: "research assistants blind in clinic, also in regular kindergarten classes, teachers blinded in regular kindergarten classes" (p. 322) Email contact quote: "Assessors were blind to all outcomes in control and parent training intervention"
Incomplete outcome data (attrition bias) self report outcomes	Low risk	Quote: "The results were analysed using an intent-to-treat approach in which all subjects returning for the posttreatment evaluation were included in the analyses regardless of the extent to which they or their parents actually participated in the treatment protocol to which they had been randomised...There was very little subject attrition by the posttreatment evaluation (none from the control group or parent training only group) (p.324)...For the PT only group, 35% of the subjects had parents who did not attend training (p.326)...although non-attendees may have been less educated, these parents may also have had less incentive to attend training given that their children were viewed by them as significantly less problematic in their behavior than were the children of families who attended parent training." (p.327) Comment: There were no attritions from either the parent training or control groups. They accounted for the low attendance to the parenting group by comparing non-attendees vs attendees on a number of demographic variables
Incomplete outcome data (attrition bias) Independent reports	Low risk	Comment: As above for self report outcomes.
Selective reporting (reporting bias)	Low risk	Comment: All prospectively stated outcomes were reported.
Other bias	Low risk	No other risks apparent.

Methods	Randomised controlled trial
Participants	Participants were 64 parents (88% mothers) with a child (4-8 years) with conduct problems who scored above 60 on the screening measure, the Child Behaviour Checklist externalising scale. Participants were recruited through leaflets distributed to kindergartens, schools and pupil guidance centres in Ghent, Belgium. Mean age was 67 months. The sample comprised 64% boys, 36% girls. 88.6% of parents were Caucasian. Participants were socially disadvantaged when compared to population norms
Interventions	<p><b>Intervention: Parenting Management Training (PMT)</b> based on Parent Management Training, Oregon and the Incredible Years Parenting Programme (N=34)</p> <p>The intervention was based on the behavioural principles of the Parent Management Training, Oregon and the Incredible Years' Parenting Programme. The authors wrote and followed a step-by-step manual (p.234). The training focused on positive parental behaviour, rule setting, disciplining, harsh punishment, inconsistent disciplining, material rewarding, social rewarding, dealing with parent-related stress factors, social support, and other risk or protective factors. The intervention consisted of 11 2-hour sessions, spread over 24 weeks, with 8-10 parents per group. All PMT sessions were led by two psychologists and supervised by two behaviour therapists (first and last author). The intervention was delivered in Ghent University</p> <p><b>Control: Wait list control</b> (N=30) where the PMT was offered after some months.</p>
Outcomes	<p>All outcomes were measured at pretreatment and posttreatment. Treatment lasted six months. A longer term-assessment was conducted at a one year follow up but there was no control group at this later stage</p> <p><b>Outcome 1: Child conduct problems</b>, measured by:</p> <ul style="list-style-type: none"> <li>(i) Child Behavior Checklist, parent report of child conduct problems. Clinical cut off score is 60. Higher score = more behaviour problems/disimprovement;</li> <li>(ii) Child Behavior Checklist Teacher Report Form, teacher report of child behavior in school settings. Clinical cut off score is 60. High score = poorer behaviour/disimprovement</li> </ul> <p><b>Outcome 2: Parental mental health</b>, measured by:</p> <ul style="list-style-type: none"> <li>(i) Parenting Stress Index-short form. Parent report of own stress and quality of relationship with child. Clinical cut off score = 90. Higher score = more stress/disimprovement</li> </ul> <p><b>Outcome 3: Parenting practices</b>, measured by:</p> <ul style="list-style-type: none"> <li>(i) Ghent Parental Behaviour Scale; parent report of own parenting behaviours. Parents rate the frequency of each behaviour towards the target child on a 5-point Likert scale ranging from "never" to "always". The items in the GPBS are grouped in eight scales: positive parental behaviour, rule setting, disciplining, harsh punishment, inconsistent disciplining, material rewarding, and social rewarding. Higher score on harsh punishment, inconsistent disciplining = poorer parenting competencies/disimprovement. Higher score on positive items = improved parenting;</li> <li>(ii) Global Ratings of Mother Behaviour, direct observation, using a video camera, in participant's home by observers of parent's permissivity, control adjustment, adjustment of maternal behaviour, maternal feelings, maternal acceptance and involvement during a play task between mother and child. Each dimension was scored on a 7-point Likert scale, with a higher score indicating a higher frequency. Observations were conducted on a select subgroup of the sample. Interrater reliability was 0.64</li> </ul> <p><b>Outcome 4 (secondary outcome): Child internalising problems:</b></p>

	<p>(i) Child Behavior Checklist, parent report of child internalising problems. Clinical cut off score is 60. Higher score = more anxiety problems/disimprovement;</p> <p>(ii) Child Behavior Checklist Teacher Report Form, teacher report of child internalising behaviour in school settings. Clinical cut off score is 60. High score = more anxiety problems/disimprovement</p> <p><b>Outcome 5 (secondary outcome): Child’s cognitive abilities</b></p> <p>(i) The Wally Child Social Problem-solving detective game; clinic measurement of child problem solving ability using coding manual. Children had to generate as many answers as possible to social dilemmas (eg. “How do you react when another child has destroyed your favourite toy?”) Higher positive solutions = improvement, lower agnostic solutions = improvement</p> <p><b>Outcome 6 (secondary outcome): Parental social support</b></p> <p>(i) Social Support List; parent report of perceived social support. Higher score = more social support</p>	
Notes	<p>(i) <i>Treatment integrity</i>. Programme providers used a newly manualised, step by step, protocolised programme over 11 sessions, based on a combination of Parent Management Training, Oregon and Webster-Strattons’ Incredible Years parenting programme (pp. 227, 234). Attendance: 4/34 parents (12%) did not attend PT at all; 19/34 (56%) parents attended more than 7 sessions and 11 parents (33%) attended all sessions (pp.227-8). Mean number of sessions attended was 8 out of 11 sessions (73%). Group facilitators were not specifically trained in the new programme, but they were psychologists and received supervision from behaviour therapists. Parental responsiveness to the programme was assessed using a parents’ satisfaction questionnaire</p> <p>Comment: Level of programme integrity was quite high with evidence of adherence, programme differentiation, quality of delivery and positive participant responsiveness. Attendance was medium to good which could partially undermine the results of the programme</p> <p>(ii) This RCT is not an independent replication as the programme was devised and evaluated by the author</p> <p>(iii) This study did not conduct a sample size calculation, and thus there may be a greater risk of a Type 2 error</p>	
<b>Risk of bias</b>		
<b>Bias</b>	<b>Authors’ judgement</b>	<b>Support for judgement</b>
Random sequence generation (selection bias)	High risk	Quote: “randomly assigned”(p227). Email communication: “random number in order of application date” Comment: Sequence generation was not adequate
Allocation concealment (selection bias)	High risk	Quote: “randomly assigned”(p227) Email communication: “One investigator organised the allocation. This was not concealed” Comment: Allocation concealment was not adequate



Blinding (performance bias and detection bias) All outcomes	Unclear risk	Comment: Insufficient information to permit judgment. Unclear risk of bias
Incomplete outcome data (attrition bias) self report outcomes	High risk	Quote: "Four parents dropped out before the first session of the PMT...In the waiting list condition, 19 parents were willing to take part in both pre-training and post-training assessment." (p.228) Comment: Reported loss to follow up imbalanced across groups: PMT - 4/34 (12%) loss and WL - 11/30 (37%) loss. An intention-to-treat analysis was not conducted. There also appear to be a number of unaccounted exclusions in the paper: some measures within the PMT outcomes have only 29 or 21 parents when 30 parents allegedly completed the programme. Within the control group, 19/30 parents were reportedly assessed but outcomes only include Ns of 11 and 16 for certain outcomes (pp.231-2). Teacher outcomes only account for 22 children in PMT and 10 children in the control group. The study does not specify reasons for attritions or exclusions
Incomplete outcome data (attrition bias) Independent reports	High risk	The Global Ratings of Mother Behaviour observation was conducted on a "select subgroup of the sample due to the intensity of the procedure", i.e. 12 parents in PMT and 10 parents in the control group (pp. 229, 232) Comment: Not all of the randomised sample received the observational measure
Selective reporting (reporting bias)	High risk	The study did not report on all prospectively stated outcomes: the results of the Social Support List were not reported in the paper Comment: There appears to be some level of selective reporting
Other bias	Low risk	No other risks apparent.

**Edwards 2007**

Methods	Costs and cost effectiveness analysis of the Incredible Years parenting intervention delivered within 11 Sure Start areas compared to a control group of receiving services as usual. Costs are based on the participants and intervention within an included RCT study (Hutchings 2007a).
Participants	Jurisdiction: Eleven Sure Start service areas in rural Wales, UK. Analytic perspective: A multi-agency public sector perspective, including health, social and special educational services. Time horizon: One year. Participants: 116 families out of the 153 families initially randomised in Hutchings 2007a. Twenty families were lost to follow up and there were incomplete economic data for a further 17 families. Participant demographics were

	comparable to the sample outlined in <a href="#">Hutchings 2007a</a> Condition: Conduct problems above the clinical cut-off score on the intensity or problem scales (127 or 11) of the screening instrument, the Eyberg Child Behaviour Inventory
Interventions	<b>Intervention: Incredible Years (IY) BASIC Parenting Programme</b> (N = 73) This IY parenting programme was delivered across 11 Sure Start areas in rural Wales. The IY intervention is a behavioural group-based parenting programme which uses a collaborative approach to promote positive parenting skills, and consisted of 12 weekly 2-2.5 hour sessions. See more details on intervention in <a href="#">Hutchings 2007a</a> . <b>Wait list control</b> (N = 43) Wait list controls received services as usual across health, social and educational sectors within the public sector in Wales, UK
Outcomes	<b>Outcome 1: Cost of running programme per parent</b> , using weekly cost diaries filled in by group leaders detailing recurrent costs. Non-recurrent costs included programme materials and initial training of group facilitators. Recurrent costs included staff costs in preparing and delivering programme, travel costs, supervision, refreshments, transport and creche facilities and managerial overheads, such as venue rental. Group leaders from four of the 11 groups completed the costs diaries <b>Outcome 2: Costs of utilisation of primary care, social care and special education services</b> , as measured by a Client Service Receipt inventory administered to parents at baseline and 6-month follow up to collect data on children's use of a wide range of health, social and special educational services (eg. doctor, social worker, education psychologist, hospital visits). Costs are mean total cost per child for intervention and control conditions for services used between baseline and six month follow up. National costs were applied to these services, drawn from a number of published sources including Unit Costs of Health and Social Care 2004, NHS reference costs for 2003-4, and local NHS trust and councils. All costs are in 2004 UK Sterling (£) values. Costs or effects were not discounted as all costs fell within a one year time horizon <b>Outcome 3: Incremental cost-effectiveness ratio (ICER)</b> per unit improvement on the intensity scale of the Eyberg Child Behaviour Inventory (ECBI), comparing the cost effectiveness of the Incredible Years intervention to the wait list control receiving services as usual. An ICER point estimate with a 1000 replication bootstrap was calculated to provide a confidence interval. Sensitivity analysis examined whether cost effectiveness varied with the intensity of the risk at baseline, group size and excluding non-recurrent costs
Notes	

## Gardner 2006

Methods	Randomised controlled trial (computer generated list)
Participants	Participants were 76 parents (95% mothers, 5% fathers) from socially disadvantaged families in Oxford county with a child (aged 2-9 years) with conduct problems above the clinical cut off score on the intensity or problem scales (127 or 11) of the screening instrument, the Eyberg Child Behaviour Inventory. Participants were either professionally referred through social workers, primary health care staff (71%) or self-referred (29%) to the community- based voluntary sector organisation, the charity Family Nurturing Network, which specialises in offering Webster-Stratton's <i>Incredible Years</i> interventions. Mean age of child was 72 months. Sample comprised 74% boys, 26% girls. Ethnicity of sample not specified, although probably mostly Caucasian. Referred families were socially disadvantaged compared with mean values for the UK

Interventions	<p><b>Intervention: Incredible Years (IY) BASIC Parenting Programme (N=44).</b></p> <p>The IY programme is a group-based, strengths-based parenting programme which uses a collaborative approach to promote positive parenting skills. The IY programme in this trial presented a structured sequence of topics during 14 weekly two hour sessions, with 10-12 parents per group. Topics included parent-child play, increasing positive behavior through praise and incentives, limit setting and ignoring, and strategies for managing non-compliance and aggression. Sessions discussed home assignments, looked at video clips and practiced activities to try out at home. Telephone calls were made during the week to encourage progress. Each group was held by one trained group leader, who was assisted by a co-leader. The leaders came from nursing and teaching backgrounds and had no specialist training in child mental health. However, they received a high level of supervision and had extensive experience in delivering the IY programme to 200 families per year. Group interventions operated in nine sites across Oxford county, including community and family centres and church halls. Five of the sites were in urban areas</p> <p><b>Control group:</b> Wait list control received the same treatment at a later stage (N=32)</p>
Outcomes	<p>All outcomes were measured at baseline and at 6 months follow-up. A longer-term assessment was conducted at 18 month follow up but there was no control group at this later stage</p> <p><b>Outcome 1: Child conduct problems</b>, measured by:</p> <ul style="list-style-type: none"> <li>(i) Eyberg Child Behaviour inventory, parent-report of child behaviour, problem and intensity scales. Clinical cut scores of 11 (problem scale) and 127 (intensity scale). Higher score = more behaviour problems/disimprovement;</li> <li>(ii) Gardner's Observation System, recorded observation of child's negative behaviour in six structured settings in the home, involving parent-child play, task for child, unstructured time for child. Child negative behaviour was defined as total frequency of non-comply, hit, yell, destructive, rude, threaten. Observations were coded from each 50-minute videotape, using the Gardner validated coding system. No cut off score. Inter-rater correlation, <math>r = .96</math>. High scores = more deviance/disimprovement</li> </ul> <p><b>Outcome 2: Parental mental health</b>, measured by:</p> <ul style="list-style-type: none"> <li>(i) Beck Depression Inventory, parent report of own mental health, clinical cut off score of 19. Higher score = more depressed/disimprovement</li> </ul> <p><b>Outcome 3: Parenting practices</b>, measured by:</p> <ul style="list-style-type: none"> <li>(i) Parent Sense of Competence Scale. Parent report of parenting competencies, efficacy and satisfaction in parenting. Higher score = improved parenting competencies;</li> <li>(ii) Parenting Scale; parent report of dysfunctional parental discipline style, for example: laxness, verbosity, over-reactivity. Higher score = poorer parenting competencies/disimprovement;</li> <li>(iii) Gardner's Observation System, recorded observation of parents's positive and negative parenting behaviour in six structured settings in the home, involving parent-child play, task for child, unstructured time for child. Parent positive behaviour was defined as praise, positive and proactive discipline, joint play and talk. Parent negative behaviour was defined as total frequency of hit, yell, threaten, and negative command. Observations were coded from each 50-minute videotape, using the Gardner validated coding system. No cut off score. Inter-rater correlation, <math>r = .95</math> for positive parenting and <math>r = .97</math> for negative parenting. Higher score on positive items = positive parenting; higher score on negative items = negative parenting</li> </ul>

Notes	<p>(i) <i>Treatment integrity</i>: Programme providers used the manualised Incredible Years (IY) parenting programme. Facilitators completed weekly checklists which showed that they adhered to protocols. Supervision was on a weekly basis by a clinical psychologist who was a trained leader in the IY. All sessions were videotaped and viewed and assessed during weekly supervision meetings (p.1125). Group facilitators received extensive training in the IY programme. Attendance: mean attendance of 9 out of 14 sessions (64%). 12% of parents attended 1-5 sessions, 12% did not attend. Parental responsiveness to the programme was assessed through weekly and end of programme parents' satisfaction questionnaires</p> <p>Comment: Level of programme integrity was high with evidence of adherence, programme differentiation, quality of delivery and positive participant responsiveness. Attendance was medium to good which could slightly undermine the results of the programme</p> <p>(ii) Outcomes of observed child negative behaviour and observed parent negative strategies were skewed (p.1128) and nonparametric tests were used (p.1127-8). This is a problem in meta-analysis as the means rest on assumptions of normality. The skewed outcomes were excluded from meta-analysis</p>	
<b>Risk of bias</b>		
<b>Bias</b>	<b>Authors' judgement</b>	<b>Support for judgement</b>
Random sequence generation (selection bias)	Low risk	Quote: "A computer-generated list was used for random allocation of families." (p. 1125)
Allocation concealment (selection bias)	Low risk	Quote: "The administrator, therapists and researchers were unaware of the randomisation sequence. The sequence was stored in numbered, opaque, tamperproof envelopes, held by an administrator who was not involved with recruitment, therapy or evaluation." (p.1125)
Blinding (performance bias and detection bias) All outcomes	Low risk	Quote: "All assessments were conducted in the home by researchers who were unaware of families' allocation (p.1125)...Several strategies were used to enhance blindness of researchers: families were reminded by letter, phone and at each visit not to reveal intervention status. Researchers did not administer consumer satisfaction questionnaires; these were mailed to a different researcher for analysis. Wherever possible, staff coded observation tapes of families they had not themselves visited." (p. 1126)

Incomplete outcome data (attrition bias) self report outcomes	Unclear risk	<p>Quote: "Allocated to FNN, N=44...participants in intervention condition assessed 6 months later, N=39...allocated to waiting list, N=32...participants on wait list assessed 6 months later, N=32 (p.1126)...all families were included in the analysis according to trial allocation, irrespective of level of uptake of intervention (p.1125)...families lost to follow-up did not differ significantly from those retained (p.1127)</p> <p>E-mail contact: "We used ITT to mean analysed according to allocation, not to imputation method. The varying Ns are due to small amounts of missing data (for example: family couldn't complete every questionnaire) and not to use of a 'per protocol analysis'. Attendance at treatment had no bearing on whether they were followed up by the research team."</p> <p>Comment: the reported loss to follow up was 5/44 (11%) parents in the intervention group and no loss in the control group. For most outcomes in the intervention group (excepting the Beck Depression Inventory which had 39 parents) there was only data for 34, 37 and 38 out of 44 parents. None of the outcomes in the wait list control group had 32 parents; instead there was only data for 30, 26, 29, and 28 parents for different outcomes. This was because there were missing data on some outcomes from some families (p.1130). The authors did not impute values for missing data. The missing data was under 20% for intervention and control groups for all outcomes except for the ECBI intensity scale where there was 23% (10/44) missing data in the intervention group. No reasons were given for the attrition of 5 families from the intervention. Although the missing data was under 20% for all outcomes in both groups, except for one measure, the risk of bias is unclear</p>
Incomplete outcome data (attrition bias) Independent reports	Unclear risk	<p>Comment: As above for self-report outcomes. Each of the three observation based outcomes lost 7/44 (16%) parents for the intervention group and 3/32 (11%) for the control group. An intention-to-treat analy-</p>

		sis, using a method of imputation for missing values was not used. However the missing data was under 20% for all outcomes in both groups. The risk of bias is unclear
Selective reporting (reporting bias)	Low risk	Comment: All prospectively stated outcomes were reported.
Other bias	Low risk	No other risks apparent.

**Hutchings 2007a**

Methods	Pragmatic randomised controlled trial (random number generator, blocked randomised by area, stratified by sex and age)
Participants	Participants were 153 parents (100% mothers) from socially disadvantaged families in Wales with a child (aged 3-4 years) with conduct problems above the clinical cutoff score on the intensity or problem scales (127 or 11) of the screening instrument, the Eyberg Child Behaviour Inventory. Participants were recruited from 11 community-based Sure Start areas in north and mid-Wales. Mean age was 46.3 months. Sample comprised 58% boys, 42% girls. All parents were Caucasian Welsh. Referred families were socially disadvantaged compared with mean values for the UK
Interventions	<p><b>Intervention: Incredible Years(IY) BASIC Parenting Programme (N=104)</b></p> <p>The IY programme is a group-based, strengths-based parenting programme which uses a collaborative approach to promote positive parenting skills. The IY programme in this trial presented a structured sequence of topics during 12 weekly 2-2.5 hour sessions, with on average 7 parents per group, with 12 parents as the maximum number per group. Topics included play, increasing positive behavior through praise and incentives, limit setting and ignoring, and strategies for managing non-compliance and aggression. Sessions discussed home assignments, looked at video clips and practiced activities to try out at home. Each group was held by two trained and supervised facilitators from different backgrounds (social work, family support, health visiting and psychology)</p> <p><b>Control group:</b> Wait list control received the same treatment once the data was collected at 6 month follow-up (N=49)</p>
Outcomes	<p>All outcomes were measured at baseline and at 6 months follow-up. Longer-term assessments were conducted at 12 and 18 months but there was no control group at these later time points</p> <p><b>Outcome 1: Child conduct problems</b>, measured by:</p> <p>(i) Eyberg Child Behaviour inventory, parent-report of child behaviour, problem and intensity scales. Clinical cut scores off 11 (problem scale) and 127 (intensity scale). Higher score = more behaviour problems/disimprovement;</p> <p>(ii) Strengths and Difficulties Questionnaire, parent-report of child behaviour, clinical cut off score for total difficulties = 17. Higher score =more behaviour problems/disimprovement;</p> <p>(iii) Dyadic Parent-Child interaction Coding System, direct 'live' observation in participant's home by observers of child's negative behaviour during a 30 minute parent-child</p>

	<p>play task. No cut off score. High scores = more deviance/disimprovement. Inter-rater score above 70% deemed reliable, assessed by two observers on 20% of observation visits</p> <p><b>Outcome 2: Parental mental health</b>, measured by:</p> <p>(i) Beck Depression Inventory, parent report of own mental health, clinical cut off score of 19. Higher score = more depressed/disimprovement;</p> <p>(ii) Parenting Stress Index-short form. Parent report of own stress and quality of relationship with child. Clinical cut off score = 90. Higher score = more stress/disimprovement</p> <p><b>Outcome 3: Parenting practices</b>, measured by:</p> <p>(i) Arnold's Parenting Scale. Parent report of dysfunctional parenting practices, for example: laxness, verbosity, over-reactivity. Higher score = poorer parenting competencies/disimprovement;</p> <p>(ii) Observed positive and negative parenting - Dyadic Parent-Child Interaction Coding System. Direct 'live' observation in participant's home by observers of parent's positive and negative parenting practices during a 30-minute play task. No cut off score. Higher score on positive items = positive parenting, higher score on negative items = critical parenting practices. Inter-rater score above 91%, which was assessed by two observers on 20% of observation visits</p>	
Notes	<p>(i) <i>Treatment integrity</i>: Programme providers used the manualised Incredible Years (IY) parenting programme. Facilitators completed weekly checklists which showed that they adhered to protocols. Supervision was on a weekly basis (3 hrs per week) by a clinical psychologist who was a trained certified leader in the IY. All sessions were videotaped and viewed and assessed during weekly supervision meetings. Group facilitators received extensive training in the IY programme, all were accredited and all had run at least one previous IY programme before this trial. Attendance: 86/104 (83%) attended, with 71/104 (68%) attending 7 or more of the 12 sessions. The mean attended was 9.2 sessions (SD 3.2) (77%). From the 18 lost to follow up, 2 parents attended one session, 1 parent 4 sessions and 1 parent 6 sessions (pp.3-4). Parental responsiveness to the programme was assessed through weekly and end of programme parents' satisfaction questionnaires</p> <p>Comment: Level of programme integrity was high with evidence of adherence, programme differentiation, quality of delivery and positive participant responsiveness. Attendance was medium to good which could slightly undermine the results of the programme</p> <p>(ii) Quote: "Competing interests: JH is paid by Incredible Years for running occasional training courses in the delivery of the parent programme. . . " (p. 6)</p> <p>Comment: The Principal Investigator is paid by the Welsh Assembly Government to deliver occasional Incredible Years interventions and is not paid by Webster-Stratton, the programme developer. She did not collect any of the data (personal correspondence) and does not believe that the fact that she is involved in training groups should affect the outcomes of the trial</p>	
<b>Risk of bias</b>		
<b>Bias</b>	<b>Authors' judgement</b>	<b>Support for judgement</b>
Random sequence generation (selection bias)	Low risk	Quote: "Participants were blocked randomised by area. The unit of randomisation was the parent-index child pair. TB blindly and randomly allocated partici-



		pants on 2:1 bases, after stratification by sex and age, using a random number generator" (p.3)
Allocation concealment (selection bias)	Low risk	<p>Quote from paper: "TB blindly allocated participants...Took place after baseline assessment" (p.3)</p> <p>E-mail contact: "It was done by central allocation, researchers on the ground were unaware of allocation...TB physically drew the shuffled consent forms for each area randomly in a 2:1 ratio. TB was blind to the content of the form. This was repeated for each area."</p> <p>Comment: Unclear from paper but email confirmed allocation was concealed</p>
Blinding (performance bias and detection bias) All outcomes	Low risk	Quote: "Researchers blind to allocation carried out the interviews and observations" (p.2,3)
Incomplete outcome data (attrition bias) self report outcomes	Low risk	<p>Quote: "86/104 (83%) in the treatment group completed trial (nine formally withdrew before intervention, nine could not be contacted at follow up, from these only two went to group intervention session)...47 of 49 (96%) completed the trial (one formally withdrew before follow-up, one could not be contacted at follow-up (flow chart page 2)...We included the 20 lost participants in the intention to treat analysis (p2)."</p> <p>Reasons for dropouts was predominantly circumstantial. However, intention-to-treat analyses were performed, using method of last observation carried forward from baseline to follow up</p> <p>Comment: Incomplete data were adequately addressed.</p>
Incomplete outcome data (attrition bias) Independent reports	Low risk	<p>Comment: As above for self-report outcomes. Observations were carried out on all randomised participants as is evidenced by the ITT analysis on p.5</p> <p>Incomplete data were adequately addressed.</p>
Selective reporting (reporting bias)	Low risk	Comment: All prospectively stated outcomes were reported.

Other bias	Low risk	No other risks apparent.
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**Kling 2010**

Methods	Randomised controlled trial
Participants	Participants were 159 parents with a child (aged 3-10 years) with conduct problems above the clinical cut off point (90th percentile) on the impact or burden scale of the Strengths and Difficulties Questionnaire. Participants were self-referred and recruited through advertisements in schools and newspapers. Parents were from the greater Stockholm urban area. Mean age of child was approximately 73 months. The sample comprised 61% boys and 39% girls. 84% of mothers, 10% of fathers, and 6% of both parents were involved in data collection. The vast majority of participants were Caucasian. Participants were not socially disadvantaged compared to population norms
Interventions	<p><b>Intervention: Comet Parent Management Training, Practitioner-assisted training (PMT-P)</b> (N=58). Comet includes evidence-based behavioural parent-training components from Barkley, Webster-Stratton and Bloomquist and Schnell. Families received eleven weekly practitioner-assisted group sessions of 2.5 hours duration, with an average of 5.8 families (SD = 1.7) per group. Programme content included self directed play and positive interaction, preparations before activities, effective commands and praise, , tokens and rewards, involving school teachers, extinction of negative behaviour, behavioural contracts, structured problem-solving and relapse prevention. Sessions encompassed teaching, brief video clips depicting various child-parent interactions, discussions, role-playing and homework assignments. Each group was run by two group leaders who came from social work backgrounds and had received specific training in the Comet programme</p> <p><b>Control: Wait list control</b> (N=40). Participants received the above intervention once data was collected posttreatment</p>
Outcomes	<p>All outcomes were measured at pretreatment and immediately posttreatment. Treatment lasted 11 weeks. A longer-term assessment was conducted at a six-month follow up but there was no control group at this later time point</p> <p><b>Outcome 1: Child conduct problems</b>, measured by:</p> <ul style="list-style-type: none"> <li>(i) Eyberg Child Behaviour inventory, parent-report of child behaviour, problem and intensity scales. Clinical cut scores off 11 (problem scale) and 127 (intensity scale). Higher score = more behaviour problems/disimprovement;</li> <li>(ii) Parent Daily Report Questionnaire, parent daily record of 34 behaviours as present or absent for the previous 24 hours and the interview was repeated for 5 days each data collection period. Higher score = more behaviour problems/disimprovement;</li> <li>(iii) Social Competence Scale-Parent, parent record of child prosocial behaviours. Higher score = less behaviour problems</li> </ul> <p><b>Outcome 2: Parenting practices</b>, measured by:</p> <ul style="list-style-type: none"> <li>(i) Parenting Practices Interview, parent self report of harsh inappropriate discipline and supportive parenting. Higher scores on positive items = improved parenting and on negative items = disimproved parenting</li> </ul>

Notes	<p>(i) Treatment integrity: Programme providers followed a comprehensive manual to ensure implementation fidelity. Group facilitators filled in weekly protocol adherence checklists on programme content, number of role-plays and homework assignments performed and number of video clips shown. Group leaders reported that 76% of the programme content was covered during the sessions. Detailed checklists were completed weekly by parents. They completed on average 63% (SD=24%) of the homework assignments. Attendance: 73% attended more than 9 sessions and the mean number of sessions attended was 9.4 out of 11 (85%) sessions. Both facilitators were trained in the Comet programme and received 8 supervision sessions across the 11 weeks of the programme. Leaders were from social work and teaching backgrounds and had previous experience in working with families. Parental satisfaction with the programme was high; on a ten point scale assessing credibility of the intervention (10 = best), the average score was 8.7 (pp.534, 537)</p> <p>Comment: Level of programme integrity was quite high with evidence of adherence, exposure, programme differentiation, participant responsiveness and quality of delivery. However, adherence was somewhat compromised with only 76% of programme content covered. Similarly, parents only completed, on average, 63% of the homework assignments</p> <p>(ii) This RCT is not an independent replication as the programme was devised and evaluated by the author</p> <p>(iii) This study did not conduct a sample size calculation, and thus, there may be a greater risk of a Type 2 error</p>
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**Risk of bias**

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	<p>Quote: "families were assigned randomly to one of three conditions...Because age has been shown to affect treatment outcomes, the participants were divided into two age groups before randomisation (3-5 years and 6 to 10 years) to prevent an uneven age distribution between conditions" (p. 531)</p> <p>Email communication: "The sample was divided in two age groups and participants in each group were randomised separately. Each participant was given an identification number. A table with random numbers that were matching the identification numbers was used to assign participants to the three conditions"</p>
Allocation concealment (selection bias)	Low risk	<p>No information provided in paper.</p> <p>Email communication: "The investigator had no direct contact with potential participants before the randomisation. The person responsible for the randomisation only knew the names and identification numbers of the participants that were included in the study. No other information related to the participants was available during that process. The person knew the names of the parents"</p>

		but because no other participant information was available, there was no basis for a biased allocation. After the randomisation the investigator informed the participants through email about their allocation."
Blinding (performance bias and detection bias) All outcomes	Low risk	Quote: "Blind to the treatment condition, research assistants collected the data." (p.532)
Incomplete outcome data (attrition bias) self report outcomes	Low risk	Quote: "PMT-P (n=58)...received allocated intervention (n=56)...included in posttest after 4 months (n=53)...analysed at posttest and follow up (n=58)...Waitlist (n=40)...received allocated intervention (n=40)...included in posttest after 4 months (n=38)...Analysed at posttest (n=40) (p.533)...of the families who withdrew before posttest, these participants did not differ significantly from the remaining participants on any of the demographic measures or outcome measures at pretest (p.532) ...A multiple imputation procedure was used. This allows for an intention-to-treat analysis, because all participants in the study can be included in the analysis" (p.535) Email communication: "The reason that the two participants in the PMT-P condition did not receive the allocated intervention was that they were lacking motivation and/or practical circumstances that made participation difficult...At post-measurement, some parents simply refused to answer (for example: because they found the questions intrusive or cumbersome, or because they felt that they had not taken part in the intervention in a meaningful way). Some did not answer due to illness/death in the family and two were impossible to reach." Comment: Data from 5/58 (6%) participants in the intervention group and 2/40 (5%) from the the control group were lost to follow up. An intention to treat analysis was conducted on all allocated parents. There were no differences between attriters and non-attriters. Reasons for for the seven attriters were circumstantial, lacking in motivation, disliking the questionnaires or had not partaken in the intervention
Incomplete outcome data (attrition bias) Independent reports	Unclear risk	N/A - this study did not contain any observation-based outcomes
Selective reporting (reporting bias)	Low risk	Comment: All prospectively stated outcomes were reported.
Other bias	Low risk	No other risks apparent.

Methods	Randomised controlled trial
Participants	<p>Participants were 136 parents with a child (aged 4-8 years) with conduct problems above the 90th percentile on the intensity and number of problems subscales on the screening instrument, the Eyberg Child Behaviour Inventory. Children were subsequently interviewed with the K-SADS-PL where most received a diagnosis or sub-diagnosis of ODD or CD according to DSM-IV criteria. One criterion less than four for diagnosis, was used to identify possible subthreshold diagnosis. Participants were recruited through a number of professionals who referred to two child psychiatric outpatient clinics in the two Norwegian cities of Trondheim and Tromsø. Mean age of child was 79 months. Sample comprised 80% boys, 20% girls. All participants were Norwegian Caucasian, except one family. The socioeconomic status of the sample was not specified. Both parents from two-parent families completed measures</p>
Interventions	<p><b>Intervention: Incredible Years (IY) BASIC Parenting Programme (N=51)</b>  The IY programme is a group-based, strengths-based parenting programme which uses a collaborative approach to promote positive parenting skills. The IY programme in this trial presented a structured sequence of topics during 12-14 weekly 2 hour sessions, with 10-12 parents per group. Topics included the use of positive disciplinary strategies, effective parenting skills, strategies for coping with stress, and ways to strengthen children's social skills. Sessions discussed home assignments, looked at video clips and practiced activities to try out at home. Each group was held by two trained and supervised facilitators. Each facilitator had a bachelor or master degree in mental health related fields and had experience in clinical work. All were IY certified leaders</p> <p><b>Intervention: IY Parent training combined with IY child therapy (N=55)</b>  Parents attended the parenting programme described above. In parallel, their children met with two therapists in groups of six for 18 weekly 2 hour sessions based on the IY Dinosaur School Program. Topics included increasing child social skills, conflict resolution skills, playing and cooperation with peers, using video vignettes for discussions, role-play, rehearsals and home assignments</p> <p><b>Control group:</b> Wait list control received the same treatment once the data were collected at 6 month follow-up (N=30)</p>
Outcomes	<p>All outcomes were measured at pretreatment and immediately posttreatment. Treatment lasted 12-14 weeks. A longer term assessment was conducted one year later, but there was no control group at this later time point</p> <p><b>Outcome 1: Child conduct problems</b>, measured by:</p> <ul style="list-style-type: none"> <li>(i) Child Behavior Checklist, parent report of child conduct problems on subscales of aggression and attention problems. Clinical cut off score is 60. Higher score = more behaviour problems/disimprovement;</li> <li>(ii) Eyberg Child Behaviour inventory, parent-report of child behaviour, problem and intensity scales. Clinical cut scores of 11 (problem scale) and 127 (intensity scale). Higher score = more behaviour problems/disimprovement;</li> <li>(iii) Preschool Behavior Questionnaire (PBQ), teacher report of child aggression, hyperactivity and internalising problems. Items were scored on a 0-2 scale, and sum scores for the subscales range from 0 to 14, 0 to 8 and 0 to 10. Higher score = more behaviour problems/disimprovement;</li> <li>(iv) Child Behaviour Checklist Teacher Report Form, teacher report of child aggression, attention and internalising problems. Sum scores for these scales were from 0-50, 0-40 and 0-70, respectively. Higher score = more behaviour problems/disimprovement;</li> </ul>

<p>(v) Social Competence and Behavior Evaluation, teacher and day-care report of child's social competence and peer interactions. Higher score = less behaviour problems/improvement</p> <p><b>Outcome 2: Parental mental health</b>, measured by:</p> <p>(i) Parenting Stress Index, parent report of own stress and quality of relationship with child. Total score range 101-505, with 101 items rated on a 1-5 scale. Higher score = more stress/disimprovement</p> <p><b>Outcome 3: Parenting practices</b>, measured by:</p> <p>(i) Parent Practices Interview, parent report of own parenting practices. Three summary scores were computed for harsh discipline (14 items), inconsistent discipline (6 items) and positive parenting (15 items), all items being rated on a 1-7 scale. Higher score on positive parenting = improvement, higher score on harsh discipline and inconsistent discipline = disimprovement</p> <p><b>Outcome 4 (secondary outcome): Child internalising behaviour</b>; measured by:</p> <p>(i) Child Behavior Checklist, parent report of child internalising problems on internalising subscale (31 items, score range 0-62) Higher score = more internalising problems/disimprovement;</p> <p>(ii) Preschool Behavior Questionnaire (PBQ), teacher report of child internalising problems. Sum scores for the subscale ranged from 0 to 10. Higher score = more internalising problems/disimprovement;</p> <p>(iii) Teacher Report Form, teacher report of child internalising problems. Sum scores for this scale was from 0-70. Higher score = more internalising problems/disimprovement;</p> <p>(iv) The Child Loneliness and Social Dissatisfaction Questionnaire, interviewer asks child questions on a 3-point scale in relation to feelings of loneliness and appraisal of their peer relationships. Sum score ranged from 16-48. Higher score = more loneliness/disimprovement</p> <p><b>Outcome 5 (secondary outcome): Child academic/cognitive performance</b>; measured by:</p> <p>(i) The Wally Child Social Problem-solving detective game; clinic measurement of child problem solving ability using coding manual. Children had to generate as many answers as possible to social dilemmas (for example: "How do you react when another child has destroyed your favourite toy?") Higher positive solutions = improvement, lower agnostic solutions = improvement. Inter-rater reliability for coding responses were checked for 20% of the Wally tests and agreement was above 0.80</p>		
Notes		
<b>Risk of bias</b>		
Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Quote: "experimental randomised control between-group design"(p. 4) Email contact was not successful in obtaining more information
Allocation concealment (selection bias)	Unclear risk	Comment: Insufficient information to permit judgment

**Larsson 2008** (Continued)

Blinding (performance bias and detection bias) All outcomes	Unclear risk	Comment: Insufficient information to permit judgment
Incomplete outcome data (attrition bias) self report outcomes	Unclear risk	Quote: "51 in PT, 4 families withdrew before treatment initiation...2 dropped out of treatment, 45 completed PT treatment...30 in WLC, 2 families withdrew from the WLC...28 completed the waiting period." (p.4) Comment: the trial lost data of 6/51 (12%) parents in the PT group and 2/30 (7%) parents in the wait list control group. However for some outcomes, involving the mother report on the Parenting Stress Index and also on the Parent Practices interview there were only 43/51 (84%) parents in the PT group. The authors did not conduct an intention-to-treat analysis for missing data. The missing data was under 20% for intervention and control groups for all outcomes. There was no imbalance between groups in relation to missing data. No reasons were given for the attrition of two families from the PT intervention or why four people chose not to attend the programme Father reports did not represent the full randomised sample as many families did not have a father present. This is a valid reason
Incomplete outcome data (attrition bias) Independent reports	Unclear risk	No Ns were provided for the Wally Child Social Problem-solving detective game, a clinic measurement of child problem solving ability and so this is at unclear risk of bias. Teacher reports did not represent the full randomised sample as not all children were in school, which is a valid reason
Selective reporting (reporting bias)	Low risk	Comment: All prospectively stated outcomes were reported.
Other bias	Low risk	No other risks apparent.

**Martin 2003**

Methods	Randomised controlled trial
Participants	Participants were 45 parents with a child (aged 2-9 years) with conduct problems above the clinical cut off point of 17 on the screening instrument, the Strengths and Difficulties Questionnaire. Participants were self-referred and recruited through an e-mail advertisement sent out to all academic and general staff in the University of Queensland, Australia. Mean age of child was 66 months. The majority of the children were boys. The majority of parents involved in data collection and programme attendance were mothers although the percentage was not specified. All participants were Caucasian Australian.



	Participants were not socially disadvantaged
Interventions	<p><b>Intervention: Work-Place Triple P parenting programme</b> (N=23)</p> <p>The Work-Place Triple P is a group-based parenting programme based on behavioural and social learning principles. Families received four weekly group sessions of 2 hours duration each and then four weekly individual telephone calls of 15-30 minutes duration each. Parents were taught 17 core positive parenting and child management strategies, for example: praise, engaging activities, setting rules, logical consequences. Parents were taught to apply parenting skills to a broad range of target behaviours in both home and community settings with the target child and all relevant siblings. Active training methods included video modelling, practice, homework, feedback and goal setting</p> <p><b>Control: Wait list control</b> (N=22). Participants received the above intervention once data was collected posttreatment</p>
Outcomes	<p>All outcomes were measured at pretreatment and immediately posttreatment. Treatment lasted 8 weeks. A longer term assessment was conducted at the four-month follow up but there was no control group at this later time point</p> <p><b>Outcome 1: Child conduct problems</b>, measured by:</p> <p>(i) Eyberg Child Behaviour inventory, parent-report of child behaviour, problem and intensity scales. Clinical cut scores of 11 (problem scale) and 127 (intensity scale). Higher score = more behaviour problems/disimprovement</p> <p><b>Outcome 2: Parental mental health</b>, measured by:</p> <p>(i) Depression-Anxiety-Stress Scale, parent report on a 21-item questionnaire assessing symptoms of depression, anxiety and stress. Higher score = worse mental health/disimprovement;</p> <p>(ii) Work Stress Measure, parent report of levels of work stress, work satisfaction and work-related self-efficacy. The measure had 18 items with each item rated on an 8-point scale according to the amount of stress they provided. Higher score = more stress/disimprovement</p> <p><b>Outcome 3: Parenting practices</b>, measured by:</p> <p>(i) Parenting Scale, parent report of own negative parenting practices. 30 item scale measuring laxness, over-reactivity and verbosity. Higher score = more critical parenting practices/disimprovement;</p> <p>(ii) Problem Setting and Behavior Checklist, parent report of their capacity to perform common parenting tasks. Higher score = better parenting practices/improvement</p> <p><b>Outcome 4 (secondary outcome): Parental social support</b>, measured by:</p> <p>(i) Social Support Scale, parent report on an 11-item scale measuring perceived social support from friends and family. Items are rated on a 6-point Likert scale. Higher score = more social support/improvement</p>
Notes	<p>(i) <i>Treatment integrity</i>: Programme providers used a manualised Group Triple P programme, they filled in protocol adherence checklists and completed 100% of what was intended (p.164). Attendance: 19/23 (83%) completed the intervention although data were lost for 7/23 parents (30%) (p.165). Both facilitators were trained and accredited Triple P providers and were Masters level psychologists. Whether or not supervision was provided is not specified. Parental satisfaction with the programme was not assessed</p> <p>Comment: Level of programme integrity was quite high with evidence of adherence, exposure, programme differentiation and quality of delivery. However level of supervision or participant responsiveness was not specified</p>

	(ii) This RCT is not an independent replication as the programme was devised and evaluated by the author (iii) This study did not conduct a sample size calculation, and thus there may be a greater risk of a Type 2 error	
<i>Risk of bias</i>		
Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Quote: "eligible subjects were randomly assigned to either intervention or control" (p. 162) Email communication: "Random assignment was performed via a random number generator."
Allocation concealment (selection bias)	Low risk	No information provided in paper. Email communication: "The randomisation was not conducted by the investigator and hence they could not foresee assignment to groups."
Blinding (performance bias and detection bias) All outcomes	High risk	No information provided in paper. Email communication: "The investigators were not blinded to allocation. It is not possible to conceal assignment to condition from the first author as she was involved in delivery of program."
Incomplete outcome data (attrition bias) self report outcomes	High risk	Quote: "Twenty-three participants were assigned to the treatment condition. Nineteen completed all 8 weeks of intervention and post-treatment measures were received from 16 of the attendees. The control group was initially assigned 22 participants. Pre-test measures were received from 16 participants of the original group, and post-testing measures from 11 participants. To examine the possibility of differential attrition across conditions, participants who completed the post-assessment were compared with those who did not...No significant completer X condition interactions were found, indicating that the attriters in each group were not significantly different from non-attriters on any of the child, parent or work variables" (p.165) Email communication: "The primary reason for dropout was time competing time commitments. We are not in a position to conduct any further ITT analyses on the data." Comment: Data was lost for 7/23 (30%) participants in the intervention group and 11/22 (50%) participants in the control group. Although there were no demographic differences between attriters and non-attriters, there was a high level of attrition across both groups. The

**Martin 2003** (Continued)

		primary reason for drop outs was parents having other commitments which clashed with their attendance at the programme. An intention-to-treat analysis was not conducted
Incomplete outcome data (attrition bias) Independent reports	Unclear risk	N/A - this study did not contain any observation-based outcomes
Selective reporting (reporting bias)	Low risk	Comment: All prospectively stated outcomes were reported.
Other bias	Low risk	No other risks apparent.

**McGilloway 2009**

Methods	Pragmatic randomised controlled trial (random number generator, block randomisation by area)
Participants	Participants were 149 parents (97% mothers) from socially disadvantaged families with a child (aged 3-8 years) with conduct problems above the clinical cut off score on the intensity or problem scales (127 or 11) of the screening instrument, the Eyberg Child Behaviour Inventory. Participants were recruited through referral to community-based organisations in Dublin and eastern Ireland through health board waiting lists, local schools, community based agencies or self-referral. Age range 32-88 months; mean age 59 months. Sample comprised 62.4% boys, 37.6% girls. Sample were 95.31 Caucasian (of which 91.96% were Irish Caucasian and 3.35 were European Caucasian), 3.35% were Black African, 0.67% Indian, 0.67% Chinese. Referred families were socially disadvantaged compared with mean values for Ireland
Interventions	<p><b>Intervention: Incredible Years (IY) BASIC Parenting Programme (N=103)</b></p> <p>The IY programme is a group-based, strengths-based parenting programme which uses a collaborative approach to promote positive parenting skills. The IY programme presented a structured sequence of topics during 12-14 weekly two hour sessions, with 11-12 parents per group. Topics included play, increasing positive behavior through praise and incentives, limit setting and ignoring, and strategies for managing non-compliance and aggression. Sessions discussed home assignments, looked at video clips and practice activities to try out at home. Each group was held by two trained and supervised facilitators from different backgrounds (social work, counselling, psychology)</p> <p><b>Control group:</b> Wait list control received the same treatment once the data were collected at 6 month follow-up (N=46)</p>
Outcomes	<p>All outcomes were measured at baseline and at 6 months follow up, about 2-3 months post-treatment. A longer-term assessment was conducted at 12 months, but there was no control group at this later data collection stage</p> <p><b>Outcome 1: Child conduct problems</b>, measured by:</p> <p>(i) Eyberg Child Behaviour inventory, parent-report of child behaviour, problem and intensity scales. Clinical cut scores of 11(problem scale) and 127 (intensity scale). Higher score = more behaviour problems/disimprovement;</p>

	<p>(ii) Strengths and Difficulties Questionnaire, parent-report of child behaviour, clinical cut off score for total difficulties = 17. Higher score =more behaviour problems/disimprovement;</p> <p>(iii) Dyadic Parent-Child interaction Coding System, direct 'live' observation in participant's home by observers of child's negative behaviour during a 30 minute parent-child play task. No cut off score. High scores = more deviance/disimprovement. Inter-rater score above 70% deemed reliable, assessed by two observers on 20% of observation visits</p> <p><b>Outcome 2: Parental mental health</b>, measured by:</p> <p>(i) Beck Depression Inventory, parent report of own mental health, clinical cut off score of 19. Higher score = more depressed/disimprovement;</p> <p>(ii) Parenting Stress Index-short form. Parent report of own stress and quality of relationship with child. Clinical cut off score = 90. Higher score = more stress/disimprovement</p> <p><b>Outcome 3: Parenting practices</b>, measured by:</p> <p>(i) Observed positive and negative parenting - Dyadic Parent-Child Interaction Coding System. Direct 'live' observation in participant's home by observers of parent's positive and negative parenting practices during a 30-minute parent-child play task. No cut off score. Higher score on positive items = positive parenting, higher score on negative items = critical parenting practices. Inter-rater score above 70% deemed reliable, assessed by two observers on 20% of observation visits</p>	
Notes	<p>(i) <i>Treatment integrity</i>: Programme providers used the manualised Incredible Years (IY) parenting programme. Facilitators completed weekly checklists and an Implementation Fidelity Form which showed that they adhered to protocols as well as assessing the quality of their delivery. Supervision was on a monthly basis (eight hours per month) by a clinical psychologist who was a trained certified leader in the IY. All sessions were videotaped and viewed and assessed during weekly supervision meetings. Group facilitators also engaged in regular peer supervision amongst themselves. Group facilitators were trained in the IY programme, all were accredited either before or during the trial, all had previous experience in delivering the IY programme and had expertise in psychology or social health related fields. Attendance: the overall mean attendance was 8.3 sessions (69%), 65% attended 7+ sessions and 26% attended 3 or less sessions. Parental responsiveness to the programme was assessed through weekly and end of programme parents' satisfaction questionnaires</p> <p>Comment: Level of programme integrity was high with evidence of adherence, programme differentiation, quality of delivery and positive participant responsiveness. Attendance was medium to good which could slightly undermine the results of the programme</p>	
<b>Risk of bias</b>		
<b>Bias</b>	<b>Authors' judgement</b>	<b>Support for judgement</b>
Random sequence generation (selection bias)	Low risk	Quote: "following baseline assessment, participants were allocated on a 2:1 basis to a parent training intervention group, or a waiting list control group using a random number generator."

Allocation concealment (selection bias)	Low risk	Participant were randomised by central allocation by those not involved in assessing study (personal communication with study authors)
Blinding (performance bias and detection bias) All outcomes	Low risk	Quote: “measures were administered to participants by researchers blinded to allocation” and “Observers were trained and blind to participant treatment allocation”
Incomplete outcome data (attrition bias) self report outcomes	Low risk	<p>Quote: In intervention group, “95/103 (92%) follow up assessment achieved: 95 completed trial (4 formally withdrew before intervention, 2 could not be contacted at follow-up, 2 contact made but unable to schedule interview...In WL, 42/46 (91%) follow up assessment achieved, 42 completed trial (2 formally withdrew before intervention, 1 could not be contacted at follow up, 1 contact made but unable to schedule interview...A strict intention-to-treat (ITT) strategy was used whereby all participants were included in the analysis regardless of programme attendance”. (p. 15)</p> <p>Reasons for parents not attending sessions were based on “qualitative interviews with a subset of ‘drop out’ parents. 4 parents reported circumstantial reasons (self/family member ill, started work or study, which clashed with time of programme), 2 parents were unhappy with format of programme, 3 parents believed that confidentiality would be breached due to many parents in the group being from the same local area.” (p.7)</p> <p>Comment: Loss to follow-up balanced across intervention and control groups. Adequate for self-report outcomes</p>
Incomplete outcome data (attrition bias) Independent reports	High risk	<p>Quote: “An ITT analysis could not be used with observation outcomes as observations were only carried out for 54% of the total participant sample (80/149). This was because researchers had not completed training in observation methods in time for the first wave of participant recruitment”</p> <p>Comment: Not all of the randomised sample received the observational measure</p>

Selective reporting (reporting bias)	Low risk	Comment: All prospectively stated outcomes were reported.
Other bias	Low risk	Comment: The study appears to be free of other sources of bias

O' Neill 2011

Methods	Costs and cost effectiveness analysis of the Incredible Years parenting intervention delivered within community-based settings compared to a control group of receiving services as usual. Costs are based on the participants and intervention within an included RCT study (McGilloway 2009).
Participants	<p>Jurisdiction: Dublin and eastern Ireland, Ireland.</p> <p>Analytic perspective: A multi-agency public sector perspective, including health, social and special educational services.</p> <p>Time horizon: One year.</p> <p>Participants: 112 families out of the 149 families initially randomised in McGilloway 2009. 12 families were lost to follow up and there was incomplete economic data for a further 25 families. Participant demographics were comparable to the sample outlined in McGilloway 2009.</p> <p>Condition: Conduct problems above the clinical cut-off score on the intensity or problem scales (127 or 11) of the screening instrument, the Eyberg Child Behaviour Inventory</p>
Interventions	<p><b>Intervention: Incredible Years (IY) BASIC Parenting Programme</b> (N = 74)</p> <p>This IY parenting programme was delivered across various community-based mental health services in Ireland. The IY intervention is a behavioural group-based parenting programme which uses a collaborative approach to promote positive parenting skills, and consisted of 12-14 weekly 2-2.5 hour sessions. See more details on intervention in McGilloway 2009.</p> <p><b>Wait list control</b> (N = 38)</p> <p>Wait list controls received services as usual across health, social and educational sectors within the public sector in Ireland</p>
Outcomes	<p><b>Outcome 1: Cost of running programme per parent</b>, using weekly cost diaries filled in by group leaders detailing recurrent costs. Recurrent costs included staff costs in preparing and delivering programme, travel costs, supervision, refreshments, transport and creche facilities and managerial overheads, such as venue rental. Group leaders from all of the nine groups completed the costs diaries</p> <p><b>Outcome 2: Costs of utilisation of primary care, social care and special education services</b>, as measured by a Services Utilisation Questionnaire (SUQ) administered to parents at baseline and 6-month follow up to collect data on children's use of a wide range of health, social and special educational services (for example: GP, social worker, education psychologist, hospital visits). Costs are mean total cost per child for intervention and control conditions for services used between baseline and six month follow up. For some categories (for example GP visits), there are well-established national costs. For some of the others (for example: A&amp;E, Outpatient and Overnight stay in paediatric hospital), costs were obtained from the Casemix/HIPE unity of the Health Service Executive, the organisation charged with running the public health system in Ireland. All costs are in 2009 Irish EURO price values. Costs or effects were not discounted as all costs fell within a one year time horizon</p> <p><b>Outcome 3: Incremental cost-effectiveness ratio (ICER)</b> per unit improvement on the intensity scale of the Eyberg Child Behaviour Inventory (ECBI), comparing the cost effectiveness of the Incredible Years intervention to the wait list control receiving services as usual. An ICER point estimate with a 1000 replication bootstrap was calculated to provide a confidence interval. Sensitivity analysis examined whether cost effectiveness varied with the intensity of the</p>

	risk at baseline
Notes	

**Scott 2001a**

Methods	Randomised controlled trial (permuted block design with allocation by date of referral)
Participants	Participants were 141 parents (all mothers) with a child (aged 3-8 years) with conduct problems above the 97th percentile on the Parent Account of Child Symptoms interview. In addition, 102/141 parents had a diagnosis of Oppositional Defiant Disorder on the ICD-10. Participants were professionally referred to four Child and Adult Mental Health (CAMHS) clinics in London and West Sussex in the UK. Mean age of child was 66 months. The sample comprised 74% boys and 26% girls. 81.4% of participants were Caucasian and 18.6% were from an unspecified ethnic minority group. Participants were socially disadvantaged compared to population norms in the UK
Interventions	<p><b>Intervention: Incredible Years (IY) BASIC Parenting Programme (N=90)</b></p> <p>The IY programme is a group-based, strengths-based parenting programme which uses a collaborative approach to promote positive parenting skills. The IY programme in this trial presented a structured sequence of topics during 13-16 weekly 2 hour sessions, with on average of 6-8 parents per group. Topics included play, increasing positive behavior through praise and incentives, limit setting and ignoring, and strategies for managing non-compliance and aggression. Sessions discussed home assignments, looked at video clips and practiced activities to try out at home. Each group was held by two facilitators who came from varied professional backgrounds. Each facilitator received extensive training and supervision in the IY programme and had experience in delivering the programme</p> <p><b>Control group: Wait list control</b> received the same treatment once the data was collected posttreatment (N=51)</p>
Outcomes	<p>All outcomes were measured at baseline and at 1-3 months posttreatment</p> <p><b>Outcome 1: Child conduct problems</b>, measured by:</p> <ul style="list-style-type: none"> <li>(i) Parent Account of Child Symptoms interview (PACS), clinic-based interview uses investigator based criteria to assess the frequency and severity of antisocial behaviours such as fighting, destruction and disobedience. Inter-rater reliability was 0.84 for the conduct problems scale;</li> <li>(ii) Strengths and Difficulties Questionnaire, parent-report of child behaviour, clinical cut off score for total difficulties = 17. Higher score = more behaviour problems/disimprovement;</li> <li>(iii) Child Behaviour Checklist, parent report of child conduct problems. Clinical cut off score is 60. Higher score = more behaviour problems/disimprovement;</li> <li>(iv) Parent Defined Problems Questionnaire, parent report of three problems that they would like to see changed in their child and indicates the severity of each on a 10cm line labelled 'not a problem' at one end and 'couldn't be worse' at the other. Higher score = more behaviour problems/disimprovement;</li> <li>(v) Parent Daily Report Questionnaire, parent daily record of 36 behaviours as present or absent each day of the week. Higher score = more behaviour problems/disimprovement;</li> <li>(vi) A diagnosis of conduct disorder (oppositional defiant type) was made if ICD-10</li> </ul>



	research criteria were met at interview. Higher score = more behaviour problems/disimprovement <b>Outcome 2: Parenting practices</b> , measured by: (i) Observation of parenting at home, as used in the FAST TRACK project. An 18 minute structured play task was given to the mother and child at home and videotaped. 20 cases were randomly selected with an assessor blind to status coding the ratio of parental praise to inappropriate commands. Inter-rater score of 0.96 and 0.97 respectively. Ratio increase in positive parenting to critical parenting = improvement in parenting practices	
Notes	<i>(i) Treatment integrity:</i> Programme providers used the manualised Incredible Years(IY) parenting programme. Facilitators completed weekly checklists which showed that they adhered to protocols. Supervision was on a weekly basis by a trained certified leader in the IY. All sessions were videotaped and viewed and assessed during weekly supervision meetings. Group facilitators received extensive training in the IY programme, all were accredited and all had run at least two previous IY programme before this trial. Facilitators also received ongoing advanced training in the programme from the programme developer, Webster-Stratton. Attendance: Mean attendance of 9.1 (SD 4.2) (65%) sessions. 60/90 (67%) attended 5 or more sessions. Parental responsiveness to the programme was not assessed Comment: Level of programme integrity was high with evidence of adherence, programme differentiation, quality of delivery. Participant responsiveness was not reported in questionnaire format, although this issue was probably attended to at supervision. Attendance was medium to good which could slightly undermine the results of the programme	
<b>Risk of bias</b>		
<b>Bias</b>	<b>Authors' judgement</b>	<b>Support for judgement</b>
Random sequence generation (selection bias)	High risk	Quote: "allocation was determined by date of receipt of referral letter...Sequence was non-random (p.3)...sequential block design" (p. 5)
Allocation concealment (selection bias)	Low risk	Quote: "The sequence was kept in locked cabinet" (p.3) E-mail communication: "Allocation was totally concealed from the relevant parties, assessors, referrer, patients at time of entry to trial"
Blinding (performance bias and detection bias) All outcomes	Low risk	Quote: "Parents were blind to allocation at the initial assessment; interviews were carried out by researchers blind to the duration or sequence of blocks (p.3)...parents were directly observed...an assessor blind to their status coded using a manual" (p.2)

Incomplete outcome data (attrition bias) self report outcomes	Low risk	<p>Quote: “73 (81%) completed trial; 17 dropped out...in wait list control 37 (73%) completed trial, 14 dropped out...we analysed all allocated cases for which we had follow up data, irrespective of how much intervention was received. We also carried out an intention to treat analysis, in which we analysed data from all allocated cases, including those lost to follow up, for which we assumed there was no change since first assessment” (p.3)</p> <p>E-mail communication: “We do not have formally documented reasons in a systematic quantitative way, as you know this population is very disadvantaged and highly mobile. 30% had moved to a different address at one year follow up which made them difficult to trace; four of the control group refused; there were similar reasons for the intervention groups. The reasons for not coming to all group sessions were different, usually because it was inconvenient to come at the time the group was held.”</p> <p>Comment: 17/90 (19%) parents in the PT group and 14/51 (27%) parents in the wait list control group were lost to follow up. There was a relatively high level of attrition from the wait list control condition at 14/51; however reasons for attrition were stated as being similar for both groups with move of address and inconvenience being the primary reasons stated. An intention to treat (ITT) analysis was used to impute for missing data, using the method of last observation carried forward. The means and Sds for the ITT analysis were not reported in the paper but the author provided the review with the files stating the means and Sds for the ITT analysis. Thus missing data was addressed</p>
Incomplete outcome data (attrition bias) Independent reports	High risk	<p>Quote: “Mother and child at home were videotaped. We randomly selected 20 cases, which an assessor blind to their status coded using a manual” (p.2)... “A diagnosis of conduct disorder (CD) was made if ICD-10 research criteria were met at interview” (p. 2)</p> <p>E-mail communication: “We picked the 20</p>

		cases at random from each group because we did not have the resources to do direct observation on all cases - it is intensive and expensive" Comment: Only 20 cases were randomly selected from each group for the observation-based outcome. Thus this outcome does not represent the full randomised sample. For the clinical interview, 105/141 met diagnosis for ODD at baseline and so this outcome also does not represent the full randomised sample, although the latter is a more valid reason
Selective reporting (reporting bias)	Low risk	Comment: All prospectively stated outcomes were reported.
Other bias	Low risk	Comment: The study appears to be free of other sources of bias

**Webster-Stratton 1984**

Methods	Randomised controlled trial
Participants	Participants were 40 parents (all mothers) with a child (aged 3-8 years) with conduct problems above the clinical cut off score of 60 on the screening instrument, the Child Behaviour Checklist. In addition, the child also had to meet criteria for Oppositional Defiant Disorder in accordance with the Diagnostic and Statistical Manual of Mental Disorders. Participants were either self or professionally referred to a psychiatric and behavioural clinic in a paediatric hospital within Seattle, USA. Mean age of child was 58 months. The sample comprised 71% boys and 29% girls. Participants were 95% Caucasian. Participants were socially disadvantaged compared to population norms
Interventions	<p><b>Intervention: Incredible Years (IY) Parenting Programme (N=15)</b> The IY programme is a group-based, strengths-based parenting programme which uses a collaborative approach to promote positive parenting skills. The IY programme presented a structured sequence of topics during 9 weekly 2 hour sessions, with 8-10 parents per group. Topics included play, increasing positive behavior through praise and incentives, limit setting and ignoring, and strategies for managing non-compliance and aggression. Sessions involved 180 videotape vignettes showing parents and children engaged in both desirable and problematic interactions. The therapist led a focused discussion on the material of each vignette. Parents did not rehearse modelled skills. Each group was led by two therapists who were doctoral level psychologists and had previous experience in counselling and parent training</p> <p><b>Intervention: Individual parent training (N=12)</b> The individual treatment consisted of one-to-one sessions between the therapist, parent, and target child. In these sessions the therapist modelled "live" many of the parent training skills. Parents role-played and rehearsed the modelled skills with their child while the therapist watched through a one-way mirror and gave direct feedback to the parent</p>

	<p>via a “bug-in-the-ear.” In addition to providing general parent training concepts, the individual sessions also focused on training directly related to the target child’s specific behavior problems</p> <p><b>Wait-list control group</b> (N=13).</p> <p>The families assigned to the control condition received no treatment. Following reassessment three months after baseline, the control-group was randomly assigned to one of the two interventions</p>
Outcomes	<p>All outcomes were measured at baseline and at posttreatment, about 3 months following baseline assessment. Treatment lasted 9 weeks. A longer-term assessment was conducted at one year after treatment but there was no control group at this later data collection stage</p> <p><b>Outcome 1: Child conduct problems</b>, measured by:</p> <ul style="list-style-type: none"> <li>(i) Eyberg Child Behaviour inventory, parent-report of child behaviour on the intensity scale. Clinical cut scores off 11 (problem scale) and 127 (intensity scale). Higher score = more behaviour problems/disimprovement;</li> <li>(ii) Child Behaviour Checklist, parent report of child conduct problems. The scale has 118 items with each rated on a 0-2 point scale. Clinical cut off score is 60. Higher score = more behaviour problems/disimprovement;</li> <li>(iii) Parent Daily Report Questionnaire, parent daily record of 36 behaviours as present or absent each day of the week. Higher score on negative items = more behaviour problems/disimprovement, higher score on positive items = less behaviour problems/improvement;</li> <li>(iv) Dyadic Parent-Child interaction Coding System, direct ‘live’ observation of 30 minutes in participant’s home by observers of child’s deviant behaviour while interacting with parent (for example: sum frequency of whine, cry, physical negative, smart talk, yell, destructive) and of child non-compliance ratio. Mothers were instructed to maintain their daily routine as much as possible with the exception of not watching television or answering the telephone. No cut off score. High scores on deviant child behaviour = more deviance/disimprovement. Mean inter-rater score was 78.6%. Observers received extensive training and observation visits were assessed by two observers on 50% of observation visits</li> </ul> <p><b>Outcome 2: Parenting practices</b>, measured by:</p> <ul style="list-style-type: none"> <li>(i) Parent Daily Report Questionnaire, parent daily record of 36 behaviours as present or absent each day of the week. Parents were asked about the occurrence of spanking. Higher score = poorer parenting;</li> <li>(ii) Dyadic Parent-Child interaction Coding System, direct ‘live’ 30 minute observation in participant’s home by observers of parenting behaviour while interacting with child ‘as they would normally do’ (for example: total praise, total critical statements, total commands). No cut off score. High score on negative items = poorer parenting, high score on positive items = improved parenting practices. Mean inter-rater score was 78.6%. Observers received extensive training and observation visits were assessed by two observers on 50% of observation visits</li> </ul>
Notes	<p>(i) <i>Treatment integrity</i>: Programme providers used the newly devised, manualised Incredible Years(IY) parenting programme. Supervision was conducted by the programme developer and all sessions were videotaped and viewed and assessed during weekly supervision meetings. Group facilitators received extensive training in the IY programme and all were doctoral level psychologists who had previous experience in counselling and parent training. Attendance: 13/15 parents (87%) attended, with a mean attendance of 8.5 out of 9 sessions (SD 1.3) (94%). Parental responsiveness to the programme was</p>

	assessed through an end of programme parents' satisfaction questionnaire Comment: Level of programme integrity was high with evidence of adherence, programme differentiation, quality of delivery and positive participant responsiveness. Attendance was good and should not bias the results of the programme (ii) This RCT is not an independent replication as the programme was devised and evaluated by the author (iii) This study did not conduct a sample size calculation, and thus there may be a greater risk of a Type 2 error	
<b><i>Risk of bias</i></b>		
<b>Bias</b>	<b>Authors' judgement</b>	<b>Support for judgement</b>
Random sequence generation (selection bias)	Low risk	Unclear in paper, just says 'randomly assigned' (p.667). Email communication: "Parents ID numbers were put on a piece of paper which was folded and put in a jar. Three people observed while concealed papers were drawn out by someone and assigned randomly to treatment or control condition" Comment: Sequence generation was probably adequate
Allocation concealment (selection bias)	Low risk	Not specified in paper. Email communication: "Allocation to groups was concealed from investigators. They had no ability to control assignment to treatment conditions. Contents of folded papers in jar could not be seen by allocator. Numbers were used, not names and no one knew the families numbers." Comment: Allocation was adequately concealed
Blinding (performance bias and detection bias) All outcomes	Low risk	Quote: "Observers were blind to the hypotheses and group membership of the subjects" (p.669) Email communication: "All studies adhered to this blinded approach for all outcomes. Home observers were blind to treatment conditions or control condition."
Incomplete outcome data (attrition bias) self report outcomes	Unclear risk	Quote: "Three subjects dropped out during baseline observations prior to starting treatment, and 2 subjects dropped out after the first two treatment sessions. Thus data will be presented on the 35 subjects who completed immediate posttreatment assessments" (p.667) Email communication: "Moving to another city or illness were some of the reasons given. There was no difference in drop outs in control versus treatment conditions" Comment: Attrition was under 20% and evenly balanced across the three conditions. Data was lost for 2/15 (13%) participants in the PT condition and 2/13 (15%) for the wait list control condition. An intention-to-treat analysis was not conducted so risk of bias is unclear

**Webster-Stratton 1984** (Continued)

Incomplete outcome data (attrition bias) Independent reports	Unclear risk	Independent outcomes are as above for self-report outcomes
Selective reporting (reporting bias)	Low risk	Comment: All prospectively stated outcomes were reported.
Other bias	Low risk	No other risks apparent.

**Webster-Stratton 1988**

Methods	Randomised controlled trial
Participants	<p>Participants were 114 parents (mothers) with a child (aged 3-8 years) with conduct problems above the clinical cut off score on the screening instrument, the Eyberg Child Behaviour Inventory. Two thirds of participants were professionally referred and one third were self-referred to the University of Washington Parenting clinic in Seattle, USA. Mean age of child was 54 months. The sample comprised 69% boys and 31% girls. Participants were 95% Caucasian, 2.5% Hispanic and 2.5 African-American. Participants were from varied socioeconomic backgrounds, which are comparable to norms. Data were collected from fathers where they were involved in parenting. Thus, the sample comprised 114 mothers and 80 fathers, with both involved in data collection and attendance at programme</p>
Interventions	<p><b>Intervention: Webster-Strattons' Group discussion videotape modelling training</b> (N=28 mothers, 20 fathers). The GDVM programme focused on play skills, praise, and tangible rewards for weeks 1-5. The last half of the programme focused on teaching parents non-punitive discipline approaches and a specific set of operant techniques and problem-solving approaches. The programme utilised vignettes and discussion to facilitate learning. The programme in this trial lasted for 10-12 weekly 2 hour sessions, with groups of 10-15 parents per group. Each group was led by two therapists with extensive experience in working with families and trained and supervised in delivering the programme</p> <p><b>Intervention: Individually administered videotape modelling training</b> (N=29 mothers, 20 fathers). Parents came to the clinic weekly for 10-12 self-administered sessions. Each week a secretary provided them with a room and with 1 of the 10 videotape programs to watch. Parents were encouraged to pace themselves, to take as long as they needed to review a tape, and to review a tape a second time if necessary. On the average, weekly sessions lasted 1 hr. The IVM parents saw the same videotapes as the GDVM parents but did not receive the benefit of therapist feedback and therapist-led group discussion</p> <p><b>Intervention: Group discussion training</b> (N=28 mothers, 19 fathers). The parents came to the clinic weekly for 10-12 two hour sessions. They met in groups of 10-15 parents with a therapist who led a group discussion of the same topics covered in GDVM. The only difference between this training and GDVM training was GDVM use of videotapes to illustrate content</p> <p><b>Wait-list control group</b> (N= 29 mothers, 21 fathers). Parents received no treatment and had no contact with a therapist. As with the other three treatment conditions, parents did receive biweekly PDR telephone calls concerning</p>

	target child behaviours. The callers were warm, supportive, and reflective, but they did not offer any direct advice. After waiting 12 weeks, control subjects were assessed a second time and were then randomly assigned to one of the treatment conditions
Outcomes	<p>All outcomes were measured at baseline and at 1-2 months posttreatment. Treatment lasted 10-12 weeks</p> <p><b>Outcome 1: Child conduct problems</b>, measured by:</p> <ul style="list-style-type: none"> <li>(i) Eyberg Child Behaviour inventory, parent-report of child behaviour, problem and intensity scales. Clinical cut scores off 11 (problem scale) and 127 (intensity scale). Higher score = more behaviour problems/disimprovement;</li> <li>(ii) Child Behaviour Checklist, parent report of child conduct problems. The scale has 118 items with each rated on a 0-2 point scale. Clinical cut off score is 60. Higher score = more behaviour problems/disimprovement;</li> <li>(iii) Parent Daily Report Questionnaire, parent daily record of 36 behaviours as present or absent each day of the week. Higher score on negative items = more behaviour problems/disimprovement, higher score on positive items = less behaviour problems/improvement;</li> <li>(iv) Dyadic Parent-Child interaction Coding System, direct 'live' observation in participant's home by observers of child's deviant behaviour while interacting with parent (for example: sum frequency of whine, cry, physical negative, smart talk, yell, destructive, noncompliance). No cut off score. High scores = more deviance/disimprovement. Mean inter-rater score was 79% (range 71-89%). Observers received extensive training and observation visits were assessed by two observers on 30% of observation visits;</li> <li>(v) Behar Preschool Behaviour Questionnaire, teacher report of child conduct problems. It consists of 30 items, each rated on a 0-2 point scale. Higher score = more behaviour problems/disimprovement</li> </ul> <p><b>Outcome 2: Parental mental health</b>, measured by:</p> <ul style="list-style-type: none"> <li>(i) Parenting Stress Index. Parent report of own stress and quality of relationship with child. The PSI contains 126 items that are divided into two major domains reflecting stress in the parent-child relationship. The second domain representing child characteristics was not used in this study. Higher score = more stress/disimprovement</li> </ul> <p><b>Outcome 3: Parenting practices</b>, measured by:</p> <ul style="list-style-type: none"> <li>(i) Parent Daily Report Questionnaire. Parents were asked about the occurrence of spanking. Higher score = poorer parenting;</li> <li>(ii) Dyadic Parent-Child interaction Coding System, direct 'live' observation in participant's home by observers of parenting behaviour while interacting with child (for example: total praise, positive affect, total critical statements, total no-opportunity commands). No cut off score. High score on negative items = poorer parenting, high score on positive items = improved parenting practices. Mean inter-rater score was 79% (range 71-89%). Observers received extensive training and observation visits were assessed by two observers on 30% of observation visits</li> </ul>
Notes	<p>(i) <i>Treatment integrity</i>. Programme providers used the manualised Incredible Years(IY) parenting programme. Facilitators completed weekly checklists which showed that they adhered to protocols. Supervision was on a weekly basis by a clinical psychologist who was a trained certified leader in the IY. Facilitators took notes on group process, session duration, parents' reactions etc. All sessions were videotaped and viewed and assessed during weekly supervision meetings. Supervision also included live monitoring of the group sessions. Group facilitators received extensive training in the IY programme and were very experienced in treating conduct problems in children. Attendance: 90% of</p>



	parents attended more than half of the sessions, with a mean 10.1 sessions attended by mothers (92%) and 9.1 sessions attended by fathers (p.561). Parental responsiveness to the programme was assessed using an end-of-programme parents' satisfaction questionnaire Comment: Level of programme integrity was high with evidence of adherence, exposure, programme differentiation, quality of delivery and positive participant responsiveness. Attendance was good which should not bias the results of the programme (i) This RCT is not an independent replication as the programme was devised and evaluated by the author (iii) This study did not conduct a sample size calculation, and thus there may be a greater risk of a Type 2 error	
<b><i>Risk of bias</i></b>		
<b>Bias</b>	<b>Authors' judgement</b>	<b>Support for judgement</b>
Random sequence generation (selection bias)	Low risk	Unspecified in paper. Email communication: "Parents' ID numbers were put on a piece of paper which was folded and put into sealed, non-transparent envelopes. The envelopes were shuffled and put into container. Three people observed while envelopes were drawn out by someone and assigned randomly to treatment or control condition. Contents of folded papers in envelopes could not be seen by allocator. Numbers were used, not names and no one knew the families' numbers." Comment: Sequence generation was probably adequate.
Allocation concealment (selection bias)	Low risk	Quote: "a randomly selected sealed envelope was opened that designated each family's parent-training condition" (p.560) Email communication: "Allocation to groups was concealed from investigators - they had no ability to control assignment to treatment conditions. Contents of envelopes could not be seen by the allocator. Numbers were used not names and no one knew the families numbers." Comment: Allocation was adequately concealed.
Blinding (performance bias and detection bias) All outcomes	Low risk	Email communication: "All studies we did adhered to this blinded approach. Home observers were blind to treatment conditions or control condition."
Incomplete outcome data (attrition bias) self report outcomes	Low risk	Quote: "GDVM 27/28 mothers with 1 drop out (with fathers 20/20). Wait-list control, 27/29 mothers with 2 drop outs (with fathers 21/21 completed)" (p. 561) Email communication: "Moving to another city or a family member killed, or illness were some of the reasons given. There was no difference in drop outs in control versus treatment conditions"

**Webster-Stratton 1988** (Continued)

		Comment: Attritions were low in both groups, with 1/28 (4%) in PT and 2/29 (7%) in WLC. Reasons for attrition were given. An intention-to treat analysis was not conducted for the 3 attriters although it is not likely that the lack of an ITT analysis in this trial would overly affect the results of the trial. Father reports did not represent the full randomised sample as not all children had fathers involved in parenting, which is a valid reason
Incomplete outcome data (attrition bias) Independent reports	Low risk	Observational outcomes are as above for self-report outcomes for mother and father participants. Teacher participants did not represent the full randomised sample as not all children were in school, which is a valid reason
Selective reporting (reporting bias)	Low risk	Comment: All prospectively stated outcomes were reported.
Other bias	Low risk	No other risks apparent.

**Webster-Stratton 1997**

Methods	Randomised controlled trial
Participants	Participants were 97 parents with a child (aged 4-8 years) with conduct problems above the clinical cut off score (more than 2 SD above the mean on the number of child behaviour problems subscale) of the screening instrument, the Eyberg Child Behaviour Inventory. The child also had to meet criteria for Oppositional Defiant Disorder and Conduct Disorder in accordance with the Diagnostic and Statistical Manual of Mental Disorders (DSM-III). Half of participants were professionally referred and half were self-referred to the University of Washington Parenting clinic in Seattle, USA. Mean age of child was 69 months. The sample comprised 74% boys and 26% girls. Participants were 96% Caucasian. Participants were not socially disadvantaged and were comparable to population norms. Fathers attended the programme and participated in data collection where fathers were involved in parenting
Interventions	<p><b>Intervention: Incredible Years (IY) Parenting Programme</b> (N=26).</p> <p>The IY programme is a group-based, strengths-based parenting programme which uses a collaborative approach to promote positive parenting skills. The IY programme presented a structured sequence of topics during 22-24 weekly 2 hour sessions, with 10-12 parents per group. Topics included play, increasing positive behavior through praise and incentives, limit setting and ignoring, and strategies for managing non-compliance and aggression. Sessions discussed home assignments, looked at video clips and practice activities to try out at home. Each group was held by two trained and supervised facilitators from different backgrounds. Each facilitator had a masters or doctorate level degree in a mental health related field such as nursing, psychology, education and had experience of 5-20 years with behaviour problem children and family counselling</p> <p><b>Intervention: Child Training 'Dinosaur school'</b> (N=27).</p> <p>The children (20 boys, 7 girls) assigned to the CT condition were divided into groups</p>

	<p>of five or six who came to the clinic weekly for 22 sessions with two therapists (lasting approximately 6 months). During each 2-hr session, children watched approximately 30 min of non-continuous videotape programs (i.e. 10-12 vignettes of modelled skills per session). After each viewing of a 1- to 2-min vignette (a child with parents or peers), the therapists led a discussion of the interactions, eliciting the children's reactions, ideas, and questions about the material. Videotape scenes depicted children coping with stressful situations in a variety of ways: controlling their anger with the "turtle technique"; problem solving at home and school; making friends; coping with rejection and teasing; paying attention to teachers; finding alternatives to bothering a child sitting next to them in the classroom; and cooperating with family members, teachers, and classmates. In addition to using videotape modelling methods, the program involved fantasy play with life-size puppets (including a number of dinosaurs) who present their ongoing interpersonal problems</p> <p><b>Intervention: Combined child and parent training (N=22).</b> The families (20 mothers, 16 fathers, and 22 children) assigned to this condition came to the clinic weekly for 22-24 sessions for PT and CT. Their PT and CT training programs were identical to that described above for the other two conditions but took place separately from the other training</p> <p><b>Wait-list control group (N=22).</b> The families (22 mothers, 18 fathers, and 22 children) assigned to the control condition received no treatment and had no contact with a therapist. After waiting 8-9 months, control-group children were reassessed and families were then randomly assigned to one of the three interventions</p>
Outcomes	<p>All outcomes were measured at baseline and at 2-3 months posttreatment. Treatment lasted 6 months. A longer-term assessment was conducted at 12 months, but there was no control group at this later data collection stage</p> <p><b>Outcome 1: Child conduct problems, measured by:</b></p> <ul style="list-style-type: none"> <li>(i) Eyberg Child Behaviour inventory, parent-report of child behaviour on the intensity scale. Clinical cut scores of 11 (problem scale) and 127 (intensity scale). Higher score = more behaviour problems/disimprovement;</li> <li>(ii) Child Behaviour Checklist, parent report of child conduct problems. The scale has 118 items with each rated on a 0-2 point scale. Clinical cut off score is 60. Higher score = more behaviour problems/disimprovement;</li> <li>(iii) Parenting Stress Index - child domain. Parent report of child behaviour. The scale has 126 items with half related to the child's behaviour. Higher score = more stress/disimprovement;</li> <li>(iv) Parent Daily Report Questionnaire, parent daily record of 36 behaviours as present or absent each day of the week. Higher score on negative items = more behaviour problems/disimprovement, higher score on positive items = less behaviour problems/improvement;</li> <li>(v) Behar Preschool Behaviour Questionnaire, teacher report of child conduct problems. It consists of 30 items, each rated on a 0-2 point scale. Higher score = more behaviour problems/disimprovement;</li> <li>(vi) Dyadic Parent-Child interaction Coding System, direct 'live' 30 minute observation in participant's home by observers of child's deviant behaviour while interacting with parent (for example: sum frequency of whine, cry, physical negative, smart talk, yell, destructive, noncompliance) and of child positive affect (sum of smiles, affectionate touch and positive talk). Parents were instructed to maintain their daily routine as much as possible although no television was allowed. No cut off score. High scores on deviant</li> </ul>

	<p>child behaviour = more deviance/disimprovement. High scores on positive items = improvement. Mean inter-rater score was 79% (range 71-89%). Observers received extensive training and observation visits were assessed by two observers on 20% of observation visits;</p> <p>(vii) Peer Problem-Solving Interaction Communication-Affect Rating Coding System, clinic observation of child interactions with peers. The child was asked to visit the playroom with their best friend for 20 minutes. There was a cooperative play segment and a competitive play segment. The child's behaviour was coded according to total negative social skills (for example: disagreement, criticisms), negative conflict management (for example: hitting other child, grabbing toy, rule violations, yelling, crying) and positive conflict management (for example: explain or give reason for request, ignore friend's negative affect, compromise). No cut off score. High scores on deviant child behaviour = disimprovement. High scores on positive items = improvement. Mean inter-rater score was 79% (range 69-92%). Observers received extensive training and observation visits were assessed by two observers on 30% of observation visits</p> <p><b>Outcome 2: Parenting practices</b>, measured by:</p> <p>(i) Parent Daily Report Questionnaire. Parents were asked about the occurrence of spanking. Higher score = poorer parenting;</p> <p>(ii) Dyadic Parent-Child interaction Coding System, direct 'live' observation in participant's home by observers of parenting behaviour while interacting with child 'as they would normally do' (for example: total praise, positive affect, total critical statements, total no-opportunity commands). No cut off score. High score on negative items = poorer parenting, high score on positive items = improved parenting practices. Mean inter-rater score was 79% (range 71-89%). Observers received extensive training and observation visits were assessed by two observers on 30% of observation visits</p>	
Notes	<p>(i) <i>Treatment integrity</i>: Programme providers used the manualised Incredible Years' (IY) parenting programme. Facilitators completed weekly checklists which showed that they adhered to protocols. Supervision was on a weekly basis by a clinical psychologist who was a trained certified leader in the IY. Facilitators took notes on group process, session duration, parents' reactions etc. All sessions were videotaped and viewed and assessed during weekly supervision meetings. Supervision also included live monitoring of the group sessions. Group facilitators received extensive training in the IY programme and were very experienced in treating conduct problems in children. Attendance: 23 mothers attended 15+ sessions and 3 mothers attended 12-14 sessions. A mean 18.28 sessions (83%) was attended by mothers and fathers attended a mean 17.88 sessions (p.95). Parental responsiveness to the programme was assessed using an end-of-programme parents' satisfaction questionnaire</p> <p>Comment: Level of programme integrity was very high with evidence of adherence, exposure, programme differentiation, quality of delivery and positive participant responsiveness. Attendance was very good which should not bias the results of the programme</p> <p>(ii) This RCT is not an independent replication as the programme was devised and evaluated by the author</p> <p>(iii) This study did not conduct a sample size calculation, and thus there may be a greater risk of a Type 2 error</p>	
<b>Risk of bias</b>		
<b>Bias</b>	<b>Authors' judgement</b>	<b>Support for judgement</b>

Random sequence generation (selection bias)	Low risk	Not specified in paper. Email communication: "Parents ID numbers were put on a piece of paper which was folded and put in a jar. Three people observed while concealed papers were drawn out by someone and assigned randomly to treatment or control condition" Comment: The sequence was probably adequate
Allocation concealment (selection bias)	Low risk	Not specified in paper. Email communication: "Allocation to groups was concealed from investigators. They had no ability to control assignment to treatment conditions. Contents of folded papers in jar could not be seen by allocator. Numbers were used, not names and no one knew the families numbers." Comment: Allocation was adequately concealed
Blinding (performance bias and detection bias) All outcomes	Low risk	Quote: "Observers were not informed of the treatment conditions of the patients" (p.98) Email communication: "All studies adhered to this blinded approach for all outcomes. Home observers were blind to treatment conditions or control condition."
Incomplete outcome data (attrition bias) self report outcomes	Low risk	Comment: There were no attriters amongst the mother participants as is evidenced by the N for each outcome representing the initial randomised sample (p.96). An intention to treat analysis was not necessary. Thus there was no incomplete data here There were no attriters amongst the father participants. Fathers did not represent the full randomised sample as not all fathers were involved in parenting, which is a valid reason
Incomplete outcome data (attrition bias) Independent reports	Low risk	Observational outcomes are as above for self report outcomes. There were no attriters amongst teacher data. Teachers did not represent the full randomised sample as not all children were in school, which is a valid reason
Selective reporting (reporting bias)	Low risk	Comment: All prospectively stated outcomes were reported.
Other bias	Low risk	No other risks were apparent.

Methods	Randomised controlled trial
Participants	<p>Participants were 159 parents with a child (aged 4-8 years) with conduct problems above the clinical cut off score on the number of problems subscale of the screening instrument, the Eyberg Child Behaviour Inventory. The child also had to meet criteria for Oppositional Defiant Disorder in accordance with the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV). Two thirds of participants were professionally referred and one third were self-referred to the University of Washington Parenting clinic in Seattle, USA. Mean age of child was 71 months. The sample comprised 91% boys and 9% girls. Participants were 87% Caucasian. Participants were not socially disadvantaged compared to population norms. Fathers attended the programme and participated in data collection where fathers were involved in parenting</p>
Interventions	<p><b>Intervention: Incredible Years' (IY) Parenting Programme</b> (N=31).  The IY programme is a group-based, strengths-based parenting programme which uses a collaborative approach to promote positive parenting skills. The IY programme presented a structured sequence of topics during 22-24 weekly 2 hour sessions, with 10-12 parents per group. Topics included play, increasing positive behavior through praise and incentives, limit setting and ignoring, and strategies for managing non-compliance and aggression. Sessions discussed home assignments, looked at video clips and practice activities to try out at home. Each group was held by two trained and supervised facilitators from different backgrounds. Each facilitator had a masters or doctorate level degree in a mental health related field such as nursing, psychology, education and had experience of 5-20 years with behaviour problem children and family counselling</p> <p><b>Intervention: Child Training 'Dinosaur school'</b> (N=30).  The children assigned to the CT condition were divided into groups of six or seven who came to the clinic weekly for 18-19 sessions with two therapists. During each 2-hr session, children watched approximately 30 min of non continuous videotape programs (i.e., 10-12 vignettes of modelled skills per session). After each viewing of a 1- to 2-min vignette (a child with parents or peers), the therapists led a discussion of the interactions, eliciting the children's reactions, ideas, and questions about the material. Videotape scenes depicted children coping with stressful situations in a variety of ways: controlling their anger with the "turtle technique"; problem solving at home and school; making friends; coping with rejection and teasing; paying attention to teachers; and finding alternatives to bothering a child sitting next to them in the classroom. In addition to using videotape modelling methods, the program involved fantasy play with life-size puppets (including a number of dinosaurs) who present their ongoing interpersonal problems. Teachers and parents were asked to reinforce the targeted social skills during school or home using weekly good-behaviour charts</p> <p><b>Intervention: Combined parent training and teacher training</b> (N=24).  In addition to the PT programme described above, this condition included information on supporting children's academic and social success at school. The teachers received the teacher training where they came to the clinic for 4 full days (32 hrs) of group training sequenced throughout the school year. The teacher curriculum targets teachers' use of effective classroom management strategies for handling misbehaviors, promoting positive relationships with difficult students, and strengthening social skills in all school settings (the classroom, lunchroom, playground, and bus). In addition to the 4 days of training, the therapist who worked with the parents or children made two individual appointments with the teacher to develop an individual behavior plan for the child.</p>

	<p>These meetings were held at the school, and at least one meeting included the parents. A constant theme during this training process was to strengthen the teachers' collaborative process and positive communication with parents</p> <p><b>Intervention: Combined child training and teacher training</b> (N=23).</p> <p>In this condition, the children participated in the Dinosaur programme and the teachers received the teacher training as described above</p> <p><b>Intervention: Combined parent training, child training and teacher training</b> (N=25).</p> <p>The families assigned to this condition received concurrent parent and child training, as described above. The teachers of children in this group received the teacher training</p> <p><b>Wait-list control group</b> (N=26).</p> <p>The families assigned to the control condition received no treatment and had no contact with a therapist. After waiting 8-9 months, control-group children were reassessed and families were then offered the parent training programme</p>
Outcomes	<p>All outcomes were measured at baseline and at 1-2 months posttreatment. Treatment lasted 22-24 weeks. A longer-term assessment was conducted at a one year follow up but there was no control group at this later data collection stage</p> <p><b>Outcome 1: Child conduct problems</b>, measured by:</p> <p>(i) Eyberg Child Behaviour inventory, parent-report of child behaviour on the intensity scale. Clinical cut scores of 11(problem scale) and 127 (intensity scale). Higher score = more behaviour problems/disimprovement;</p> <p>(ii) TASB - A teacher-report measure of child's aggressive behaviour and prosocial behaviour in the classroom. Higher score on negative items = more behaviour problems/disimprovement. Higher score on positive items = improvement;</p> <p>(iii) Teacher rating scales of the PCSC, teacher report of child conduct problems and social acceptance. Higher score on conduct problems = disimprovement. Higher score on social acceptance = improvement;</p> <p>(iv) Dyadic Parent-Child interaction Coding System, direct 'live' 30 minute observation in participant's home by observers of child's deviant, non-compliant behaviour while interacting with parent. No cut off score. High scores on deviant child behaviour = more deviance/disimprovement. Mean inter-rater score was 97%. Observers had received extensive training;</p> <p>(v) C-II-Child, 30 minute observation of child and parent interaction. Observers coded percentage of (a) time child acted inappropriately and (b) total overall poor conduct. Interrater correlation for A was 0.57 and for B was 0.60. Higher score = more behaviour problems/disimprovement;</p> <p>(vi) MOOSES, classroom observation coding system used to code children's interactions with teachers and peers. This study used a summary score for total negative behavior in class (including negative, aggressive, and disruptive behaviours with teachers and total physical and verbal aggression and negative behaviours with peers in structured and unstructured situations). Interrater correlation was 0.71. Higher score = more behaviour problems/disimprovement;</p> <p>(vii) SHP, observation of child in the classroom. Observers assessed the child's poor authority acceptance (14 items, including fighting, breaking rules, harming others, refusing to accept authority and reversed items, such as friendliness, staying on task, completing assignments). Interrater reliability was .73. Higher score = more behaviour problems/disimprovement;</p> <p>(viii) DPIS, clinic observation of child playing with friend in playroom. Children were</p>

	<p>given a 15 minute warm up period and then given a 10 minute play activity in which they had to cooperate with their friend in completing the project. Observers coded the Inappropriate Play factor which consisted of 8 items (for example: reckless, trouble keeping occupied). Interrater score was .71. Higher score = more behaviour problems/disimprovement</p> <p><b>Outcome 2: Parenting practices</b>, measured by:</p> <p>(i) Parenting Practices Interview, parent self report of harsh inappropriate discipline and supportive parenting. Higher score on critical parenting = poorer parenting. Higher scores on positive items = improved parenting;</p> <p>(ii) Parent DDI, parent report of 19 negative and 19 prosocial child behaviours as present or absent during the last 24 hrs. If the behaviour occurred parents were asked how they handled the problem. The ratio of critical verbal discipline to positive responses was used. Higher score = poorer parenting;</p> <p>(iii) Dyadic Parent-Child interaction Coding System, direct 'live' observation in participant's home by observers of positive and critical parenting behaviour while interacting with child 'as they would normally do' (for example: total praise, positive affect, total critical statements, total no-opportunity commands). No cut off score. High score on negative items = poorer parenting, high score on positive items = improved parenting practices. Mean inter-rater score for positive and negative items was .98 and .96 respectively;</p> <p>(iv) CII-Parenting Style, a 30 minute observation of parenting practices, including harsh-critical and nurturing-supportive parenting practices. No cut off score. High score on negative items = poorer parenting, high score on positive items = improved parenting practices. Mean inter-rater score for positive and negative items was .54 and .67 respectively</p>	
Notes	<p>(i) <i>Treatment integrity</i>: Programme providers used the manualised Incredible Years (IY) parenting programme. Facilitators completed weekly checklists which showed that they adhered to protocols. Supervision was on a weekly basis by a clinical psychologist who was a trained certified leader in the IY. Facilitators took notes on group process, session duration, parents' reactions etc. All sessions were videotaped and viewed and assessed during weekly supervision meetings. Group facilitators received extensive training in the IY programme and were very experienced in treating conduct problems in children. Attendance: 100% of parents attended 15+ sessions, with a mean 21 sessions (91%) attended by mothers and fathers. Parental responsiveness to the programme was assessed through an end of programme parents' satisfaction questionnaire</p> <p>Comment: Level of programme integrity was very high with evidence of adherence, exposure, programme differentiation, quality of delivery and positive participant responsiveness. Attendance was very good which should not bias the results of the programme</p> <p>(ii) This RCT is not an independent replication as the programme was devised and evaluated by the author</p> <p>(iii) This study did not conduct a sample size calculation, and thus there may be a greater risk of a Type 2 error</p>	
<i>Risk of bias</i>		
Bias	Authors' judgement	Support for judgement



Random sequence generation (selection bias)	Low risk	<p>Quote: “conducted by lottery...drawing names until each condition was full” (p.107)</p> <p>Email communication: “Parents ID numbers were put on a piece of paper which was folded and put in a jar; three people observed while concealed papers were drawn out by someone and assigned randomly to treatment or control condition”</p> <p>Comment: sequence generation was adequate</p>
Allocation concealment (selection bias)	Low risk	<p>Unspecified in paper.</p> <p>Email communication: “Allocation to groups was concealed from investigators. They had no ability to control assignment to treatment conditions. Contents of folded papers in jar could not be seen by allocator. Numbers were used not names and no one knew the families numbers.”</p> <p>Comment: Allocation concealment was adequate</p>
Blinding (performance bias and detection bias) All outcomes	Low risk	<p>Quote: “Observers were blind to condition” (p.108).</p> <p>Email communication: “All studies adhered to a blinded approach for all outcomes. Home observers were blind to treatment conditions or control condition.”</p>
Incomplete outcome data (attrition bias) self report outcomes	Low risk	<p>Quote: “From the entire sample that completed baseline assessments, only four families dropped out of the project prior to beginning treatment and refused to participate in post-assessments. Because there is no post-assessment data for these families, their data could not be included in analyses of treatment effectiveness...There was no significant difference in drop-out rate by treatment condition...Missing data were handled at two levels. An individual summary score was only computed if at least 60% of items that made up the scale were present” (p.111)</p> <p>Email communication: “Regarding the drops from this study. Four families dropped after the baseline assessment, prior to random assignment--so they were never in a study condition. These families decided they did not wish to be involved in the study at all after completing baseline assessments.”</p> <p>Comment: Four parents dropped out at baseline but this appears to have occurred before randomisation and does not affect the 159 parents that were stated as being initially randomised. On a few measures, there was an exclusion of one parent which is due to the parent incompletely filling in the questionnaires. An intention to treat analysis was not conducted for this excluded data although the loss is just 3%</p> <p>Outcomes for fathers did not represent the full ran-</p>

		domised sample as not all fathers participated in data collection. Furthermore dichotomous outcomes did not represent the full randomised sample as some of the participants did not score at a sufficiently clinical level at baseline (142 on ECBI intensity scale). However these are valid reasons
Incomplete outcome data (attrition bias) Independent reports	Low risk	Comment: Same as above for self-report outcomes. Similar to self-report outcomes, the loss to exclusions was 3% for all observational outcomes and should not unduly affect the results
Selective reporting (reporting bias)	Low risk	Comment: Unclear in paper as only composite scores were reported. However individual scores obtained from study authors demonstrates that all prospectively stated outcomes were reported
Other bias	Low risk	No other risks apparent.

**Characteristics of excluded studies [ordered by study ID]**

Study	Reason for exclusion
Adesso 1981	Screening for conduct problems was descriptive only and did not involve diagnosis or child scoring above the clinical cut-off point on a validated measure of child conduct problems
Baydar 2004	Screening for conduct problems was descriptive only and did not involve diagnosis or above the clinical score on a validated measure of child conduct problems
Beelman 2003	Not screened for conduct problems, nor randomised.
Behan 2001	Intervention condition included regular child mental health services as well as the Parenting Plus parenting programme
Brotman 2008	Revised Incredible Years parenting programme involving home visits. Also sample were not screened
Bywater 2009	No long term control group beyond 6 month follow-up.
Chadwick 2001	Children had severe learning difficulties as well as conduct problems
Chamberlain 2008	Universal parenting programme so no screening for conduct problems
Chao 2006	Children have significantly delayed language problems as well as conduct problems. Also the intervention includes individual parent-professional components

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Chartier 2010	No control group.
Christensen 1980	No control group, just comparison of bibliography, group and individual parenting conditions
Coard 2007	A preventive programme so children were excluded if they had clinically significant conduct problems
Connolly 2001	Study was controlled but not randomised. Allocation to treatment group dependent on child's clinical profile at baseline. Children in waiting list were transferred to intervention condition based on presenting problems
Coughlin 2009	Screening for conduct problems was descriptive only and did not involve diagnosis or child scoring above the clinical cut-off point on a validated measure of child conduct problems
Cunningham 1995	Not just a parenting programme being evaluated as children took part in conjoint social skills programme at the same time
Daly 1985	Screening for conduct problems is descriptive only. Controlled but not randomised
Dawson-McClure 2005	Not properly controlled. Control involved another parenting intervention which does not fit our inclusion criteria
DeGarmo 2007	Some of the sample received an additional marital component in addition to parent training. Also some of the sample (i.e. girls) were not screened for conduct problems
Dionne 2009	Sample were not screened for conduct problems.
Dishion 1995	Not controlled.
Drugli 2009	Not controlled at 5-6 year follow-up.
Eichelberger 2010	Universal programme so no screening of sample for conduct problems
Eyberg 1980b	Not screened for conduct problems. Controlled but not randomised
Firestone 1980	Screening is purely descriptive. Not a group-based parenting programme as half of sessions were on an individual therapist-parent basis
Forgatch 2009	Sample is not screened for conduct problems.
Foster 2007	Costs study of stacking various Incredible Years' parent, child and teacher interventions. Data taken from non-controlled trials as well as non-controlled so not eligible for this review
Foster 2008	Universal costing of all layers of Triple P interventions, which includes costs of group-based parenting interventions but participants did not all have clinical levels of conduct problems
Gallart 2005	Unequal screening - not all participants scored above the clinical cut-off point on a measure of child conduct problems

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Griffin 2009	Not fully a group based parenting programme as there are too many individual therapist-parent sessions within the programme
Hahlweg 2010	Sample was not screened for conduct problems as it's a Triple P preventive programme
Hampel 2010	Children have physical disabilities as well as conduct problems
Hanisch 2010	Teachers participate in programme as well as parents.
Harrington 2000	No control group.
Hartung 2010	Not screened for conduct problems as a Triple P preventive programme
Hoath 2002	Sample is described as just having Attention Deficit Disorder and not as having comorbid conduct problems, Conduct Disorder. Based on the review's eligibility criteria this study is excluded
Hutchings 2002	Not a group based parenting intervention. Individual based intervention
Hutchings 2004b	A four year follow-up of an individual based intervention.
Ialongo 2001	Not a group-based parenting intervention as includes extra school-based component. Sample also not screened for conduct problems
Irvine 1999	Many of the children were above 12 years and they did not score above the clinical cut off point on a validated measure of child conduct problems
Karoly 1977	Screening was only descriptive.
Kazdin 1992	Not controlled.
Kim 2008	Sample were not screened for conduct problems.
Kjøbli 2009	Not a group based parenting intervention.
Lauth 2007	Not properly controlled. All conditions were active treatments
Lavigne 2008	Not properly controlled. All conditions were active treatments
Letarte 2010	Sample were not screened for conduct problems.
Leung 2009	Not a group-based parenting intervention. Parent-child interaction therapy involves individual sessions between therapist, parent and child
MacDonald 2005	Sample were not screened for conduct problems.
Magen 1994	Sample were not screened for conduct problems.

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McIntyre 2008	Children had developmental delays as well as conduct problems
Mihalopoulos 2007	Costs study not targeted at group-based parenting intervention but at all levels of Triple P interventions
Mullin 1994	Sample were not screened for conduct problems.
Muntz 2004	Costs study based on Hutchings 2002, which is not a group-based parenting intervention
Nicholson 1999	Not a group-based parenting intervention.
Nixon 2004	Not a group-based parenting intervention. Intervention is Parent-Child Interaction Therapy, which is an individual based intervention
Ogden 2008	Not a group-based parenting intervention. Parent Management Training Oregon has individual therapists with each family
Patterson 2002b	Children not sufficiently screened for conduct problems. Children scored just in upper 50% on Eyberg Child Behaviour Inventory, so not in clinical range. Only 39.4% of children scored in clinical range on ECBI
Pfiffner 1990	No control group but two head-to-head parenting groups.
Pitts 2001	Not all of the children reached a clinical level of conduct problems on the rating scale
Plant 2007	Conduct problems comorbid with developmental disabilities (for example: Down Syndrome)
Price 2008	No screening for level of conduct problems.
Prinz 1994	No control group.
Quinn 2007	Conduct problems comorbid with developmental disabilities.
Sanders 2000	No control, two head-to-head parenting interventions.
Sanders 2004	No control group, just two head-to-head parenting interventions
Sanders 2008	No screening for level of conduct problems.
Scott 2005	No control at follow-up period.
Scott 2010a	Parenting intervention delivered with adjunctive literacy programme
Scott 2010b	Parenting intervention delivered with adjunctive literacy programme
Sharry 2005	No control group.
Sheeber 1994	Screening not for level of conduct problems but for temperament difficulties

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Siegart 1980	Screening is descriptive only. Does not use validated instrument or diagnostic tool to screen for conduct problems
Solis Camera 2004	Screening process descriptive only.
Spaccarelli 1992	All of sample did not reach the clinical cut-off score on the ECBI, nor receive a diagnosis. Parenting programme included parent training and an adjunctive problem-solving component or therapist discussion
Stewart-Brown 2004	Twelve month follow-up of Patterson 2002 where children were not sufficiently screened for conduct problems. Children scored just in upper 50% on Eyberg Child Behaviour Inventory, so not in clinical range. Only 39.4% of children scored in clinical range on ECBI
Taylor 1998	Children were not sufficiently screened for conduct problems. 83% of children scored above the clinical range on the Eyberg Child Behaviour Inventory but our inclusion criteria stipulates that all children must have a clinical level of conduct problems
Thompson 1996	Costs study is based on children aged 2-17 years. Also study is controlled but not randomised
Thorell 2009	Control group was a non-clinical sample and was not screened for conduct problems
Tolan 2009	Multi-component intervention with parent training and literacy and other elements
Tremblay 1991	Children are involved in the intervention as well as parents
Tulloch 1997	Children in the control group were not screened for a clinical level of conduct problems
Turner 2007	Children were not screened for conduct problems.
van den Hoofdakker 2005	Intervention was parent training plus routine care versus a control group of routine care
Verduyn 2003	The intervention mainly centred around treating depression with only a minor component relating to parent skills. The study does not include any measure on child conduct problems or parenting skills
Webster-Stratton (press)	All of the sample has ADHD, with only half of participants having comorbid ADHD and ODD. Within our review we only accept ADHD studies if all of the sample are comorbid with ODD/CD and if they report separate outcomes for conduct problems and attention/hyperactivity problems. The study fulfils the latter criteria but not the former and so is not eligible for the review
Webster-Stratton 1982	Children were not screened for level of conduct problems.
Webster-Stratton 1985	No control group.
Webster-Stratton 1989a	No control group.
Webster-Stratton 1989b	No control group, just two head-to-head interventions.

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Webster-Stratton 1990	No control group.
Webster-Stratton 1994	No control group, just two head-to-head parenting programmes
Webster-Stratton 2008	Sample were screened for conduct problems but there was no outcome measure for child conduct problems
Webster-Stratton 2010	No control group at long-term follow-up.
Wiggins 2009	A considerable percentage of the sample did not reach the clinical cut off score on the Strengths and Difficulties questionnaire conduct problems subscale
Wolchik 2002	A preventive programme so children not screened for conduct problems
Zubrick 2005	Universal parenting programme, no screening for conduct problems

### Characteristics of studies awaiting assessment *[ordered by study ID]*

#### Farzadfard 2008

Methods	Controlled trial (unclear from abstract if randomised adequately)
Participants	Fifty-one mothers with high levels of stress were randomised to an experimental (N = 26) and control (N = 25) group
Interventions	Intervention: Parenting skills training. Control: wait list control.
Outcomes	Parental stress, using the Parenting Stress Index. Child conduct problems, using the Child Behaviour Checklist.
Notes	Despite concerted efforts we cannot access the full text of this published study. We do not know whether children were screened for conduct problems, the age of the children involved or the nature of the parenting skills intervention

#### Jalali 2008

Methods	Controlled study, unclear about randomisation procedures.
Participants	Twenty mothers of children diagnosed with Oppositional Defiant Disorder were randomised to an experimental and control group
Interventions	Eight week Triple P-positive parenting program. Not clear if this is a group, individual or self-administered programme
Outcomes	Outcomes: physical symptoms, anxiety, depression and malfunctioning. Not clear from abstract whether child conduct problems are measured

Notes	We could not access this published study. Unclear if study is eligible or not, need to ascertain nature of parenting programme, whether child conduct problems were measured, age of children, etc
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**Steiman 2005**

Methods	Controlled trial, unsure if randomised.
Participants	Participapnts were 147 families with children, aged 3 to 7, with early-onset conduct problems who were randomised to the Incredible Years parent training ( N = 67), Incredible Years child training program (N = 43) and a wait-list control group (N = 37)
Interventions	The Incredible Years parent training, Incredible Years child training program and a wait-list control group
Outcomes	Parent-reported or observed child behaviour Parenting stress, depressive symptoms Marital problem-solving, and marital communication Critical parenting
Notes	Full text of paper could not be accessed. Screening for conduct problems needs to be assessed

**Characteristics of ongoing studies [ordered by study ID]**

**Matthys 2005**

Trial name or title	Parent Management Training with Preschool Children at Risk for Disruptive Behavior Disorders.
Methods	Randomised controlled trial, with accompanying costs and cost-effectiveness study of the RCT
Participants	One hundred and forty children, aged four and a half years were selected for the study on the basis of high aggression scores on the Child Behavior Checklist
Interventions	The parents of half of these children were randomly assigned to the Incredible Years' BASIC and ADVANCE parenting programmes; the other children serve as 'care as usual' controls
Outcomes	Child conduct problems, using parent report measures (for example: Child Behavior Checklist, Eyberg Children's Behavior Inventory), diagnostic tool (NIMH Diagnostic Interview Schedule for Children IV) teacher reports (for example: Child Behavior Checklist - Teacher Rating Form, Parent-teacher Involvement Questionnaire), and home observation tool (Dyadic Parent-Child Interaction Coding System) Parenting skills, using Daily Discipline Interview and observations of parent-child interactions at home (Dyadic Parent-Child Interaction Coding System) Costs data: Detailed information on the costs of the intervention and on the costs generated by the conduct problems (for example: medical consumption, education) are monitored
Starting date	2005



**Matthys 2005** (Continued)

Contact information	W.Matthys@umcutrecht.nl
Notes	The nature of the screening and randomisation needs to be assessed but this trial looks like it could be eligible

**Ollendick 2009**

Trial name or title	Comparison of Two Psychosocial Therapies for Treating Children With Oppositional-Defiant Disorder
Methods	Randomised controlled trial.
Participants	Participants (154) in this study will include children with ODD and their parents. Inclusion criteria are that the child meets DSM-IV criteria for oppositional-defiant disorder. Included children are between 8-12 years old. Children will be excluded if they have a history or current diagnosis of CD, autism, pervasive developmental disorders (PDD), any psychotic disorder or have an estimated fullscale IQ below 80
Interventions	Behavioral: Parent management training (PMT) Behavioral: Collaborative problem-solving (CPS) Behavioral: waiting-list control
Outcomes	Child conduct problems, using diagnostic measures for ODD, CD and ADHD Parenting practices Parents' satisfaction with the programme
Starting date	June 2007
Contact information	tho@vt.edu
Notes	We will have to check that the PMT is a group-based programme but this trial looks like it probably will be eligible once it is published

## DATA AND ANALYSES

**Comparison 1. Parent training versus control for individual studies (child conduct problems)**

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Child conduct problems (CBCL total problems - mother report)	2		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
2 Child conduct problems (CBCL total problems - father report)	2		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
3 Child conduct problems (CBCL externalising subscale - parent report)	2		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
4 Child conduct problems (CBCL social problems subscale - parent report)	1	81	Std. Mean Difference (IV, Random, 95% CI)	0.45 [0.01, 0.89]
5 Child conduct problems (CBCL total problems - parent report)	3		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
6 Child conduct problems (CBCL aggression subscale - parent report)	2		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
7 Child conduct problems (CBCL aggression subscale - mother report)	1	73	Std. Mean Difference (IV, Random, 95% CI)	-0.64 [-1.13, -0.16]
8 Child conduct problems (CBCL aggression subscale - father report)	1	46	Std. Mean Difference (IV, Random, 95% CI)	-0.76 [-1.36, -0.15]
9 Child conduct problems (CBCL delinquent subscale - parent report)	2		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
10 Child Conduct problems (CBCL total problems - teacher report)	1	32	Std. Mean Difference (IV, Random, 95% CI)	0.16 [-0.58, 0.91]
11 Child conduct problems (CBCL externalising subscale - teacher report)	1	32	Std. Mean Difference (IV, Random, 95% CI)	0.28 [-0.47, 1.04]
12 Child conduct problems (CBCL social problems subscale - teacher report)	1	81	Std. Mean Difference (IV, Random, 95% CI)	0.48 [0.04, 0.92]
13 Child conduct problems (CBCL aggression subscale - teacher report)	1	81	Std. Mean Difference (IV, Random, 95% CI)	0.22 [-0.22, 0.65]
14 Child conduct problems (CBCL externalising subscale - independent observation)	1	81	Std. Mean Difference (IV, Random, 95% CI)	0.03 [-0.41, 0.46]
15 Child conduct problems (ECBI problem subscale - parent report)	6		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only

16	Child conduct problems (ECBI intensity subscale - parent report)	6		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
17	Child conduct problems (ECBI problem subscale - mother report)	2		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
18	Child conduct problems (ECBI problem subscale - father report)	2		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
19	Child conduct problems (ECBI intensity subscale - mother report)	4		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
20	Child conduct problems (ECBI intensity subscale - father report)	4		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
21	Child conduct problems (SDQ total deviance - parent report)	3		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
22	Child conduct problems (SDQ conduct problems subscale - parent report)	2		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
23	Child conduct problems (Social Competence Scale - parent report)	2		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
24	Child conduct problems (PDR total score - parent report)	2		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
25	Child conduct problems (PDR negative subscale - mother report)	3		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
26	Child conduct problems (PDR low rate events - mother report)	1	54	Std. Mean Difference (IV, Random, 95% CI)	-0.56 [-1.11, -0.02]
27	Child conduct problems (PDR time out - mother report)	1	54	Std. Mean Difference (IV, Random, 95% CI)	-0.75 [-1.30, -0.19]
28	Child conduct problems (PDR positive behaviour - mother report)	3		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
29	Child conduct problems (PDR no. negative in 24 hrs - mother report)	1	48	Std. Mean Difference (IV, Random, 95% CI)	-0.62 [-1.20, -0.03]
30	Child conduct problems (PDR no. positive in 24 hrs - mother report)	1	48	Std. Mean Difference (IV, Random, 95% CI)	-0.89 [-1.49, -0.29]
31	Child conduct problems (PBQ - teacher report)	2		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
32	Child conduct problems (PSI child domain - mother report)	1	48	Std. Mean Difference (IV, Random, 95% CI)	-1.11 [-1.72, -0.49]
33	Child conduct problems (PSI child domain - father report)	1	35	Std. Mean Difference (IV, Random, 95% CI)	-0.97 [-1.68, -0.26]
34	Child conduct problems (HSQ, no. of settings - parent report)	1	81	Std. Mean Difference (IV, Random, 95% CI)	-0.06 [-0.49, 0.38]

35	Child conduct problems (HSQ, mean severity - parent report)	1	81	Std. Mean Difference (IV, Random, 95% CI)	-0.13 [-0.56, 0.31]
36	Child conduct problems (Parent Defined Problems Questionnaire - parent report)	1	141	Std. Mean Difference (IV, Random, 95% CI)	-0.92 [-1.28, -0.56]
37	Child conduct problems (SSQ no. of settings - parent report)	1	81	Std. Mean Difference (IV, Random, 95% CI)	0.17 [-0.27, 0.61]
38	Child conduct problems (SSQ mean severity - teacher report)	1	81	Std. Mean Difference (IV, Random, 95% CI)	0.14 [-0.29, 0.58]
39	Child conduct problems (SSRS behaviour subscale - teacher report)	1	81	Std. Mean Difference (IV, Random, 95% CI)	0.35 [-0.09, 0.79]
40	Child conduct problems (PACS conduct problems - clinical interview)	1	141	Std. Mean Difference (IV, Random, 95% CI)	-0.89 [-1.25, -0.53]
41	Child conduct problems (DPICS observed child negative behaviour - independent observation of child interacting with parent at home)	2		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
42	Child conduct problems (DPICS child total deviance with parent - observation at home)	1	24	Std. Mean Difference (IV, Random, 95% CI)	-0.87 [-1.72, -0.03]
43	Child conduct problems (DPICS observed child total deviance with mother - observation at home)	2		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
44	Child conduct problems (DPICS child total deviance with father - observation at home)	2		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
45	Child conduct problems (DPICS child deviance and non-compliance with mother - observation at home)	1	57	Std. Mean Difference (IV, Random, 95% CI)	-0.73 [-1.27, -0.19]
46	Child conduct problems (DPICS child deviance and non compliance with father - observation at home)	1	45	Std. Mean Difference (IV, Random, 95% CI)	-0.61 [-1.21, -0.01]
47	Child conduct problems (DPICS total non-compliance with parent - observation at home)	1	24	Std. Mean Difference (IV, Random, 95% CI)	-1.06 [-1.93, -0.20]
48	Child conduct problems (DPICS child non-compliance ratio - observation at home)	1	24	Std. Mean Difference (IV, Random, 95% CI)	-0.67 [-1.50, 0.16]

49	Child conduct problems (DPICS child negative valence with mother - observation at home)	1	57	Std. Mean Difference (IV, Random, 95% CI)	-1.31 [-1.89, -0.73]
50	Child conduct problems (DPICS child negative valence with father - observation at home)	1	45	Std. Mean Difference (IV, Random, 95% CI)	-1.02 [-1.64, -0.39]
51	Child conduct problems (DPICS child positive affect with mother - observation at home)	1	48	Std. Mean Difference (IV, Random, 95% CI)	-0.52 [-1.10, 0.06]
52	Child conduct problems (DPICS child positive affect with father - observation at home)	1	35	Std. Mean Difference (IV, Random, 95% CI)	-0.68 [-1.37, 0.00]
53	Child conduct problems (C-II Child observation overall poor conduct with mother - home observation)	1	57	Std. Mean Difference (IV, Random, 95% CI)	-0.59 [-1.12, -0.05]
54	Child conduct problems (C-II Child observation per cent time inappropriate with mother - home observation)	1	57	Std. Mean Difference (IV, Random, 95% CI)	-0.87 [-1.42, -0.33]
55	Child conduct problems (C-II Child observation overall poor conduct with father - home observation)	1	46	Std. Mean Difference (IV, Random, 95% CI)	-0.33 [-0.91, 0.25]
56	Child conduct problems (C-II Child observation percent time inappropriate with father - home observation)	1	46	Std. Mean Difference (IV, Random, 95% CI)	-0.69 [-1.29, -0.10]
57	Child conduct problems (Conflict with peers - clinic observation)	1	48	Std. Mean Difference (IV, Random, 95% CI)	-0.61 [-1.19, -0.03]
58	Child conduct problems (Ratio of positive to negative interactions with peers - clinic observation)	1	48	Std. Mean Difference (IV, Random, 95% CI)	-0.17 [-0.74, 0.40]
59	Child conduct problems (DPIS child inappropriate with peers - clinic observation)	1	56	Std. Mean Difference (IV, Random, 95% CI)	-0.58 [-1.12, -0.05]
60	Child conduct problems (DPIS child positive with peers - clinic observation)	1	56	Std. Mean Difference (IV, Random, 95% CI)	0.49 [-0.04, 1.03]
61	Child conduct problems (MOOSES child negative with peers and teacher in class - classroom observation)	1	56	Std. Mean Difference (IV, Random, 95% CI)	-0.49 [-1.02, 0.04]
62	Child conduct problems (SHP child antisocial in classroom - classroom observation)	1	56	Std. Mean Difference (IV, Random, 95% CI)	-0.31 [-0.84, 0.22]

63	Child conduct problems (SHP social contact in classroom - classroom observation)	1	56	Std. Mean Difference (IV, Random, 95% CI)	-0.32 [-0.85, 0.21]
64	Child conduct problems (TASB child aggressive subscale - teacher report)	1	56	Std. Mean Difference (IV, Random, 95% CI)	-0.54 [-1.07, -6.41]
65	Child conduct problems (TASB prosocial subscale - teacher report)	1	57	Std. Mean Difference (IV, Random, 95% CI)	-0.19 [-0.71, 0.33]
66	Child conduct problems (PCSC child poor conduct - teacher report)	1	56	Std. Mean Difference (IV, Random, 95% CI)	0.20 [-0.32, 0.73]
67	Child conduct problems (PCSC child social competence scale - teacher report)	1	56	Std. Mean Difference (IV, Random, 95% CI)	-0.26 [-0.79, 0.27]
68	Child conduct problems (DSM diagnosis of Oppositional Defiant Disorder (ODD) - clinical interview)	1	81	Risk Ratio (M-H, Random, 95% CI)	1.38 [0.89, 2.13]
69	Child conduct problems (DSM diagnosis of Conduct Disorder - clinical interview)	1	81	Risk Ratio (M-H, Random, 95% CI)	1.72 [0.62, 4.82]
70	Child conduct problems (ICD-10 diagnosis of ODD - clinical interview)	1	105	Risk Ratio (M-H, Random, 95% CI)	0.55 [0.42, 0.72]
71	Child conduct problems (ECBI above 90th percentile - parent report)	2		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
72	Child conduct problems (ECBI above 142 - parent report)	1	41	Risk Ratio (M-H, Random, 95% CI)	0.95 [0.57, 1.59]
73	Child conduct problems (CBCL above 60, clinical score - parent report)	1	48	Risk Ratio (M-H, Random, 95% CI)	0.26 [0.12, 0.61]
74	Child conduct problems (PDR above 30% reduction - parent report)	1	48	Risk Ratio (M-H, Random, 95% CI)	0.11 [0.03, 0.41]
75	Child conduct problems (DPICS below 30% reduction in negative behaviour - observation in home)	2		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
76	Child conduct problems (TASB below 20% reduction in behaviour - teacher report)	1	27	Risk Ratio (M-H, Random, 95% CI)	0.36 [0.17, 0.76]
77	Child conduct problems (MOOSE - teacher report)	1	23	Risk Ratio (M-H, Random, 95% CI)	0.58 [0.30, 1.12]
78	Child conduct problems (Mother-child free play - clinic observation)	1	81	Std. Mean Difference (IV, Random, 95% CI)	0.13 [-0.31, 0.56]

79 Child conduct problems (Mother-child task - clinic observation)	1	81	Std. Mean Difference (IV, Random, 95% CI)	0.12 [-0.32, 0.55]
80 Child conduct problems (Examiner rating - clinic observation)	1	81	Std. Mean Difference (IV, Random, 95% CI)	0.20 [-0.24, 0.63]

### Comparison 2. Parent training versus control for individual studies (parental mental health)

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Parental mental health (Parenting Stress Index (PSI) total score - parent report)	4		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
2 Parental mental health (PSI total score - mother report)	2		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
3 Parental mental health (PSI - father report)	2		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
4 Parental mental health (Beck Depression Inventory - parent report)	3		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
5 Parental mental health (Depression-Anxiety-Stress Adjustment scale - parent report)	1	27	Std. Mean Difference (IV, Random, 95% CI)	-0.49 [-1.27, 0.29]
6 Parental mental health (Work Stress scale - parent report)	1	27	Std. Mean Difference (IV, Random, 95% CI)	-0.19 [-0.95, 0.58]

### Comparison 3. Parent training versus control for individual studies (parenting practices)

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Parenting practices (Parenting Practices Scale - mother report)	1	81	Std. Mean Difference (IV, Random, 95% CI)	0.10 [-0.34, 0.53]
2 Parenting practices (Parenting Competence total score - parent report)	1	65	Std. Mean Difference (IV, Random, 95% CI)	-0.40 [-0.90, 0.10]
3 Parenting practices (Parenting competency efficacy subscale - parent report)	1	81	Std. Mean Difference (IV, Random, 95% CI)	0.0 [-0.44, 0.44]
4 Parenting practices (Parenting competency satisfaction subscale - parent report)	1	81	Std. Mean Difference (IV, Random, 95% CI)	-0.17 [-0.60, 0.27]
5 Parenting practices (Parenting Scale total score - parent report)	2		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only

6 Parenting practices (Parental sense of competence scale - parent report)	1	153	Std. Mean Difference (IV, Random, 95% CI)	-0.91 [-1.26, -0.55]
7 Parenting practices (Ghent positive parental behaviour subscale - parent report)	1	46	Std. Mean Difference (IV, Random, 95% CI)	-0.49 [-1.11, 0.12]
8 Parenting practices (Ghent rule setting subscale - parent report)	1	46	Std. Mean Difference (IV, Random, 95% CI)	0.23 [-0.38, 0.83]
9 Parenting practices (Ghent disciplining subscale - parent report)	1	46	Std. Mean Difference (IV, Random, 95% CI)	-0.22 [-0.83, 0.38]
10 Parenting practices (Ghent harsh punishment subscale - parent report)	1	46	Std. Mean Difference (IV, Random, 95% CI)	-0.62 [-1.24, 0.00]
11 Parenting practices (Ghent inconsistent disciplining - parent report)	1	46	Std. Mean Difference (IV, Random, 95% CI)	-0.36 [-0.97, 0.26]
12 Parenting practices (Ghent ignoring subscale - parent report)	1	46	Std. Mean Difference (IV, Random, 95% CI)	-0.29 [-0.90, 0.32]
13 Parenting practices (Ghent maternal rewarding subscale - parent report)	1	46	Std. Mean Difference (IV, Random, 95% CI)	-0.56 [-1.17, 0.06]
14 Parenting practices (Ghent social rewarding subscale - parent report)	1	46	Std. Mean Difference (IV, Random, 95% CI)	-0.35 [-0.97, 0.26]
15 Parenting practices (Parent Daily Report spans subscale - mother report)	3		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
16 Parenting practices (PDR spans - father report)	1	41	Std. Mean Difference (IV, Random, 95% CI)	-0.68 [-1.32, -0.05]
17 Parenting Practices (Parenting practices interview - parent report)	1	98	Std. Mean Difference (IV, Random, 95% CI)	-0.71 [-1.13, -0.29]
18 Parenting practices (PPI harsh discipline subscale - mother report)	1	71	Std. Mean Difference (IV, Random, 95% CI)	-0.84 [-1.34, -0.35]
19 Parenting practices (PPI harsh discipline subscale - father report)	1	48	Std. Mean Difference (IV, Random, 95% CI)	-0.57 [-1.16, 0.02]
20 Parenting practices (PPI inconsistent discipline - mother report)	1	71	Std. Mean Difference (IV, Random, 95% CI)	-1.35 [-1.88, -0.82]
21 Parenting practices (PPI inconsistent discipline - father report)	1	48	Std. Mean Difference (IV, Random, 95% CI)	-0.55 [-1.13, 0.04]
22 Parenting practices (PPI positive/supportive parenting subscale - mother report)	2		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only



23 Parenting practices (PPI positive/supportive parenting - father report)	2		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
24 Parenting practices (PPI harsh inappropriate - mother report)	1	57	Std. Mean Difference (IV, Random, 95% CI)	-0.65 [-1.19, -0.12]
25 Parenting practices (PPI harsh inappropriate - father report)	1	45	Std. Mean Difference (IV, Random, 95% CI)	-0.29 [-0.88, 0.30]
26 Parenting practices (Problem-solving behaviour checklist - parent report)	1	27	Std. Mean Difference (IV, Random, 95% CI)	-1.11 [-1.94, -0.28]
27 Parenting practices (DDI critical verbal ratio - mother report)	1	57	Std. Mean Difference (IV, Random, 95% CI)	-0.99 [-1.54, -0.44]
28 Parenting practices (DPICS positive parenting - observation of parent at home)	2		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
29 Parenting practices (DPICS positive parenting - observation of mother at home)	1	56	Std. Mean Difference (IV, Random, 95% CI)	-0.80 [-1.35, -0.26]
30 Parenting practices (DPICS positive parenting - observation of father at home)	1	46	Std. Mean Difference (IV, Random, 95% CI)	-0.02 [-0.59, 0.56]
31 Parenting practices (DPICS total praise - observation of mother at home)	3		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
32 Parenting practices (DPICS total praise - observation of father at home)	2		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
33 Parenting practices (DPICS positive affect -observation of mother at home)	2		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
34 Parenting practices (DPICS positive affect - observation of father at home)	2		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
35 Parenting practices (DPICS critical parenting - observation of parent at home)	2		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
36 Parenting practices (DPICS total criticism - observation of mother at home)	3		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
37 Parenting practices (DPICS total criticism - observation of father at home)	2		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
38 Parenting practices (DPICS no opportunity commands - observation of mother at home)	2		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
39 Parenting practices (DPICS no opportunity commands - observation of father at home)	1	41	Std. Mean Difference (IV, Random, 95% CI)	-0.37 [-0.99, 0.24]

40	Parenting practices (DPICS commands and criticism - observation of mother at home)	1	48	Std. Mean Difference (IV, Random, 95% CI)	-0.30 [-0.88, 0.27]
41	Parenting practices (DPICS commands and criticism - observation of father at home)	1	35	Std. Mean Difference (IV, Random, 95% CI)	0.28 [-0.39, 0.95]
42	Parenting practices (DPICS total commands mother - observation of mother at home)	1	24	Std. Mean Difference (IV, Random, 95% CI)	-1.61 [-2.55, -0.66]
43	Parenting practices (DPICS direct commands ratio - observation of parent at home)	1	24	Std. Mean Difference (IV, Random, 95% CI)	-0.82 [-1.66, 0.02]
44	Parenting practices (DPICS negative valence - observation of mother at home)	1	48	Std. Mean Difference (IV, Random, 95% CI)	-0.94 [-1.54, -0.34]
45	Parenting practices (DPICS negative valence - observation of father at home)	1	35	Std. Mean Difference (IV, Random, 95% CI)	-0.61 [-1.29, 0.07]
46	Parenting practices (C-II supportive parenting - observation of mother at home)	1	56	Std. Mean Difference (IV, Random, 95% CI)	-0.38 [-0.91, 0.15]
47	Parenting practices (C-II supportive parenting - observation of father at home)	1	46	Std. Mean Difference (IV, Random, 95% CI)	-0.28 [-0.87, 0.30]
48	Parenting practices (FAST TRACK ratio of praise to inappropriate commands - observation of parent at home)	1	40	Std. Mean Difference (IV, Random, 95% CI)	-0.83 [-1.48, -0.18]
49	Parenting practices (Gardner's observation system positive strategies - observation of parent at home)	1	66	Std. Mean Difference (IV, Random, 95% CI)	-0.37 [-0.86, 0.12]
50	Parenting practices (DPICS below 30% reduction in parenting criticism - observation of mother at home)	1	48	Risk Ratio (M-H, Random, 95% CI)	0.42 [0.23, 0.80]
51	Parenting practices (CII harsh critical with mother - home observation)	1	57	Std. Mean Difference (IV, Random, 95% CI)	-0.56 [-1.09, -0.03]
52	Parenting practices (CII harsh critical with father - home observation)	1	45	Std. Mean Difference (IV, Random, 95% CI)	-0.33 [-0.92, 0.26]
53	Parenting practices (CII family need intervention with mother - home observation)	1	57	Std. Mean Difference (IV, Random, 95% CI)	-0.91 [-1.45, -0.36]
54	Parenting practices (CII family need intervention with father - home observation)	1	45	Std. Mean Difference (IV, Random, 95% CI)	-0.45 [-1.04, 0.14]
55	Parenting practices (GRMB permissivity subscale - home observation)	1	22	Std. Mean Difference (IV, Random, 95% CI)	0.0 [-0.84, 0.84]

56 Parenting practices (GRMB control adjustment subscale - home observation)	1	22	Std. Mean Difference (IV, Random, 95% CI)	-0.60 [-1.46, 0.26]
57 Parenting practices (GRMB maternal adjustment subscale - home observation)	1	22	Std. Mean Difference (IV, Random, 95% CI)	0.43 [-0.42, 1.28]
58 Parenting practices (GRMB acceptance of mother subscale - home observation)	1	22	Std. Mean Difference (IV, Random, 95% CI)	-0.42 [-1.27, 0.43]
59 Parenting practices (GRMB mother involvement subscale - home observation)	1	22	Std. Mean Difference (IV, Random, 95% CI)	-1.11 [-2.02, -0.19]
60 Parenting practices (GRMB minutes no control subscale - home observation)	1	22	Std. Mean Difference (IV, Random, 95% CI)	0.26 [-0.58, 1.10]
61 Parenting practices (GRMB mother feelings subscale - home observation)	1	22	Std. Mean Difference (IV, Random, 95% CI)	-0.56 [-1.42, 0.30]
62 Parenting practices (Mother-child free play - clinic observation)	1	81	Std. Mean Difference (IV, Random, 95% CI)	-0.02 [-0.46, 0.41]
63 Parenting practices (Mother-child task - clinic observation)	1	81	Std. Mean Difference (IV, Random, 95% CI)	0.10 [-0.33, 0.54]

#### Comparison 4. Parent training versus control for individual studies (child emotional/internalising problems)

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Child emotional problems (CBCL anxiety subscale - parent report)	1	81	Std. Mean Difference (IV, Random, 95% CI)	0.31 [-0.13, 0.75]
2 Child emotional problems (CBCL internalising subscale - mother report)	3		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
3 Child emotional problems (CBCL anxiety subscale - teacher report)	1	81	Std. Mean Difference (IV, Random, 95% CI)	0.09 [-0.35, 0.52]
4 Child emotional problems (CBCL internalising subscale - teacher report)	1	49	Std. Mean Difference (IV, Random, 95% CI)	0.38 [-0.20, 0.96]
5 Child emotional problems (CBCL-DOF internalising subscale - observation of child in classroom)	1	81	Std. Mean Difference (IV, Random, 95% CI)	-0.09 [-0.53, 0.34]
6 Child emotional problems (Child Loneliness Report Questionnaire - child report)	1	73	Std. Mean Difference (IV, Random, 95% CI)	-0.03 [-0.50, 0.44]

7 Child emotional problems (CBCL above clinical level of internalising subscale - parent report)	1	73	Odds Ratio (M-H, Random, 95% CI)	0.70 [0.26, 1.87]
8 Child emotional problems (DSM diagnosis for anxiety - clinical report)	1	81	Odds Ratio (M-H, Random, 95% CI)	0.25 [0.03, 2.34]
9 Child emotional problems (DSM diagnosis for depression - clinical report)	1	81	Odds Ratio (M-H, Random, 95% CI)	0.34 [0.03, 3.44]

#### Comparison 5. Parent training versus control for individual studies (child educational/cognitive abilities)

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Child cognitive abilities (SSRS academic subscale - teacher report)	1	81	Std. Mean Difference (IV, Random, 95% CI)	0.23 [-0.20, 0.67]
2 Child cognitive abilities (Woodcock letter subscale - psycho-educational test)	1	81	Std. Mean Difference (IV, Random, 95% CI)	-0.26 [-0.69, 0.18]
3 Child cognitive abilities (Woodcock applied problems subscale - psycho-educational test)	1	81	Std. Mean Difference (IV, Random, 95% CI)	-0.10 [-0.54, 0.34]
4 Child cognitive abilities (Woodcock dictation subscale - psycho-educational test)	1	81	Std. Mean Difference (IV, Random, 95% CI)	-0.16 [-0.60, 0.28]
5 Child cognitive abilities (Woodcock science subscale - psycho-educational test)	1	81	Std. Mean Difference (IV, Random, 95% CI)	-0.06 [-0.50, 0.37]
6 Child cognitive abilities (Woodcock social studies subscale - psycho-educational test)	1	81	Std. Mean Difference (IV, Random, 95% CI)	-0.08 [-0.51, 0.36]
7 Child cognitive abilities (Woodcock humanities subscale - psycho-educational test)	1	81	Std. Mean Difference (IV, Random, 95% CI)	0.04 [-0.40, 0.47]
8 Child cognitive abilities (Woodcock broad knowledge subscale - psycho-educational test)	1	81	Std. Mean Difference (IV, Random, 95% CI)	-0.06 [-0.49, 0.38]
9 Child cognitive abilities (Woodcock academic skills subscale - psycho-educational test)	1	81	Std. Mean Difference (IV, Random, 95% CI)	-0.24 [-0.68, 0.19]

10 Child cognitive abilities (Wally problem solving task - clinic report)	1	32	Std. Mean Difference (IV, Random, 95% CI)	0.52 [-0.22, 1.26]
11 Child cognitive abilities (Wally object acquisitions task, no of positive solutions - clinic report)	1	48	Std. Mean Difference (IV, Random, 95% CI)	-0.24 [-0.81, 0.33]
12 Child cognitive abilities (Wally object acquisitions task proportion of positive to negative solutions - clinic report)	1	48	Std. Mean Difference (IV, Random, 95% CI)	-0.19 [-0.76, 0.38]
13 Child cognitive abilities (Wally friendship task, no. of positive solutions - clinic report)	1	48	Std. Mean Difference (IV, Random, 95% CI)	-0.21 [-0.78, 0.36]
14 Child cognitive abilities (Wally friendship task, no of positive to negative solutions - clinic report)	1	48	Std. Mean Difference (IV, Random, 95% CI)	-0.16 [-0.73, 0.41]

#### Comparison 6. Parent training versus control for individual studies (parental social support)

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Parental social support (Social support scale - parent report)	1	27	Std. Mean Difference (IV, Random, 95% CI)	0.18 [-0.59, 0.95]

#### Comparison 7. Parent training versus control meta-analysis of child conduct problems: parent-report

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Meta-analysis of child conduct problems: parent report	13	1024	Std. Mean Difference (Random, 95% CI)	-0.53 [-0.72, -0.34]
2 Sensitivity analysis remove studies with quasi randomisation (Child conduct problems: parent report)	9	680	Std. Mean Difference (Random, 95% CI)	-0.62 [-0.79, -0.44]
3 Sensitivity analysis remove studies with inadequate blinding (Child conduct problems: parent report)	10	875	Std. Mean Difference (Random, 95% CI)	-0.55 [-0.76, -0.34]
4 Sensitivity analysis remove studies without an intention to treat analysis (Child conduct problems: parent report)	7	727	Std. Mean Difference (Random, 95% CI)	-0.49 [-0.74, -0.24]

5 Sensitivity analysis replace ITT of LOCF in Scott 2001 with ITT of mean values	7	727	Std. Mean Difference (Random, 95% CI)	-0.50 [-0.76, -0.24]
6 Sensitivity analysis remove studies/measures within studies with no ITT and more than 20% attrition (Child conduct problems: parent report)	11	948	Std. Mean Difference (Random, 95% CI)	-0.55 [-0.74, -0.35]
7 Sensitivity analysis remove studies without independent replication (Child conduct problems: parent report)	5	586	Std. Mean Difference (Random, 95% CI)	-0.56 [-0.74, -0.38]
8 Sensitivity analysis remove studies/measures within studies with high risk of bias (Child conduct problems: parent report)	8	653	Std. Mean Difference (Random, 95% CI)	-0.60 [-0.77, -0.43]
9 Subgroup severity of child conduct problems of child conduct problems: parent report	13	1024	Std. Mean Difference (Random, 95% CI)	-0.53 [-0.72, -0.34]
9.1 More severe conduct problems (diagnosis)	6	424	Std. Mean Difference (Random, 95% CI)	-0.56 [-0.98, -0.14]
9.2 Less severe conduct problems	7	600	Std. Mean Difference (Random, 95% CI)	-0.54 [-0.71, -0.36]
10 Subgroup trial setting of child conduct problems: parent report	13	1024	Std. Mean Difference (Random, 95% CI)	-0.53 [-0.72, -0.34]
10.1 Research settings	6	259	Std. Mean Difference (Random, 95% CI)	-0.68 [-1.10, -0.26]
10.2 Service settings	7	765	Std. Mean Difference (Random, 95% CI)	-0.48 [-0.70, -0.27]
11 Subgroup socioeconomic status of child conduct problems: parent report	13	1024	Std. Mean Difference (Random, 95% CI)	-0.53 [-0.72, -0.34]
11.1 Social disadvantage	8	740	Std. Mean Difference (Random, 95% CI)	-0.46 [-0.70, -0.22]
11.2 Socioeconomic status comparable to population norms	5	284	Std. Mean Difference (Random, 95% CI)	-0.72 [-1.00, -0.43]
12 Subgroup level of implementation fidelity of child conduct problems: parent report	13	1024	Std. Mean Difference (Random, 95% CI)	-0.53 [-0.72, -0.34]
12.1 High level of implementation fidelity	11	845	Std. Mean Difference (Random, 95% CI)	-0.58 [-0.73, -0.42]
12.2 Low level of implementation fidelity	2	179	Std. Mean Difference (Random, 95% CI)	-0.28 [-1.11, 0.56]

## Comparison 8. Parent training versus control meta-analysis of child conduct problems: independent report

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Meta-analysis of child conduct problems: independent report	9	670	Std. Mean Difference (Random, 95% CI)	-0.44 [-0.77, -0.11]
2 Sensitivity analysis remove quasi-randomised studies (Child conduct problems: independent report)	6	416	Std. Mean Difference (Random, 95% CI)	-0.57 [-0.93, -0.22]
3 Sensitivity analysis remove studies with inadequate blinding (Child conduct problems: independent report)	8	638	Std. Mean Difference (Random, 95% CI)	-0.51 [-0.85, -0.16]
4 Sensitivity analysis remove studies without an intention to treat analysis (Child conduct problems: independent report)	5	480	Std. Mean Difference (Random, 95% CI)	-0.29 [-0.65, 0.07]
5 Sensitivity analysis replace ITT of LOCF in Scott 2001 with ITT of mean values	5	480	Std. Mean Difference (Random, 95% CI)	-0.29 [-0.66, 0.07]
6 Sensitivity analysis remove studies with no ITT and more than 20% attrition (Child conduct problems: independent report)	7	558	Std. Mean Difference (Random, 95% CI)	-0.38 [-0.68, -0.07]
7 Sensitivity analysis remove studies without independent replication (Child conduct problems: independent report)	3	374	Std. Mean Difference (Random, 95% CI)	-0.72 [-1.43, -0.00]
8 Sensitivity analysis remove non-validated measures from Barkley 2000 (Negative parenting practices: independent report)	9	670	Std. Mean Difference (Random, 95% CI)	-0.44 [-0.77, -0.11]
9 Sensitivity analysis remove high risk studies (Child conduct problems: independent report)	5	336	Std. Mean Difference (Random, 95% CI)	-0.35 [-0.59, -0.11]
10 Subgroup severity of conduct problems of child conduct problems: independent report	9	670	Std. Mean Difference (Random, 95% CI)	-0.44 [-0.77, -0.11]
10.1 More severe problems at pre-treatment	5	351	Std. Mean Difference (Random, 95% CI)	-0.46 [-0.93, 0.01]
10.2 Less severe problems at pre-treatment	4	319	Std. Mean Difference (Random, 95% CI)	-0.42 [-0.96, 0.12]
11 Subgroup trial setting of child conduct problems: independent report	9	670	Std. Mean Difference (Random, 95% CI)	-0.44 [-0.77, -0.11]
11.1 Research setting	5	215	Std. Mean Difference (Random, 95% CI)	-0.42 [-0.75, -0.09]
11.2 Service setting	4	455	Std. Mean Difference (Random, 95% CI)	-0.48 [-1.09, 0.13]

12 Subgroup socioeconomic status of child conduct problems: independent report	9	670	Std. Mean Difference (Random, 95% CI)	-0.44 [-0.77, -0.11]
12.1 Social disadvantage	6	511	Std. Mean Difference (Random, 95% CI)	-0.42 [-0.91, 0.06]
12.2 Socioeconomic status comparable to population norms	3	159	Std. Mean Difference (Random, 95% CI)	-0.49 [-0.87, -0.11]
13 Subgroup level of implementation fidelity of child conduct problems: independent report	9	670	Std. Mean Difference (Random, 95% CI)	-0.44 [-0.77, -0.11]
13.1 High level of implementation fidelity	8	589	Std. Mean Difference (Random, 95% CI)	-0.53 [-0.86, -0.20]
13.2 Lower level of implementation fidelity	1	81	Std. Mean Difference (Random, 95% CI)	0.22 [-0.29, 0.73]

### Comparison 9. Parent training versus control meta-analysis of parental mental health: parent-report

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Meta-analysis of Parental mental health: parent report	8	636	Std. Mean Difference (Random, 95% CI)	-0.36 [-0.52, -0.20]
2 Sensitivity analysis remove quasi-randomised studies (Parental mental health: parent report)	5	450	Std. Mean Difference (Random, 95% CI)	-0.36 [-0.55, -0.17]
3 Sensitivity analysis remove studies with inadequate blinding (Parental mental health: parent report)	5	504	Std. Mean Difference (Random, 95% CI)	-0.36 [-0.55, -0.18]
4 Sensitivity analysis remove studies without an Intention to treat analysis (Parental mental health: parent report)	3	383	Std. Mean Difference (Random, 95% CI)	-0.36 [-0.57, -0.15]
5 Sensitivity analysis remove studies with over 20% attrition and no ITT (Parental mental health: parent report)	6	564	Std. Mean Difference (Random, 95% CI)	-0.39 [-0.56, -0.22]
6 Sensitivity analysis remove studies without independent replication (Parental mental health: parent report)	4	429	Std. Mean Difference (Random, 95% CI)	-0.39 [-0.59, -0.19]
7 Sensitivity analysis remove studies at high risk of bias (Parental mental health: parent report)	4	423	Std. Mean Difference (Random, 95% CI)	-0.36 [-0.56, -0.16]



8 Subgroup severity of conduct problems of parental mental health: parent report	8	636	Std. Mean Difference (Random, 95% CI)	-0.36 [-0.52, -0.20]
8.1 More severe problems (diagnosis of Conduct Disorder)	2	141	Std. Mean Difference (Random, 95% CI)	-0.47 [-0.81, -0.13]
8.2 Less severe diagnosis of conduct problems	6	495	Std. Mean Difference (Random, 95% CI)	-0.33 [-0.52, -0.15]
9 Subgroup trial setting of parental mental health: parent report	8	636	Std. Mean Difference (Random, 95% CI)	-0.36 [-0.52, -0.20]
9.1 Research setting	3	126	Std. Mean Difference (Random, 95% CI)	-0.28 [-0.62, 0.07]
9.2 Service setting	5	510	Std. Mean Difference (Random, 95% CI)	-0.39 [-0.57, -0.20]
10 Subgroup socioeconomic status of parental mental health: parent report	8	636	Std. Mean Difference (Random, 95% CI)	-0.36 [-0.52, -0.20]
10.1 Social disadvantage	6	555	Std. Mean Difference (Random, 95% CI)	-0.36 [-0.53, -0.18]
10.2 Socioeconomic status comparable to population norms	2	81	Std. Mean Difference (Random, 95% CI)	-0.39 [-0.81, 0.03]
11 Subgroup level of implementation fidelity of parental mental health: parent report	8	636	Std. Mean Difference (Random, 95% CI)	-0.36 [-0.52, -0.20]
11.1 High level of implementation fidelity	7	555	Std. Mean Difference (Random, 95% CI)	-0.36 [-0.54, -0.19]
11.2 Lower level of implementation fidelity	1	81	Std. Mean Difference (Random, 95% CI)	-0.37 [-0.81, 0.07]

#### Comparison 10. Parent training versus control meta-analysis of positive parenting practices: parent-report

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Meta-analysis of positive parenting practices: parent report	7	429	Std. Mean Difference (Random, 95% CI)	-0.53 [-0.90, -0.16]
2 Sensitivity analysis remove quasi-randomised studies (Positive parenting practices: parent report)	4	242	Std. Mean Difference (Random, 95% CI)	-0.52 [-0.91, -0.13]
3 Sensitivity analysis remove studies with inadequate blinding (Positive parenting practices: parent report)	4	296	Std. Mean Difference (Random, 95% CI)	-0.30 [-0.65, 0.04]
4 Sensitivity analysis remove studies without an intention to treat analysis (Positive parenting practices: parent report)	2	179	Std. Mean Difference (Random, 95% CI)	-0.37 [-1.04, 0.31]

5 Sensitivity analysis remove studies with over 20% loss and no ITT (Positive parenting practices: parent report)	5	356	Std. Mean Difference (Random, 95% CI)	-0.50 [-0.95, -0.04]
6 Sensitivity analysis remove studies without independent replication (Positive parenting practices: parent report)	2	125	Std. Mean Difference (Random, 95% CI)	-0.88 [-1.84, 0.08]
7 Sensitivity analysis remove studies at high risk of bias (Positive parenting practices: parent report)	3	215	Std. Mean Difference (Random, 95% CI)	-0.41 [-0.80, -0.03]
8 Subgroup severity of conduct problems of positive parenting practices: parent report	7	429	Std. Mean Difference (Random, 95% CI)	-0.53 [-0.90, -0.16]
8.1 More severe conduct problems	3	193	Std. Mean Difference (Random, 95% CI)	-0.46 [-1.30, 0.37]
8.2 Less severe conduct problems	4	236	Std. Mean Difference (Random, 95% CI)	-0.58 [-0.87, -0.28]
9 Subgroup trial setting of positive parenting practices: parent report	7	429	Std. Mean Difference (Random, 95% CI)	-0.53 [-0.90, -0.16]
9.1 Research setting	3	125	Std. Mean Difference (Random, 95% CI)	-0.41 [-0.98, 0.16]
9.2 Service setting	4	304	Std. Mean Difference (Random, 95% CI)	-0.61 [-1.13, -0.08]
10 Subgroup level of socioeconomic status of positive parenting practices: parent report	7	429	Std. Mean Difference (Random, 95% CI)	-0.53 [-0.90, -0.16]
10.1 Social disadvantage	4	252	Std. Mean Difference (Random, 95% CI)	-0.50 [-1.06, 0.06]
10.2 Socioeconomic status comparable to population norms	3	177	Std. Mean Difference (Random, 95% CI)	-0.57 [-1.14, -0.01]
11 Subgroup level of implementation fidelity of positive parenting practices: parent report	7	429	Std. Mean Difference (Random, 95% CI)	-0.53 [-0.90, -0.16]
11.1 High level of implementation fidelity	5	250	Std. Mean Difference (Random, 95% CI)	-0.61 [-1.11, -0.11]
11.2 Lower level of implementation fidelity	2	179	Std. Mean Difference (Random, 95% CI)	-0.37 [-1.04, 0.31]

# **Comparison 11. Parent training versus control meta-analysis of positive parenting practices: independent report**

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Meta-analysis of positive parenting practices: independent report	9	524	Std. Mean Difference (Random, 95% CI)	-0.47 [-0.65, -0.29]
2 Sensitivity analysis remove quasi-randomised studies (Positive parenting practices: independent report)	7	462	Std. Mean Difference (Random, 95% CI)	-0.44 [-0.63, -0.25]
3 Sensitivity analysis remove studies with inadequate blinding (Positive parenting practices:independent report)	8	502	Std. Mean Difference (Random, 95% CI)	-0.47 [-0.66, -0.29]
4 Sensitivity analysis remove studies without an intention to treat analysis (Positive parenting practices: independent report)	3	247	Std. Mean Difference (Random, 95% CI)	-0.48 [-0.75, -0.21]
5 Sensitivity analysis remove studies with over 20% attrition and no ITT (Positive parenting practices: independent report)	6	382	Std. Mean Difference (Random, 95% CI)	-0.45 [-0.67, -0.24]
6 Sensitivity analysis remove studies without independent replication (Positive parenting practices: independent report)	4	339	Std. Mean Difference (Random, 95% CI)	-0.48 [-0.71, -0.25]
7 Sensitivity analysis remove studies with high risk of bias (Positive parenting practices: independent report)	6	382	Std. Mean Difference (Random, 95% CI)	-0.45 [-0.67, -0.24]
8 Subgroup severity of conduct problems of positive parenting practices: independent report	9	524	Std. Mean Difference (Random, 95% CI)	-0.47 [-0.65, -0.29]
8.1 More severe conduct problems	4	158	Std. Mean Difference (Random, 95% CI)	-0.66 [-0.98, -0.33]
8.2 Less severe conduct problems	5	366	Std. Mean Difference (Random, 95% CI)	-0.39 [-0.61, -0.17]
9 Subgroup trial setting of positive parenting practices: independent report	9	524	Std. Mean Difference (Random, 95% CI)	-0.47 [-0.65, -0.29]
9.1 Research setting	5	185	Std. Mean Difference (Random, 95% CI)	-0.46 [-0.76, -0.17]
9.2 Service setting	4	339	Std. Mean Difference (Random, 95% CI)	-0.48 [-0.71, -0.25]
10 Subgroup socioeconomic status of positive parenting practices: independent report	9	524	Std. Mean Difference (Random, 95% CI)	-0.47 [-0.65, -0.29]
10.1 Social disadvantage	6	385	Std. Mean Difference (Random, 95% CI)	-0.51 [-0.73, -0.30]
10.2 Socioeconomic status comparable to population norms	3	139	Std. Mean Difference (Random, 95% CI)	-0.37 [-0.71, -0.03]

## Comparison 12. Parent training versus control meta-analysis of negative parenting practices: parent-report

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Meta-analysis of negative parenting practices: parent report	9	525	Std. Mean Difference (Random, 95% CI)	-0.77 [-0.96, -0.59]
2 Sensitivity analysis remove quasi-randomised studies (Negative parenting practices: parent report)	7	419	Std. Mean Difference (Random, 95% CI)	-0.80 [-1.00, -0.59]
3 Sensitivity analysis remove studies with inadequate blinding (Negative parenting practices: parent report)	6	392	Std. Mean Difference (Random, 95% CI)	-0.79 [-1.01, -0.58]
4 Sensitivity analysis remove studies without an intention to treat analysis (Negative parenting practices: parent report)	3	253	Std. Mean Difference (Random, 95% CI)	-0.80 [-1.07, -0.53]
5 Sensitivity analysis remove studies with over 20% attrition and no ITT (Negative parenting practices: parent report)	7	452	Std. Mean Difference (Random, 95% CI)	-0.80 [1.00, -0.60]
6 Sensitivity analysis remove studies without independent replication (Negative parenting practices: parent report)	3	280	Std. Mean Difference (Random, 95% CI)	-0.82 [-1.08, -0.56]
7 Sensitivity analysis remove studies with high risk of bias (Negative parenting practices: parent report)	6	392	Std. Mean Difference (Random, 95% CI)	-0.79 [-1.01, -0.58]
8 Subgroup severity of conduct problems of negative parenting practices: parent report	9	525	Std. Mean Difference (Random, 95% CI)	-0.77 [-0.96, -0.59]
8.1 More severe conduct problems	4	184	Std. Mean Difference (Random, 95% CI)	-0.80 [-1.10, -0.50]
8.2 Less severe conduct problems	5	341	Std. Mean Difference (Random, 95% CI)	-0.76 [-0.99, -0.53]
9 Subgroup trial setting of negative parenting practices: parent report	9	525	Std. Mean Difference (Random, 95% CI)	-0.77 [-0.96, -0.59]
9.1 Research setting	6	245	Std. Mean Difference (Random, 95% CI)	-0.72 [-0.99, -0.46]
9.2 Service setting	3	280	Std. Mean Difference (Random, 95% CI)	-0.82 [-1.08, -0.56]
10 Subgroup socioeconomic status of negative parenting practices: parent report	9	525	Std. Mean Difference (Random, 95% CI)	-0.77 [-0.96, -0.59]
10.1 Social disadvantage	5	350	Std. Mean Difference (Random, 95% CI)	-0.81 [-1.04, -0.58]

10.2 Socioeconomic status comparable to population norms	4	175	Std. Mean Difference (Random, 95% CI)	-0.70 [-1.01, -0.40]
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### Comparison 13. Parent training versus control meta-analysis of negative parenting practices: independent report

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Meta-analysis of negative parenting practices: independent report	8	502	Std. Mean Difference (Random, 95% CI)	-0.42 [-0.67, -0.16]
2 Sensitivity analysis remove quasi-randomised studies (Negative parenting practices: independent report)	6	399	Std. Mean Difference (Random, 95% CI)	-0.53 [-0.74, -0.32]
3 Sensitivity analysis remove studies with inadequate blinding (Negative parenting practices: independent report)	7	480	Std. Mean Difference (Random, 95% CI)	-0.46 [-0.72, -0.20]
4 Sensitivity analysis remove studies without an intention to treat analysis (Negative parenting practices: independent report)	4	328	Std. Mean Difference (Random, 95% CI)	-0.27 [-0.50, -0.05]
5 Sensitivity analysis remove studies with over 20% attrition and no ITT (Negative parenting practices: independent report)	6	400	Std. Mean Difference (Random, 95% CI)	-0.40 [-0.67, -0.13]
6 Sensitivity analysis remove studies without independent replication (Negative parenting practices: independent report)	2	233	Std. Mean Difference (Random, 95% CI)	-0.52 [-0.93, -0.12]
7 Sensitivity analysis remove non-validated studies (Negative parenting practices: independent report)	7	421	Std. Mean Difference (Random, 95% CI)	-0.50 [-0.73, -0.26]
8 Sensitivity analysis remove studies at high risk of bias (Negative parenting practices: independent report)	5	319	Std. Mean Difference (Random, 95% CI)	-0.48 [-0.71, -0.24]
9 Subgroup severity of conduct problems of negative parenting practices: independent report	8	502	Std. Mean Difference (Random, 95% CI)	-0.42 [-0.67, -0.16]
9.1 More severe conduct problems	4	199	Std. Mean Difference (Random, 95% CI)	-0.43 [-0.91, 0.04]
9.2 Less severe conduct problems	4	303	Std. Mean Difference (Random, 95% CI)	-0.44 [-0.74, -0.15]

10 Subgroup trial setting of negative parenting practices: independent report	8	502	Std. Mean Difference (Random, 95% CI)	-0.42 [-0.67, -0.16]
10.1 Research setting	5	188	Std. Mean Difference (Random, 95% CI)	-0.49 [-0.84, -0.14]
10.2 Service setting	3	314	Std. Mean Difference (Random, 95% CI)	-0.35 [-0.76, 0.07]
11 Subgroup socioeconomic status of negative parenting practices: independent report	8	502	Std. Mean Difference (Random, 95% CI)	-0.42 [-0.67, -0.16]
11.1 Social disadvantage	5	360	Std. Mean Difference (Random, 95% CI)	-0.40 [-0.81, 0.00]
11.2 Socioeconomic status comparable to population norms	3	142	Std. Mean Difference (Random, 95% CI)	-0.48 [-0.82, -0.14]
12 Subgroup level of implementation fidelity in negative parenting practices: independent report	8	502	Std. Mean Difference (Random, 95% CI)	-0.42 [-0.67, -0.16]
12.1 High level of implementation fidelity	7	421	Std. Mean Difference (Random, 95% CI)	-0.50 [-0.73, -0.26]
12.2 Lower level of implementation fidelity	1	81	Std. Mean Difference (Random, 95% CI)	0.04 [-0.40, 0.48]

#### Comparison 14. Parent training versus control meta-analysis of child emotional problems: parent-report

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Meta-analysis of child emotional problems: parent report	3	190	Std. Mean Difference (Random, 95% CI)	0.16 [-0.18, 0.50]
2 Sensitivity analysis remove studies with inadequate blinding (Child emotional problems: parent report)	1	81	Std. Mean Difference (Random, 95% CI)	0.31 [-0.13, 0.75]
3 Sensitivity analysis remove studies without an intention to treat analysis (Child emotional problems: parent report)	1	81	Std. Mean Difference (Random, 95% CI)	0.31 [-0.13, 0.75]
4 Sensitivity analysis remove studies with over 20% attrition and no ITT (Child emotional problems: parent report)	2	141	Std. Mean Difference (Random, 95% CI)	0.07 [-0.50, 0.63]
5 Sensitivity analysis remove studies without independent replication (Child emotional problems: parent report)	1	60	Std. Mean Difference (Random, 95% CI)	-0.27 [-0.90, 0.36]
6 Subgroup severity of conduct problems of child emotional problems: parent report	3	190	Std. Mean Difference (Random, 95% CI)	0.16 [-0.18, 0.50]
6.1 More severe conduct problems	2	141	Std. Mean Difference (Random, 95% CI)	0.07 [-0.50, 0.63]

6.2 Less severe conduct problems	1	49	Std. Mean Difference (Random, 95% CI)	0.3 [-0.27, 0.87]
7 Subgroup trial setting of child emotional problems: parent report	3	190	Std. Mean Difference (Random, 95% CI)	0.16 [-0.18, 0.50]
7.1 Research setting	1	49	Std. Mean Difference (Random, 95% CI)	0.3 [-0.27, 0.87]
7.2 Service setting	2	141	Std. Mean Difference (Random, 95% CI)	0.07 [-0.50, 0.63]
8 Subgroup implementation fidelity of child emotional problems: parent report	3	190	Std. Mean Difference (Random, 95% CI)	0.16 [-0.18, 0.50]
8.1 High level of implementation fidelity	2	109	Std. Mean Difference (Random, 95% CI)	0.03 [-0.53, 0.59]
8.2 Lower levels of implementation fidelity	1	81	Std. Mean Difference (Random, 95% CI)	0.31 [-0.13, 0.75]

#### Comparison 15. Parent training versus control meta-analysis of child emotional problems: independent report

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Meta-analysis of child emotional problems: independent report	2	130	Std. Mean Difference (Random, 95% CI)	0.08 [-0.83, 0.98]
2 Sensitivity analysis remove studies with inadequate blinding (Child emotional problems: independent report)	1	81	Std. Mean Difference (Random, 95% CI)	-0.62 [-1.97, 0.73]
3 Sensitivity analysis remove studies without an intention to treat analysis (Child emotional problems: independent report)	1	81	Std. Mean Difference (Random, 95% CI)	-0.62 [-1.97, 0.73]
4 Sensitivity analysis remove studies with over 20% attrition and no ITT (Child emotional problems: independent report)	1	81	Std. Mean Difference (Random, 95% CI)	-0.62 [-1.97, 0.73]
5 Subgroup severity of conduct problems of child emotional problems: independent report	2	130	Std. Mean Difference (Random, 95% CI)	0.08 [-0.83, 0.98]
5.1 More severe conduct problems	1	81	Std. Mean Difference (Random, 95% CI)	-0.62 [-1.97, 0.73]
5.2 Less severe conduct problems	1	49	Std. Mean Difference (Random, 95% CI)	0.38 [-0.20, 0.96]
6 Subgroup trial setting of child emotional problems: independent report	2	130	Std. Mean Difference (Random, 95% CI)	0.08 [-0.83, 0.98]
6.1 Research setting	1	49	Std. Mean Difference (Random, 95% CI)	0.38 [-0.20, 0.96]
6.2 Service setting	1	81	Std. Mean Difference (Random, 95% CI)	-0.62 [-1.97, 0.73]
7 Subgroup level of implementation fidelity: independent report	2	130	Std. Mean Difference (Random, 95% CI)	0.08 [-0.83, 0.98]

7.1 High level of implementation fidelity	1	49	Std. Mean Difference (Random, 95% CI)	0.38 [-0.20, 0.96]
7.2 Lower level of implementation fidelity	1	81	Std. Mean Difference (Random, 95% CI)	-0.62 [-1.97, 0.73]

#### Comparison 16. Parent training versus control meta-analysis of child cognitive ability: independent report

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Meta-analysis of child cognitive ability: independent report	3	161	Std. Mean Difference (Random, 95% CI)	0.07 [-0.35, 0.50]
2 Sensitivity analysis remove quasi-randomised studies (Child cognitive ability: independent report)	1	48	Std. Mean Difference (Random, 95% CI)	-0.21 [-0.78, 0.36]
3 Sensitivity analysis remove studies with inadequate blinding (Child cognitive ability: independent report)	2	129	Std. Mean Difference (Random, 95% CI)	-0.13 [-0.48, 0.22]
4 Sensitivity analysis remove studies with no intention to treat analysis (Child cognitive ability: independent report)	2	129	Std. Mean Difference (Random, 95% CI)	-0.13 [-0.48, 0.22]
5 Sensitivity analysis remove studies with attrition over 20% and no ITT (Child cognitive ability: independent report)	2	129	Std. Mean Difference (Random, 95% CI)	-0.13 [-0.48, 0.22]
6 Sensitivity analysis remove studies with high risk of bias (Child cognitive ability: independent report)	1	48	Std. Mean Difference (Random, 95% CI)	-0.21 [-0.78, 0.36]
7 Subgroup severity of conduct problems of child cognitive ability: independent report	3	161	Std. Mean Difference (Random, 95% CI)	0.07 [-0.35, 0.50]
7.1 More severe conduct problems	2	129	Std. Mean Difference (Random, 95% CI)	-0.13 [-0.48, 0.22]
7.2 Less severe conduct problems	1	32	Std. Mean Difference (Random, 95% CI)	0.52 [-0.01, 1.05]
8 Subgroup trial setting of child cognitive ability: independent report	3	161	Std. Mean Difference (Random, 95% CI)	0.07 [-0.35, 0.50]
8.1 Research setting	2	80	Std. Mean Difference (Random, 95% CI)	0.16 [-0.55, 0.88]
8.2 Service setting	1	81	Std. Mean Difference (Random, 95% CI)	-0.08 [-0.52, 0.36]
9 Subgroup socioeconomic status of child cognitive ability: independent report	3	161	Std. Mean Difference (Random, 95% CI)	0.07 [-0.35, 0.50]
9.1 Social disadvantage	2	113	Std. Mean Difference (Random, 95% CI)	0.20 [-0.39, 0.79]



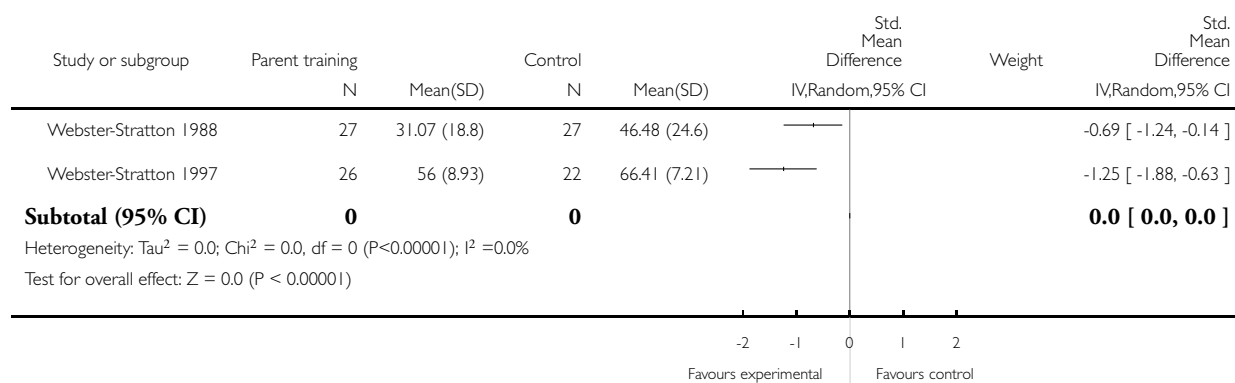
9.2 Socioeconomic status comparable to population norms	1	48	Std. Mean Difference (Random, 95% CI)	-0.21 [-0.78, 0.36]
10 Subgroup level of implementation fidelity of child cognitive ability: independent report	3	161	Std. Mean Difference (Random, 95% CI)	0.07 [-0.35, 0.50]
10.1 High level of implementation fidelity	2	80	Std. Mean Difference (Random, 95% CI)	0.16 [-0.55, 0.88]
10.2 Lower level of implementation fidelity	1	81	Std. Mean Difference (Random, 95% CI)	-0.08 [-0.52, 0.36]

### Analysis 1.1. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 1 Child conduct problems (CBCL total problems - mother report).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 1 Child conduct problems (CBCL total problems - mother report)

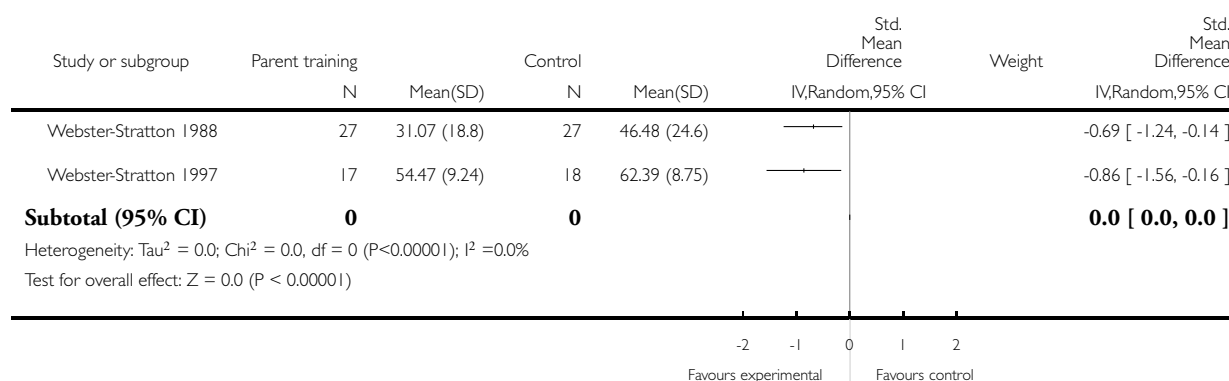


### Analysis 1.2. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 2 Child conduct problems (CBCL total problems - father report).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 2 Child conduct problems (CBCL total problems - father report)

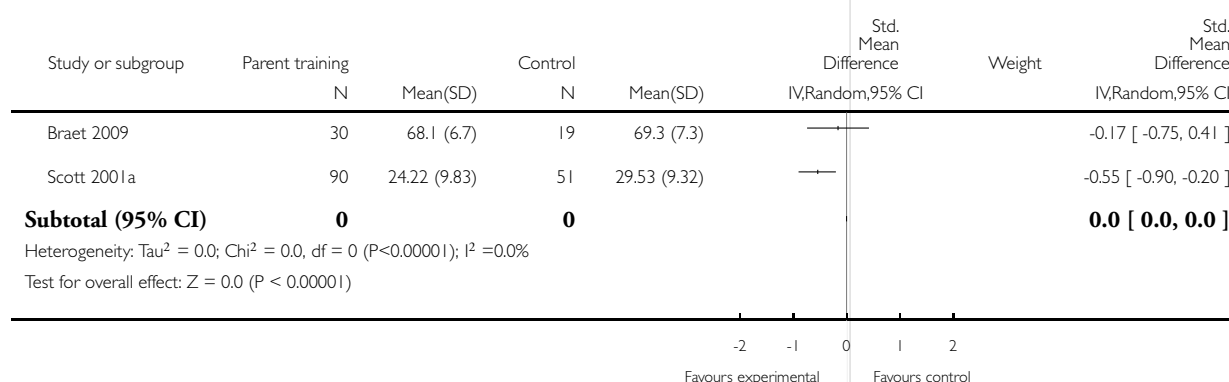


### Analysis 1.3. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 3 Child conduct problems (CBCL externalising subscale - parent report).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 3 Child conduct problems (CBCL externalising subscale - parent report)

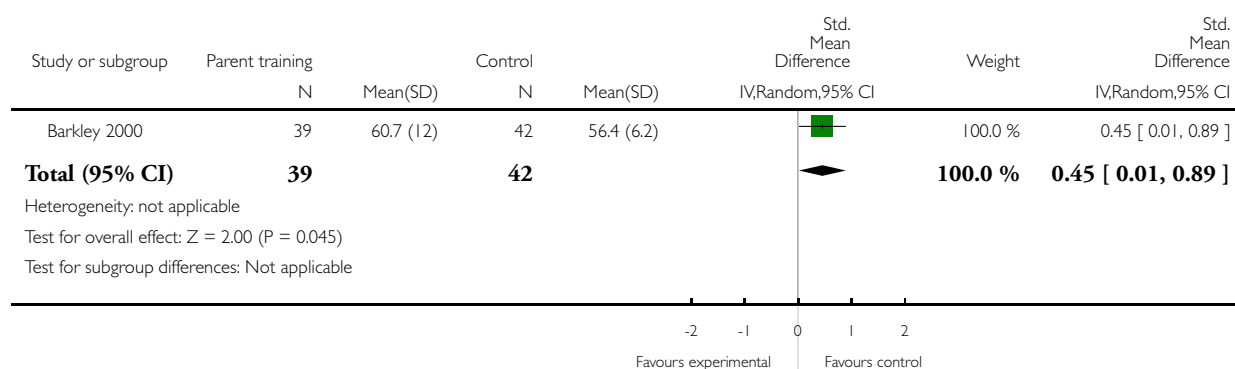


**Analysis 1.4. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 4 Child conduct problems (CBCL social problems subscale - parent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 4 Child conduct problems (CBCL social problems subscale - parent report)

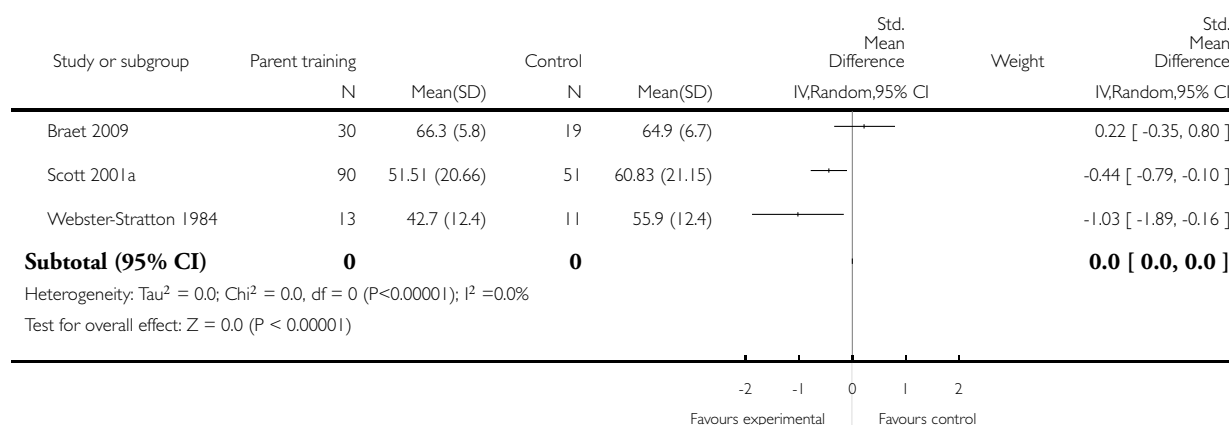


### Analysis 1.5. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 5 Child conduct problems (CBCL total problems - parent report).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 5 Child conduct problems (CBCL total problems - parent report)

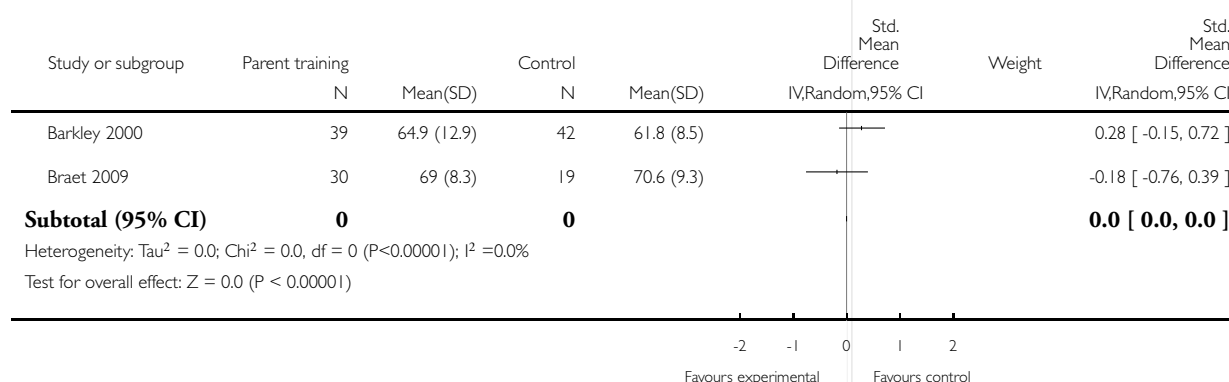


### Analysis 1.6. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 6 Child conduct problems (CBCL aggression subscale - parent report).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 6 Child conduct problems (CBCL aggression subscale - parent report)

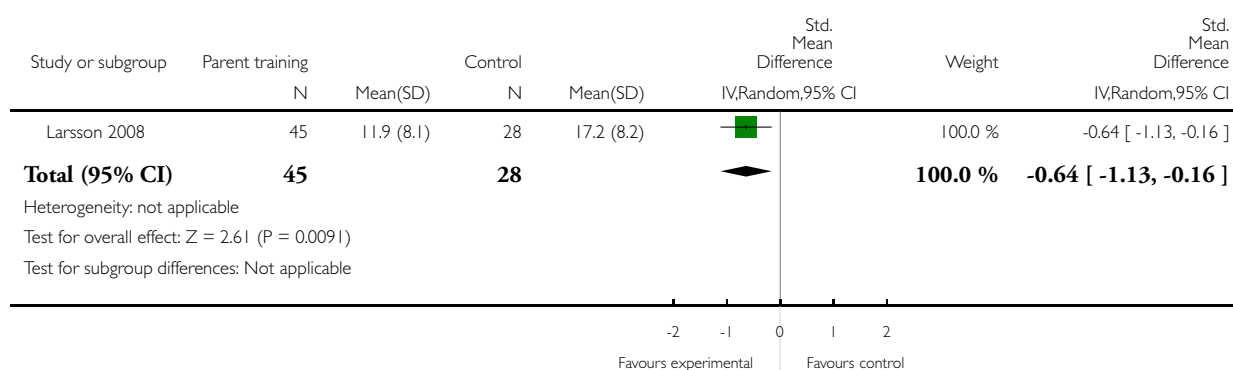


**Analysis 1.7. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 7 Child conduct problems (CBCL aggression subscale - mother report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 7 Child conduct problems (CBCL aggression subscale - mother report)

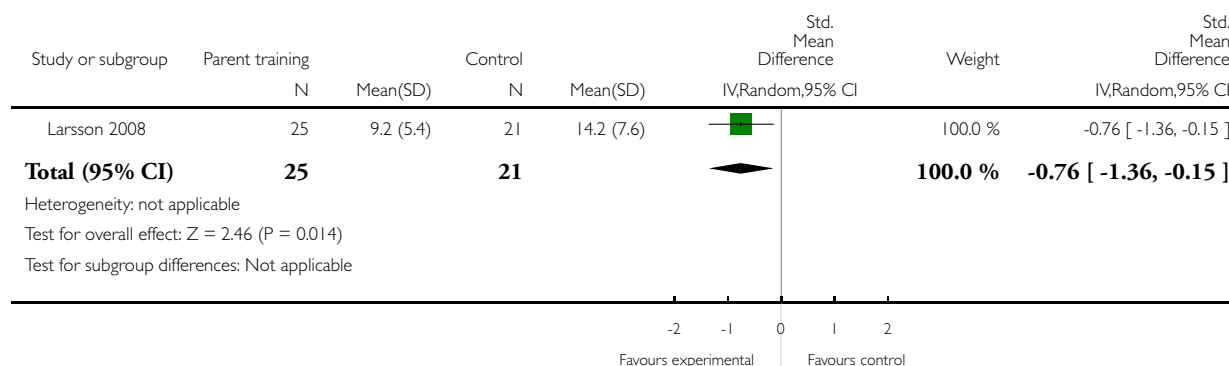


### Analysis 1.8. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 8 Child conduct problems (CBCL aggression subscale - father report).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 8 Child conduct problems (CBCL aggression subscale - father report)

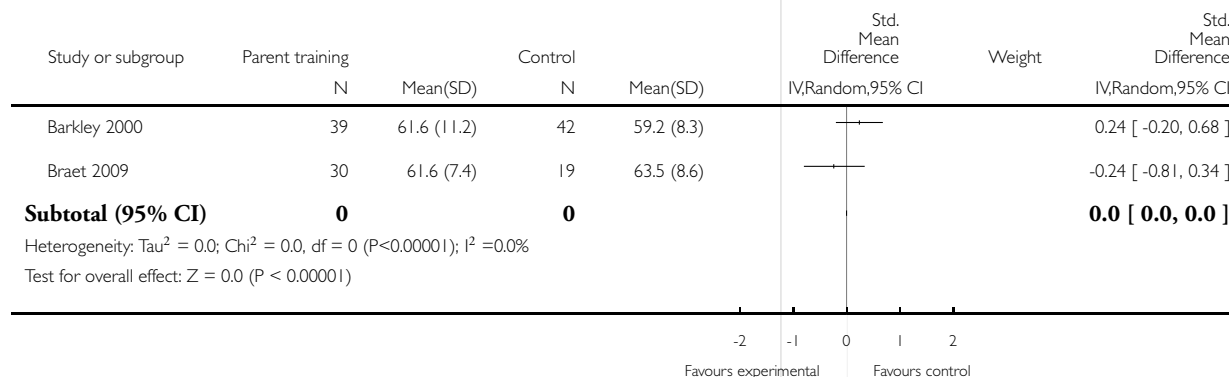


### Analysis 1.9. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 9 Child conduct problems (CBCL delinquent subscale - parent report).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 9 Child conduct problems (CBCL delinquent subscale - parent report)

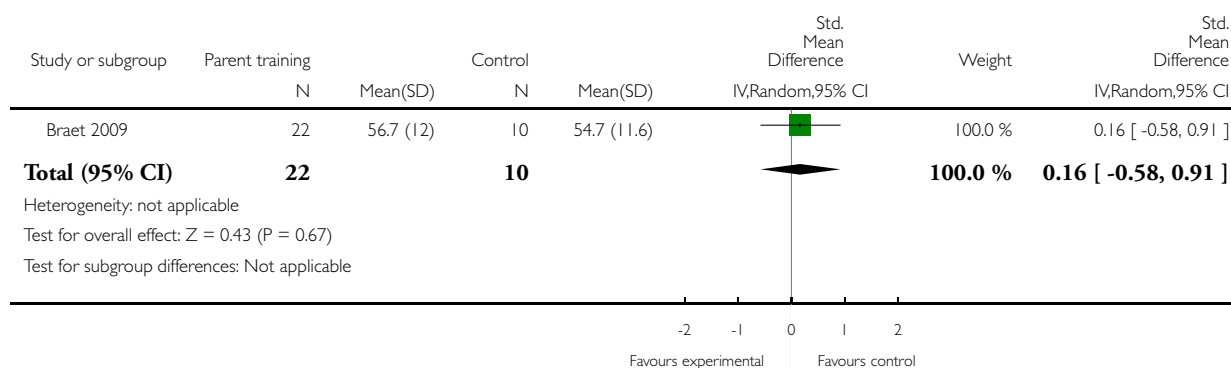


### Analysis 1.10. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 10 Child Conduct problems (CBCL total problems - teacher report).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 10 Child Conduct problems (CBCL total problems - teacher report)

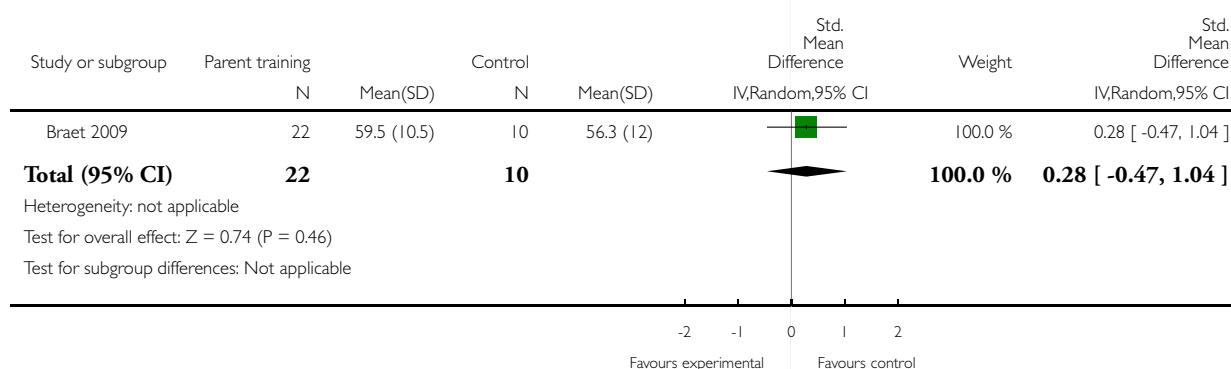


### Analysis 1.11. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 11 Child conduct problems (CBCL externalising subscale - teacher report).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 11 Child conduct problems (CBCL externalising subscale - teacher report)

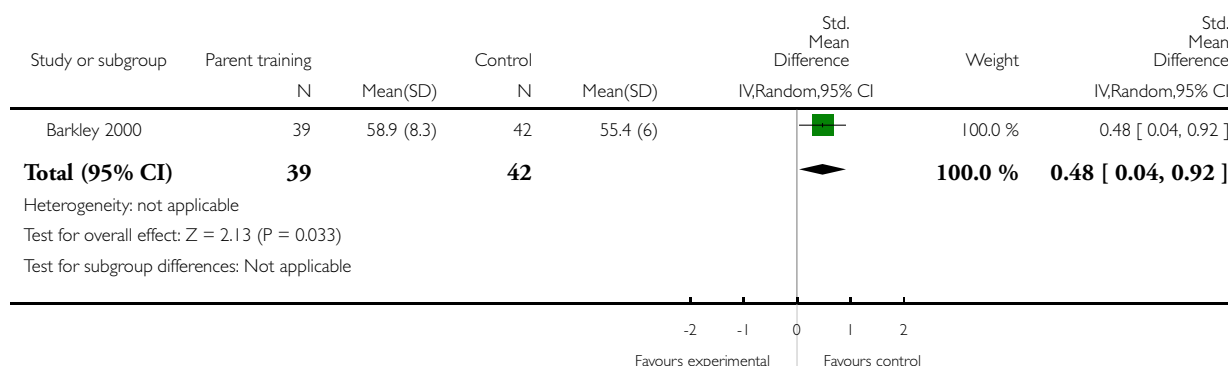


### Analysis 1.12. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 12 Child conduct problems (CBCL social problems subscale - teacher report).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 12 Child conduct problems (CBCL social problems subscale - teacher report)

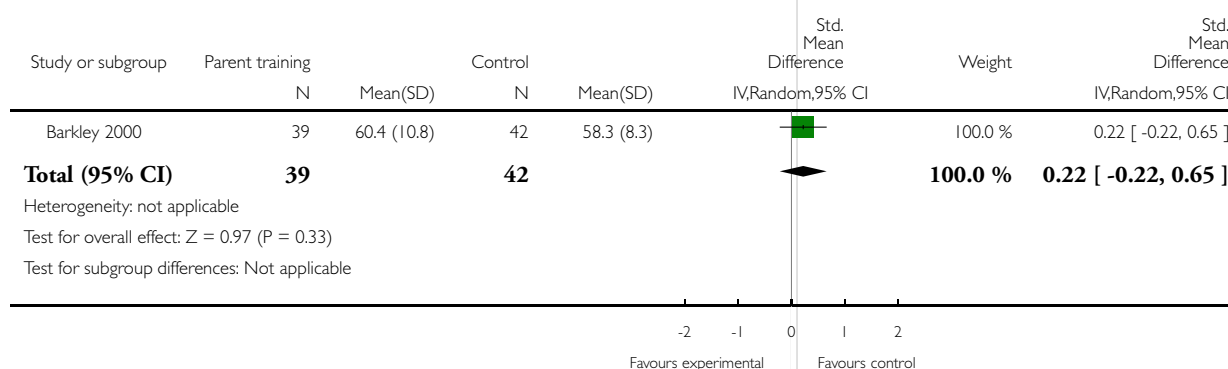


### Analysis 1.13. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 13 Child conduct problems (CBCL aggression subscale - teacher report).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 13 Child conduct problems (CBCL aggression subscale - teacher report)



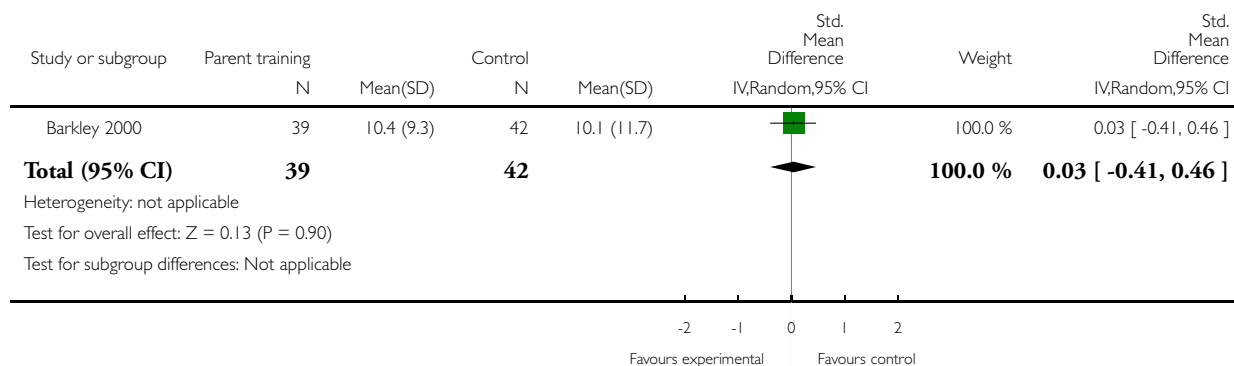


# **Analysis 1.14. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 14 Child conduct problems (CBCL externalising subscale - independent observation).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 14 Child conduct problems (CBCL externalising subscale - independent observation)

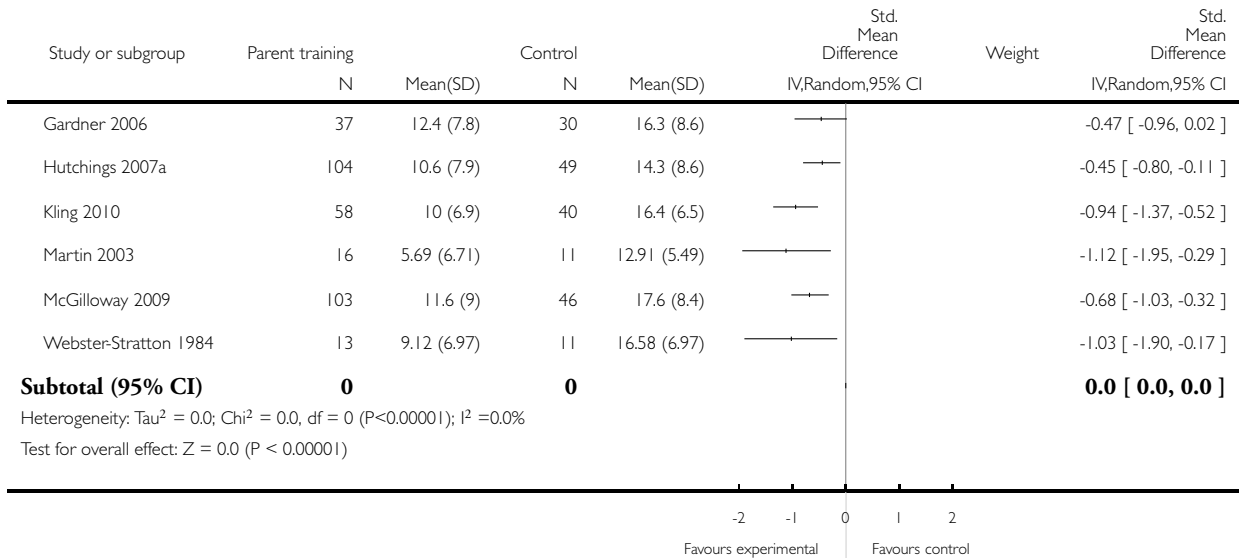


**Analysis 1.15. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 15 Child conduct problems (ECBI problem subscale - parent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 15 Child conduct problems (ECBI problem subscale - parent report)

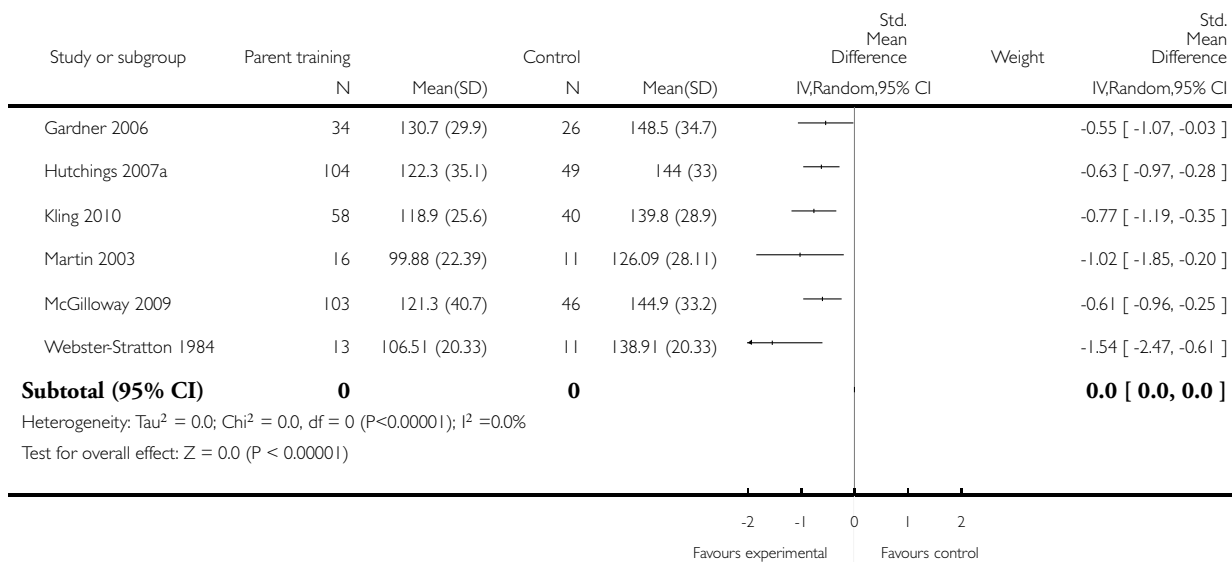


**Analysis 1.16. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 16 Child conduct problems (ECBI intensity subscale - parent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 16 Child conduct problems (ECBI intensity subscale - parent report)

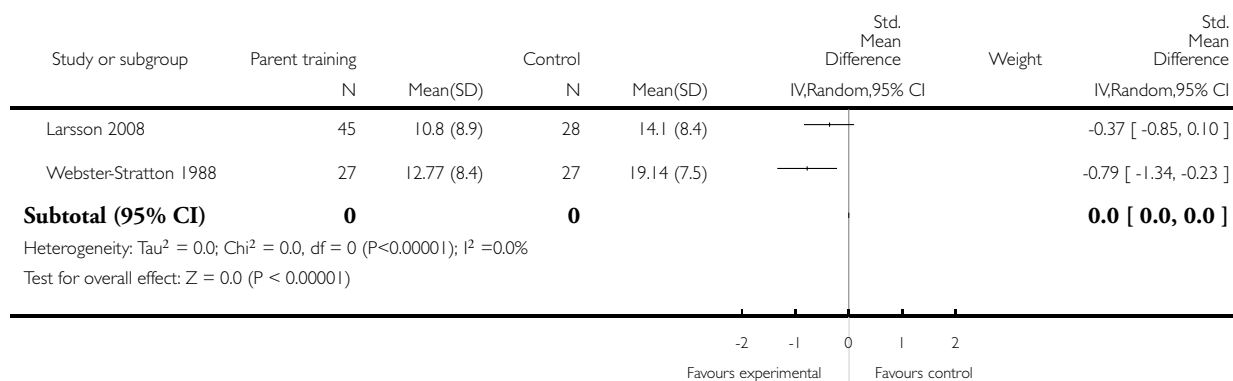


### Analysis 1.17. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 17 Child conduct problems (ECBI problem subscale - mother report).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 17 Child conduct problems (ECBI problem subscale - mother report)

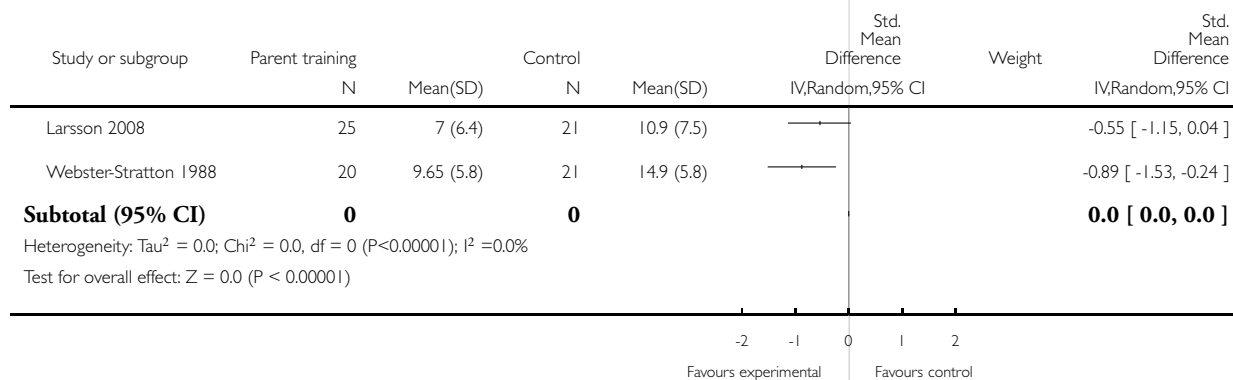


### Analysis 1.18. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 18 Child conduct problems (ECBI problem subscale - father report).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 18 Child conduct problems (ECBI problem subscale - father report)

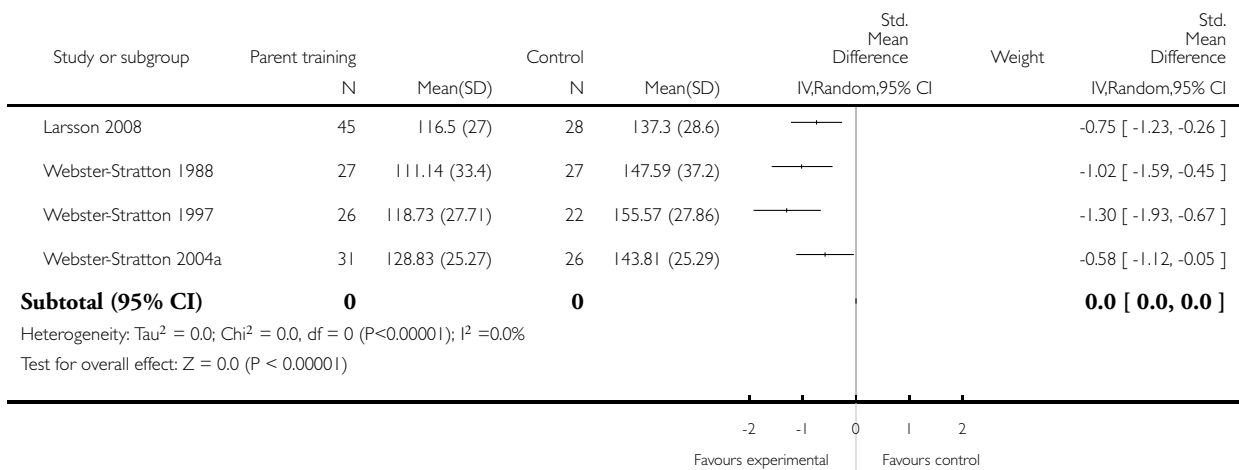


**Analysis 1.19. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 19 Child conduct problems (ECBI intensity subscale - mother report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 19 Child conduct problems (ECBI intensity subscale - mother report)

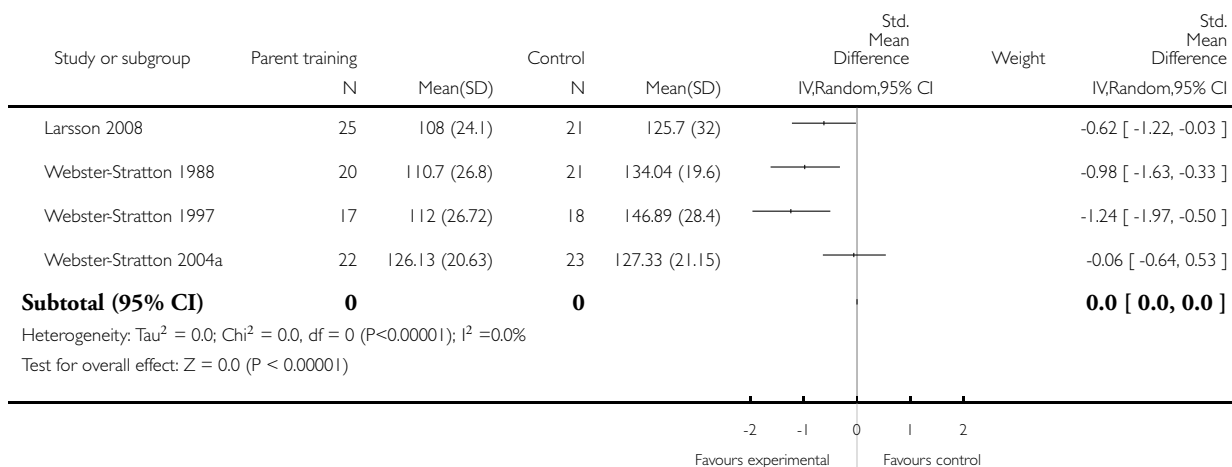


**Analysis 1.20. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 20 Child conduct problems (ECBI intensity subscale - father report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 20 Child conduct problems (ECBI intensity subscale - father report)

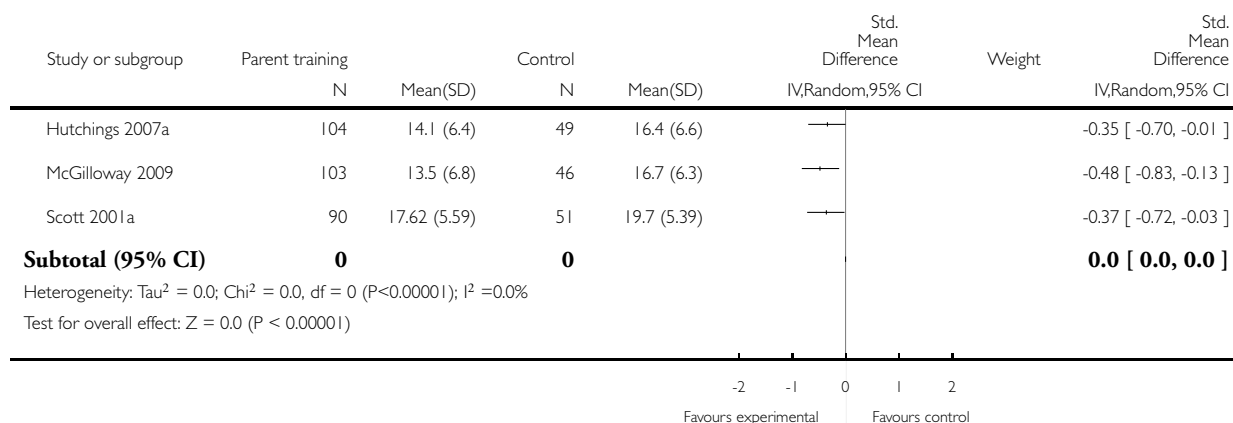


**Analysis 1.21. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 21 Child conduct problems (SDQ total deviance - parent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 21 Child conduct problems (SDQ total deviance - parent report)

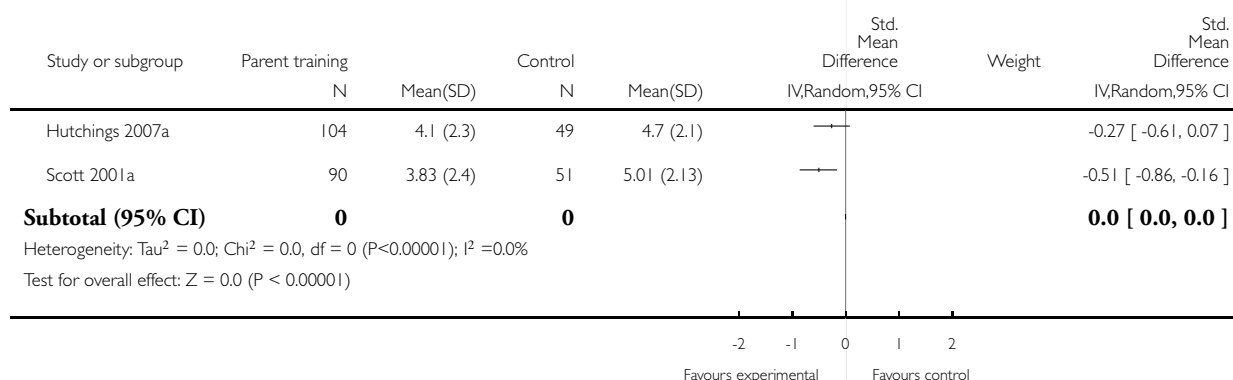


**Analysis 1.22. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 22 Child conduct problems (SDQ conduct problems subscale - parent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 22 Child conduct problems (SDQ conduct problems subscale - parent report)

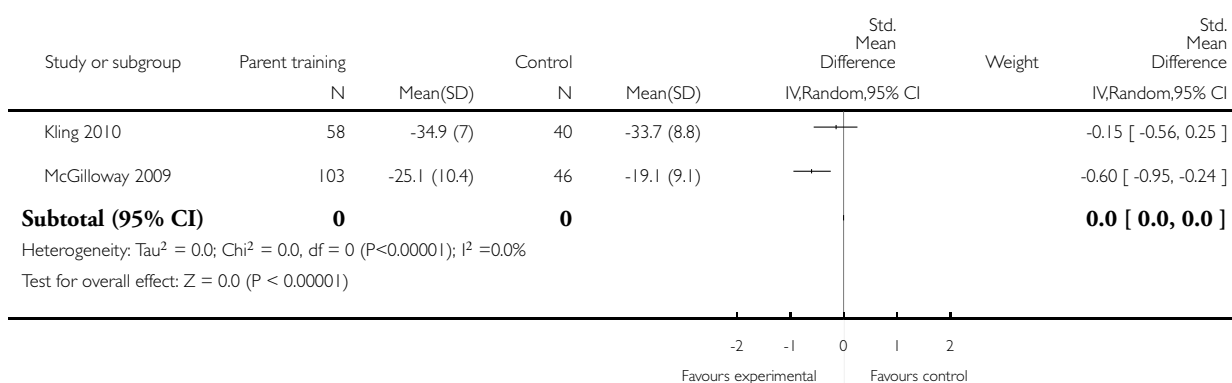


**Analysis 1.23. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 23 Child conduct problems (Social Competence Scale - parent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 23 Child conduct problems (Social Competence Scale - parent report)



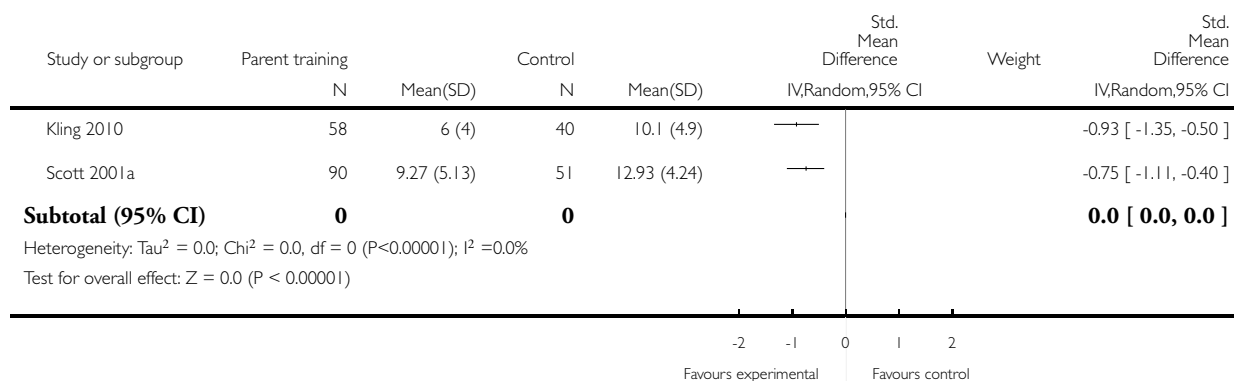


### Analysis 1.24. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 24 Child conduct problems (PDR total score - parent report).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 24 Child conduct problems (PDR total score - parent report)

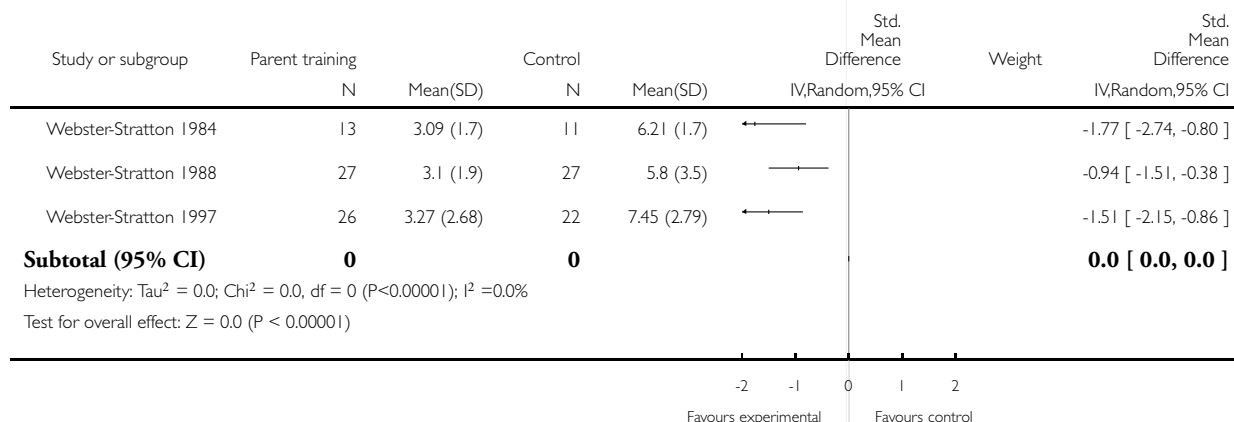


### Analysis 1.25. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 25 Child conduct problems (PDR negative subscale - mother report).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 25 Child conduct problems (PDR negative subscale - mother report)

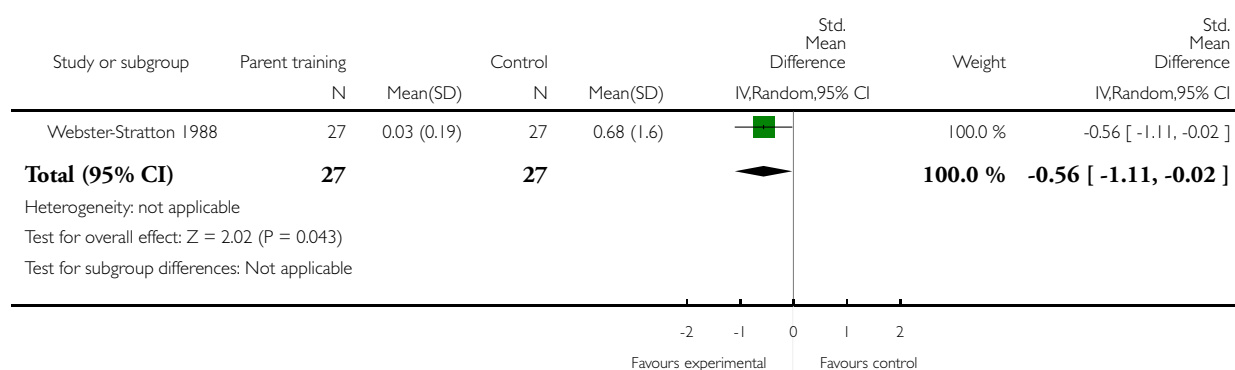


**Analysis 1.26. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 26 Child conduct problems (PDR low rate events - mother report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 26 Child conduct problems (PDR low rate events - mother report)

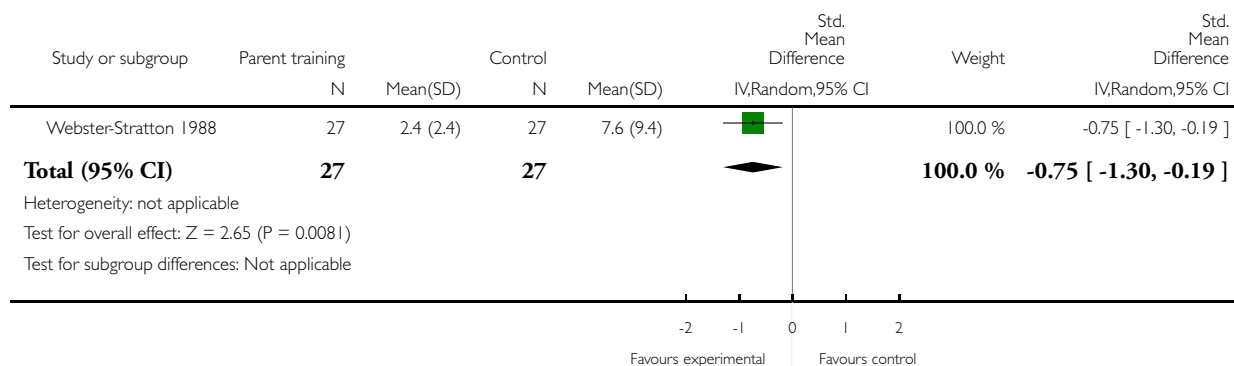


**Analysis 1.27. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 27 Child conduct problems (PDR time out - mother report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 27 Child conduct problems (PDR time out - mother report)

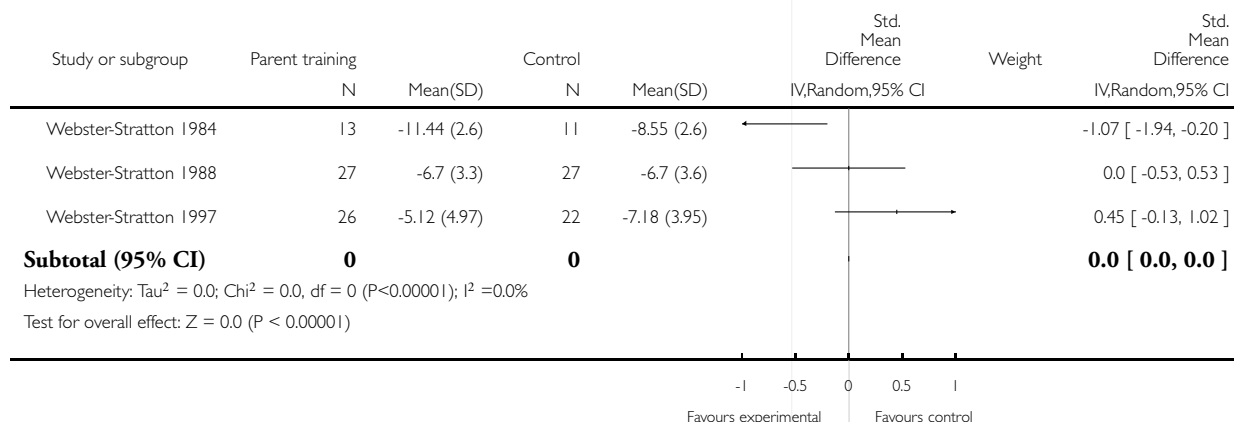


**Analysis 1.28. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 28 Child conduct problems (PDR positive behaviour - mother report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 28 Child conduct problems (PDR positive behaviour - mother report)

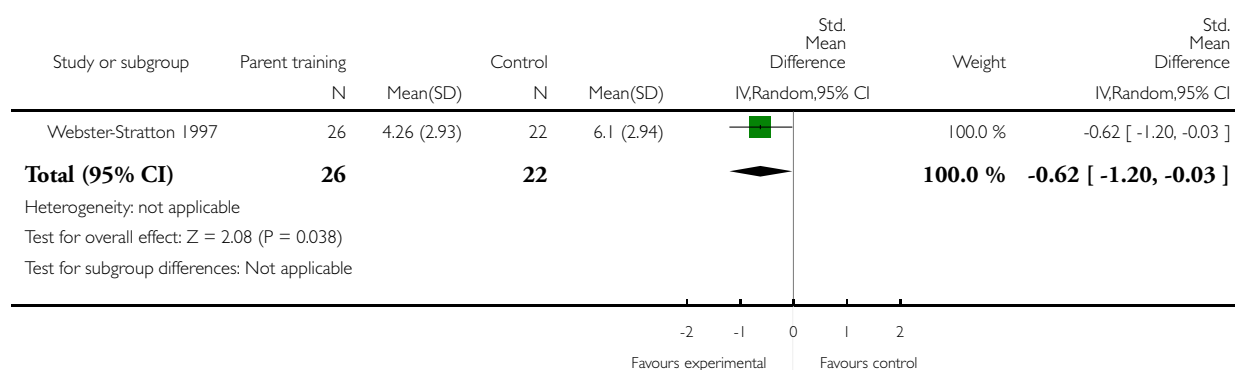


**Analysis 1.29. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 29 Child conduct problems (PDR no. negative in 24 hrs - mother report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 29 Child conduct problems (PDR no. negative in 24 hrs - mother report)

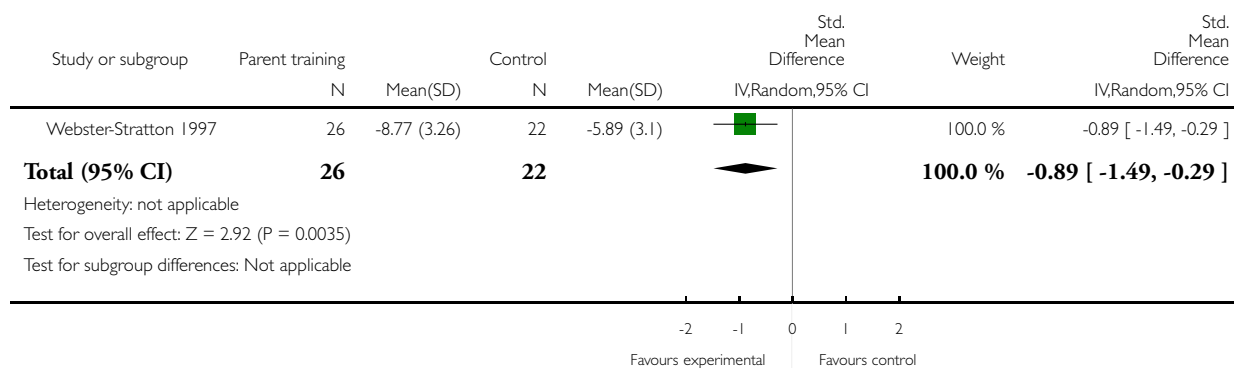


**Analysis 1.30. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 30 Child conduct problems (PDR no. positive in 24 hrs - mother report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 30 Child conduct problems (PDR no. positive in 24 hrs - mother report)

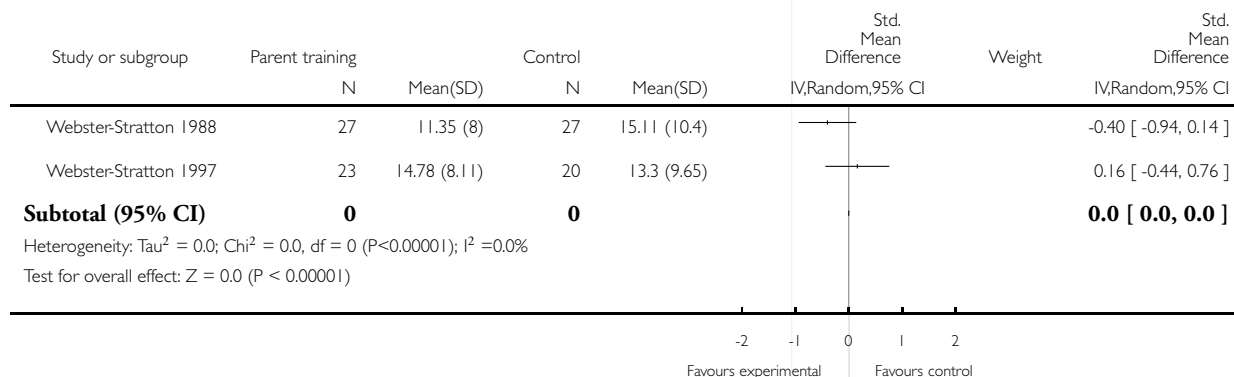


**Analysis 1.31. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 31 Child conduct problems (PBQ - teacher report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 31 Child conduct problems (PBQ - teacher report)

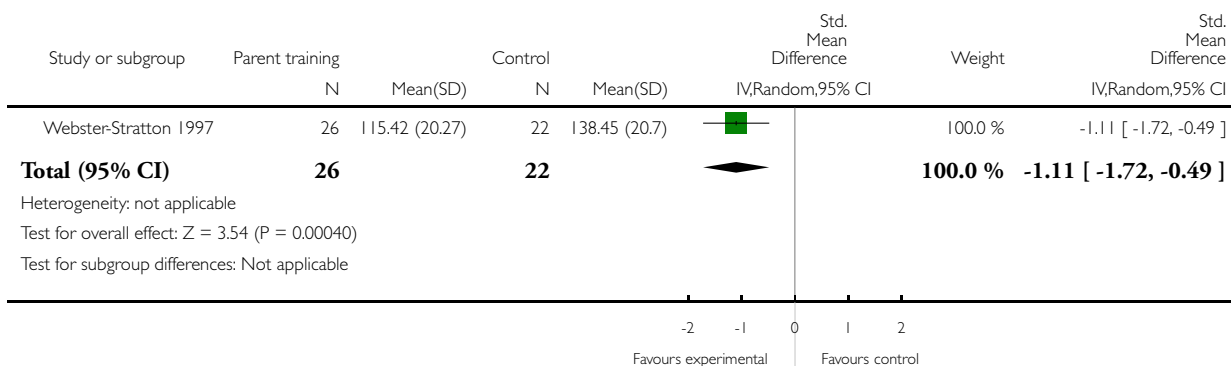


### Analysis 1.32. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 32 Child conduct problems (PSI child domain - mother report).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 32 Child conduct problems (PSI child domain - mother report)

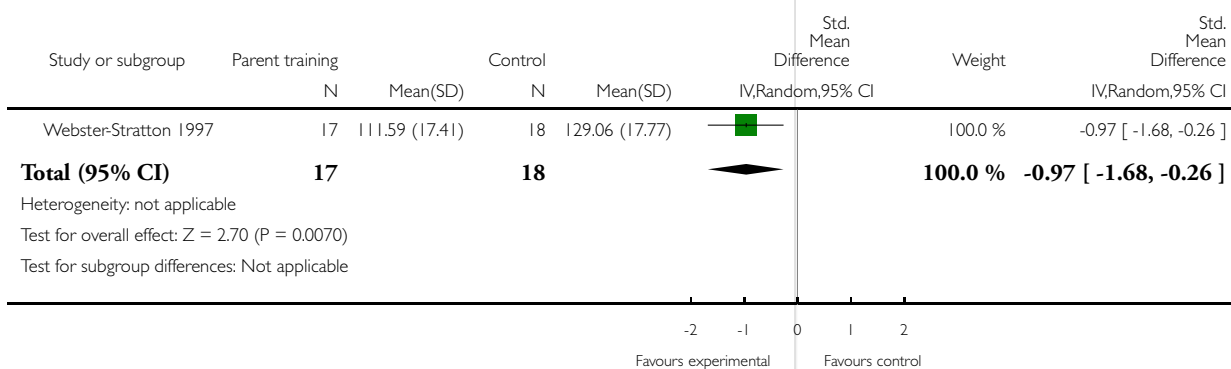


### Analysis 1.33. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 33 Child conduct problems (PSI child domain - father report).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 33 Child conduct problems (PSI child domain - father report)

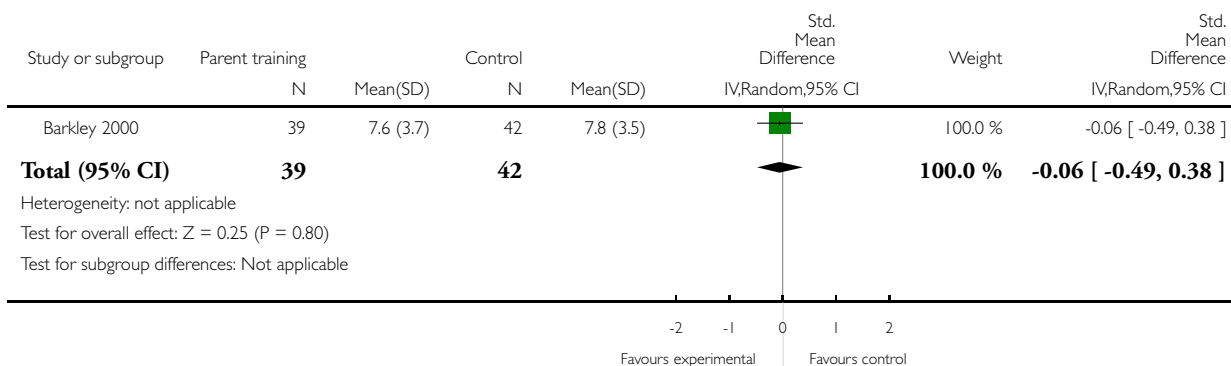


**Analysis 1.34. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 34 Child conduct problems (HSQ, no. of settings - parent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 34 Child conduct problems (HSQ, no. of settings - parent report)

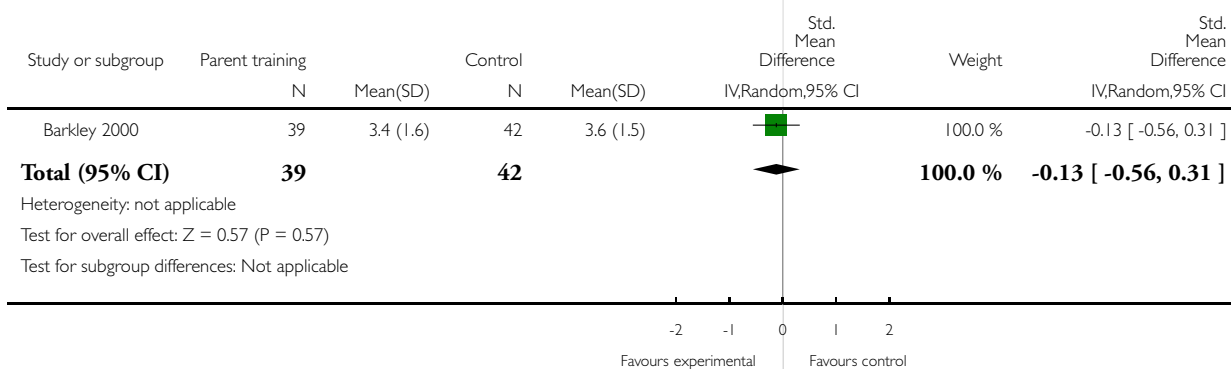


**Analysis 1.35. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 35 Child conduct problems (HSQ, mean severity - parent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 35 Child conduct problems (HSQ, mean severity - parent report)

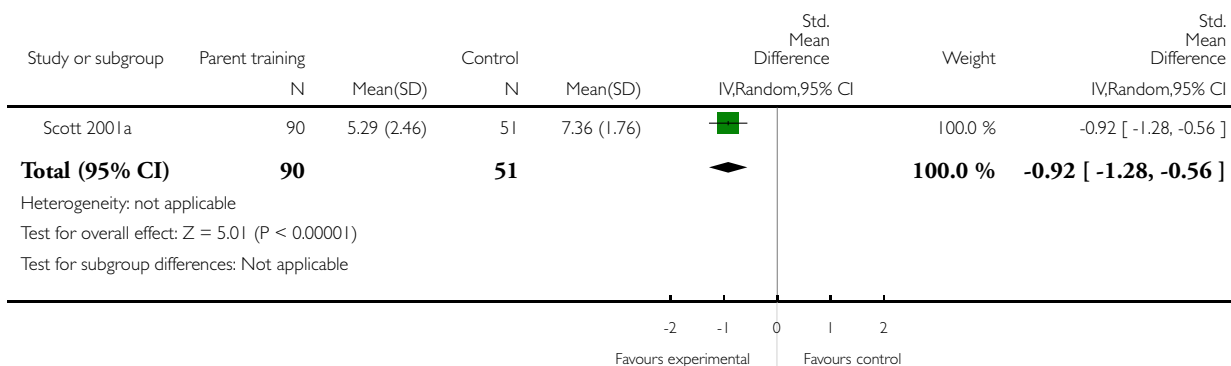


**Analysis 1.36. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 36 Child conduct problems (Parent Defined Problems Questionnaire - parent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 36 Child conduct problems (Parent Defined Problems Questionnaire - parent report)

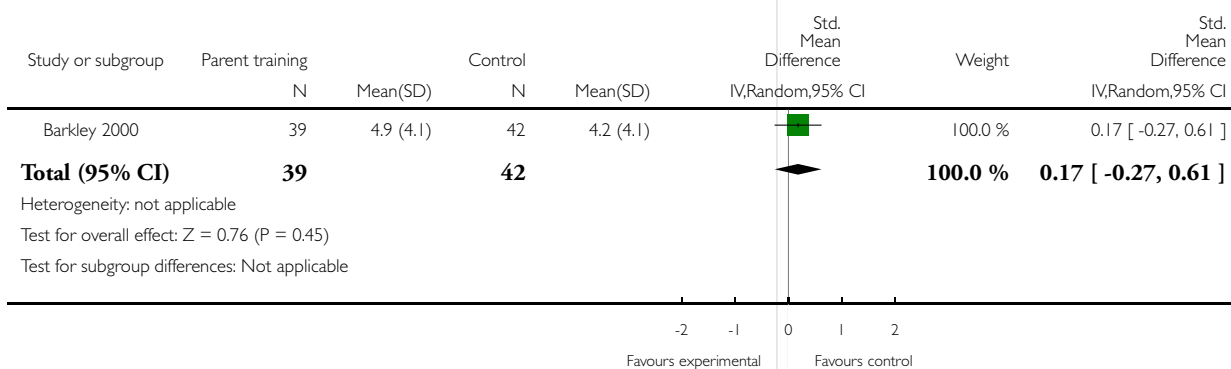


**Analysis 1.37. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 37 Child conduct problems (SSQ no. of settings - parent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 37 Child conduct problems (SSQ no. of settings - parent report)



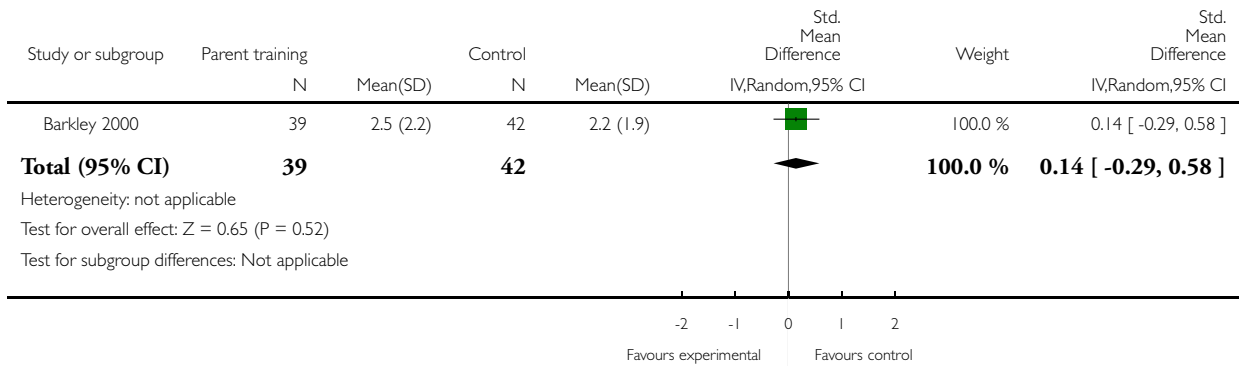


**Analysis 1.38. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 38 Child conduct problems (SSQ mean severity - teacher report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 38 Child conduct problems (SSQ mean severity - teacher report)

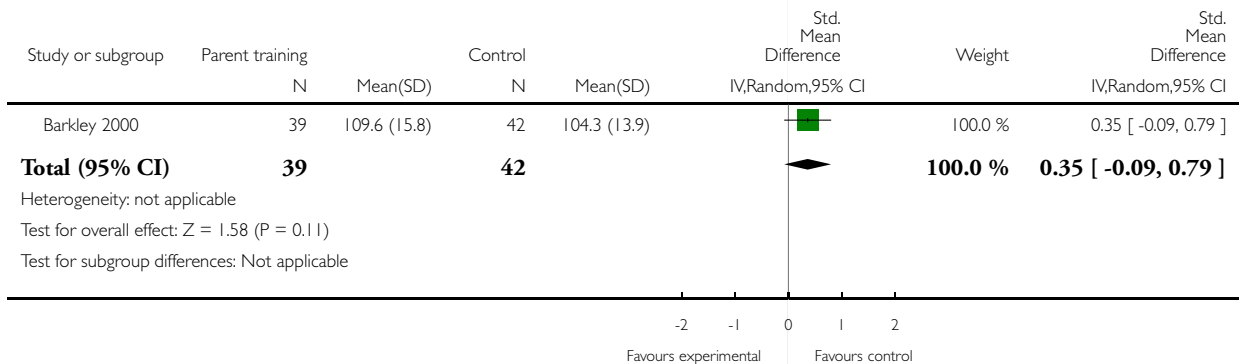


**Analysis 1.39. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 39 Child conduct problems (SSRS behaviour subscale - teacher report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 39 Child conduct problems (SSRS behaviour subscale - teacher report)

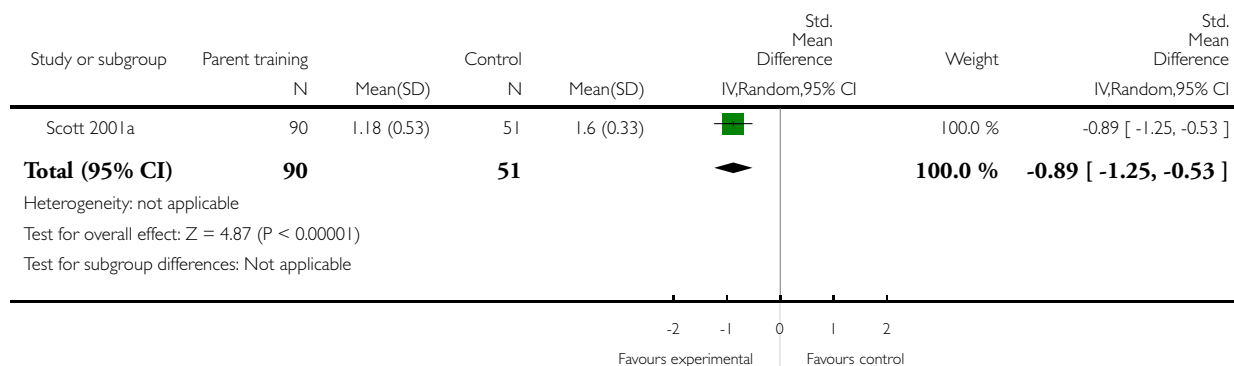


**Analysis 1.40. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 40 Child conduct problems (PACS conduct problems - clinical interview).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 40 Child conduct problems (PACS conduct problems - clinical interview)

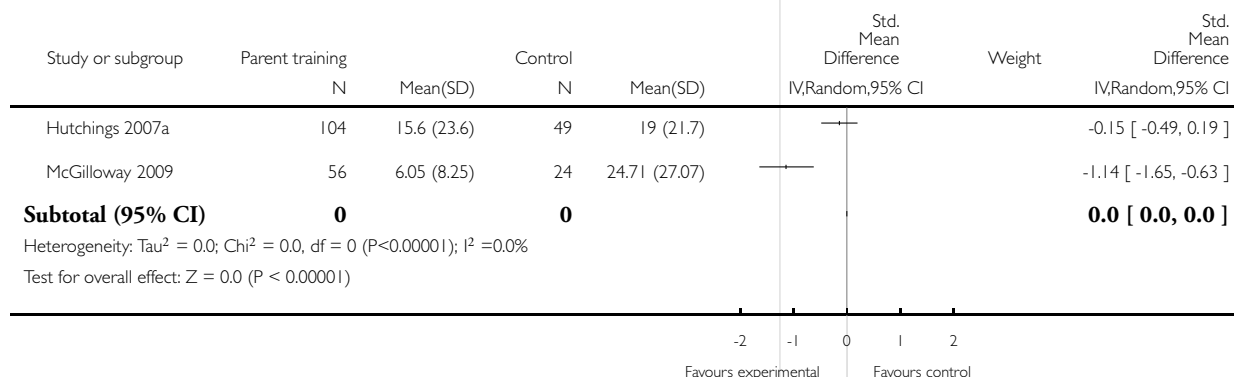


**Analysis 1.41. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 41 Child conduct problems (DPICS observed child negative behaviour - independent observation of child interacting with parent at home).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 41 Child conduct problems (DPICS observed child negative behaviour - independent observation of child interacting with parent at home)

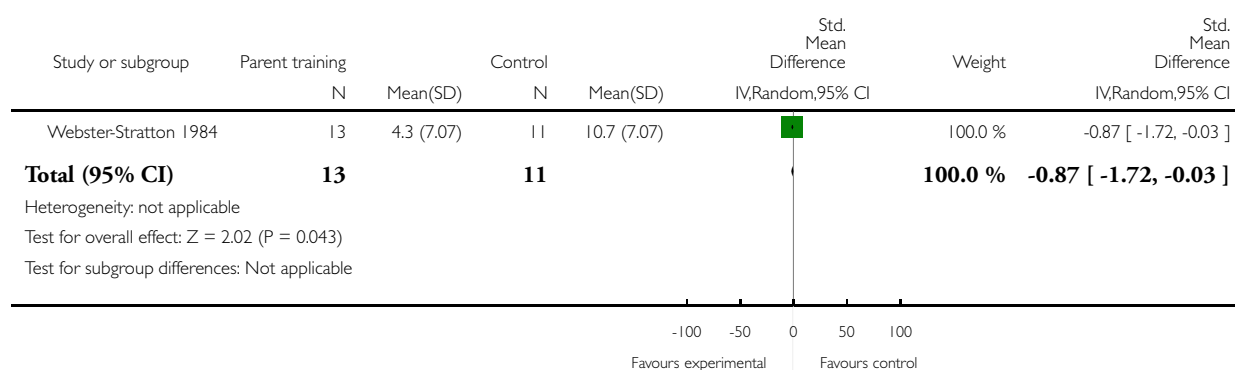


**Analysis 1.42. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 42 Child conduct problems (DPICS child total deviance with parent - observation at home).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 42 Child conduct problems (DPICS child total deviance with parent - observation at home)

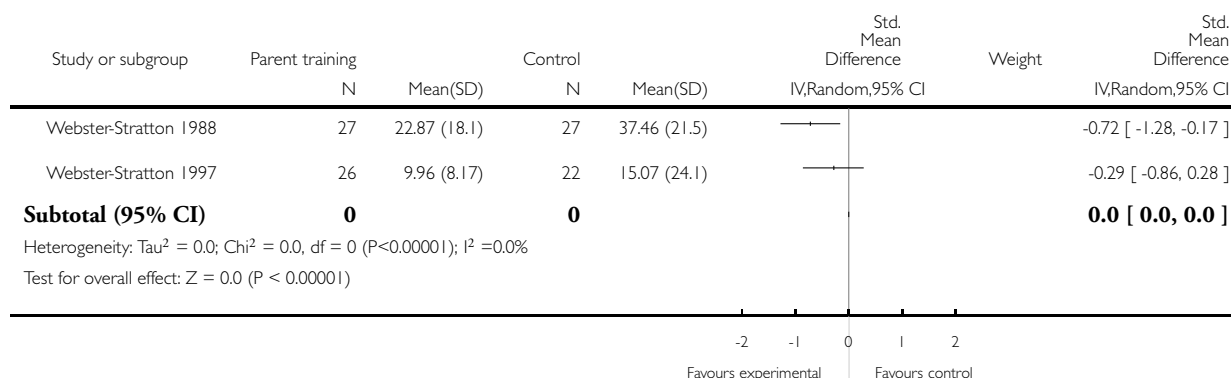


**Analysis 1.43. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 43 Child conduct problems (DPICS observed child total deviance with mother - observation at home).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 43 Child conduct problems (DPICS observed child total deviance with mother - observation at home)

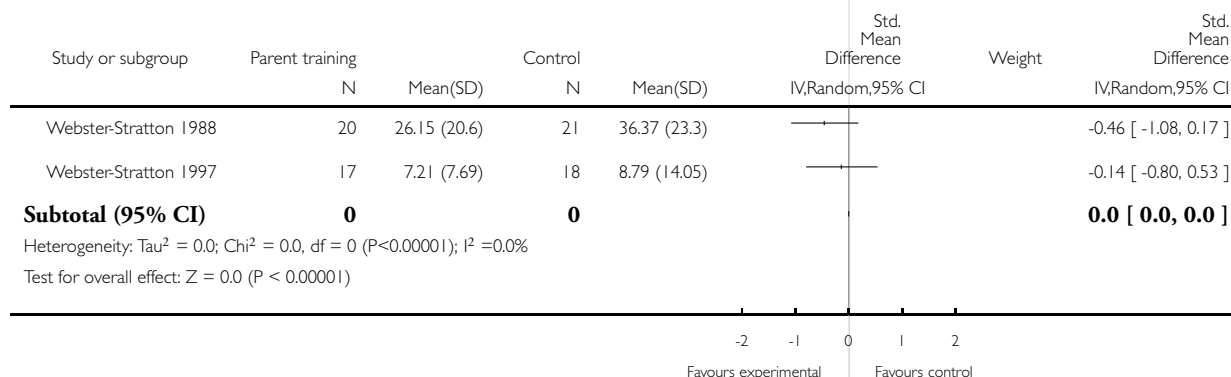


**Analysis 1.44. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 44 Child conduct problems (DPICS child total deviance with father - observation at home).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 44 Child conduct problems (DPICS child total deviance with father - observation at home)

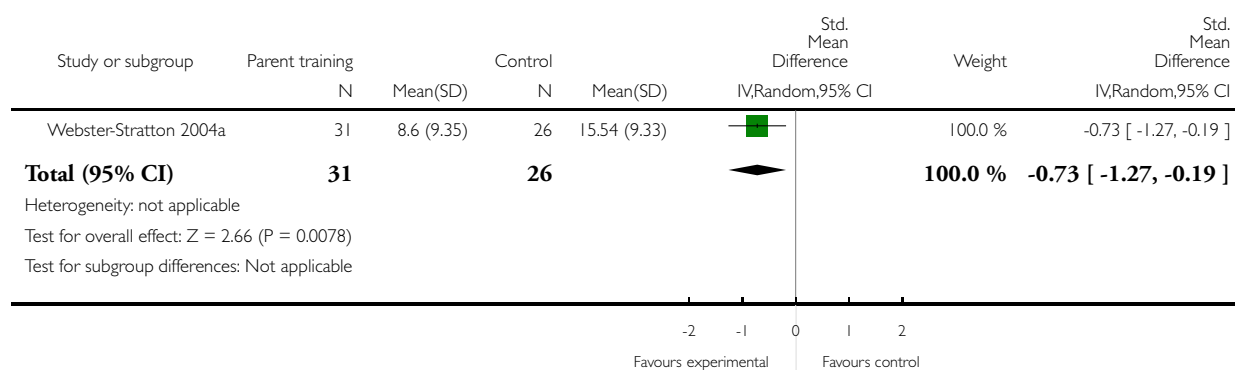


**Analysis 1.45. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 45 Child conduct problems (DPICS child deviance and non-compliance with mother - observation at home).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 45 Child conduct problems (DPICS child deviance and non-compliance with mother - observation at home)

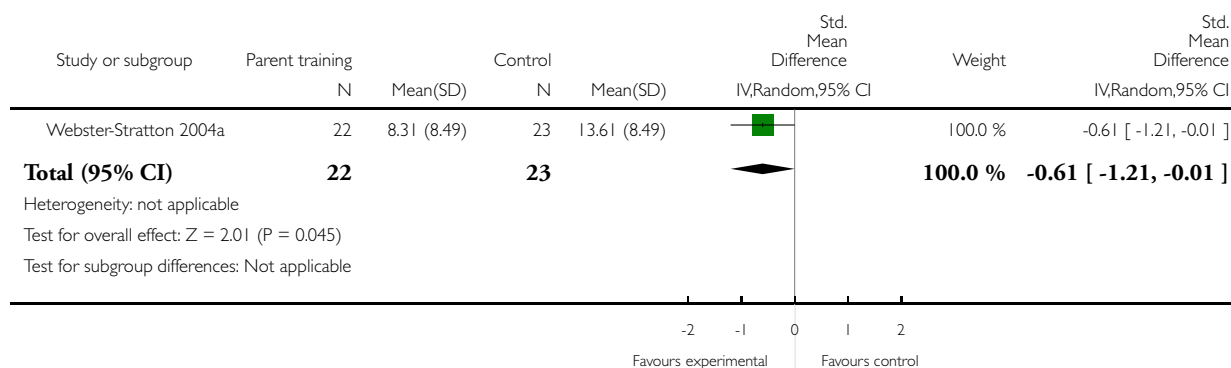


**Analysis 1.46. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 46 Child conduct problems (DPICS child deviance and non compliance with father - observation at home).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 46 Child conduct problems (DPICS child deviance and non compliance with father - observation at home)

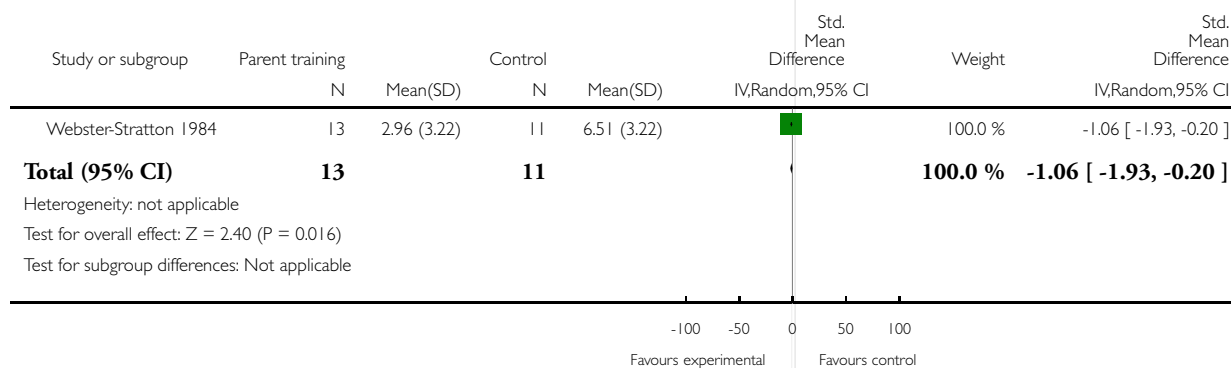


**Analysis 1.47. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 47 Child conduct problems (DPICS total non-compliance with parent - observation at home).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 47 Child conduct problems (DPICS total non-compliance with parent - observation at home)

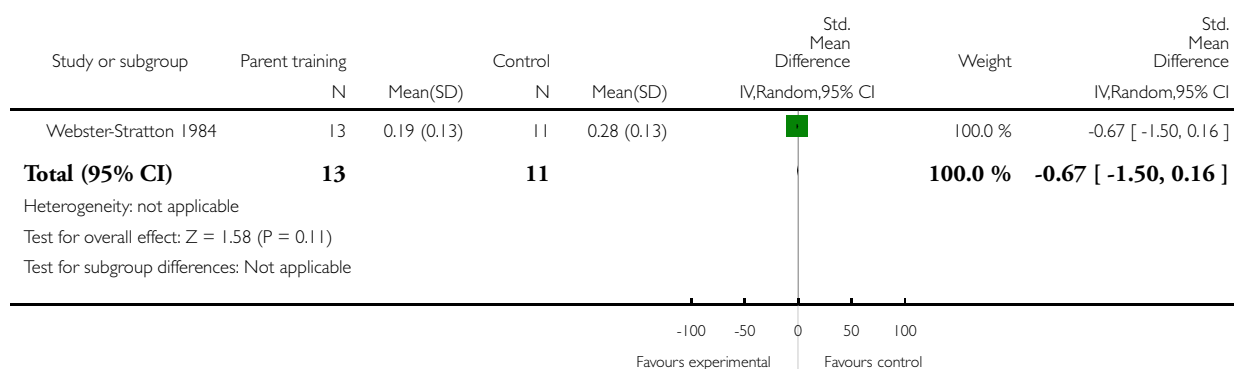


**Analysis 1.48. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 48 Child conduct problems (DPICS child non-compliance ratio - observation at home).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 48 Child conduct problems (DPICS child non-compliance ratio - observation at home)

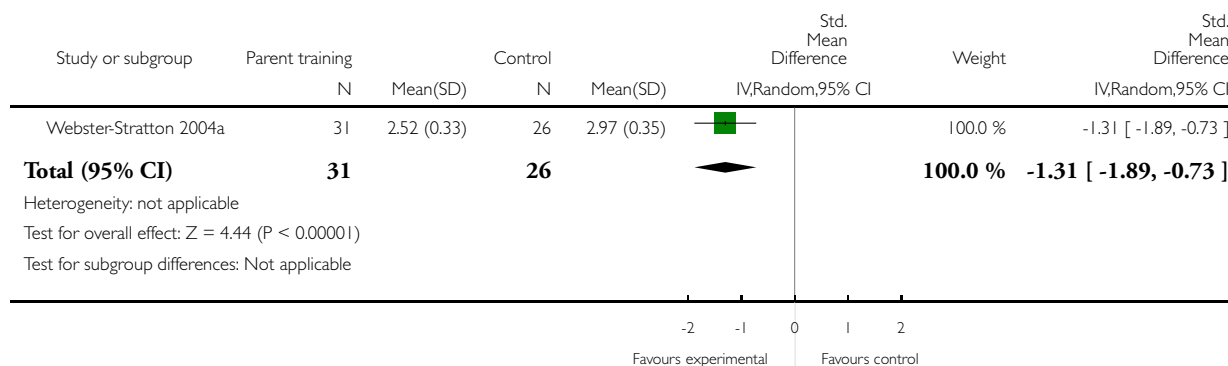


**Analysis 1.49. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 49 Child conduct problems (DPICS child negative valence with mother - observation at home).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 49 Child conduct problems (DPICS child negative valence with mother - observation at home)

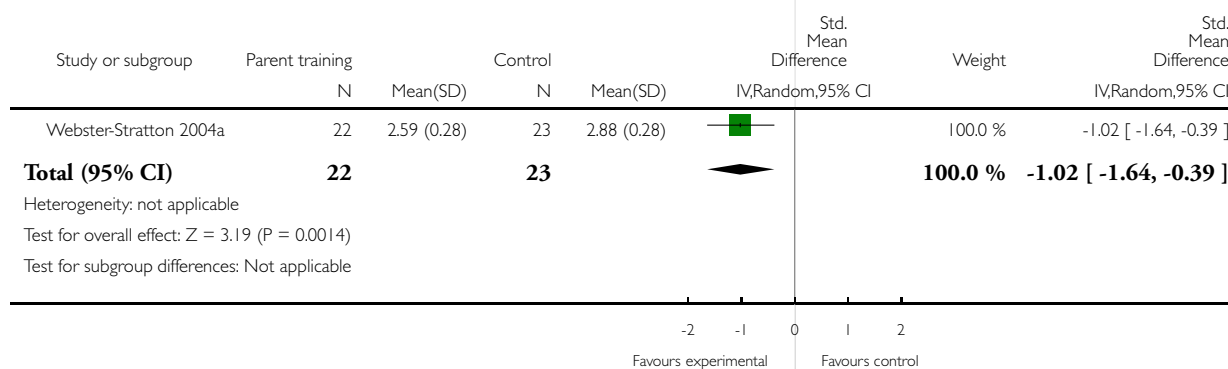


**Analysis 1.50. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 50 Child conduct problems (DPICS child negative valence with father - observation at home).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 50 Child conduct problems (DPICS child negative valence with father - observation at home)



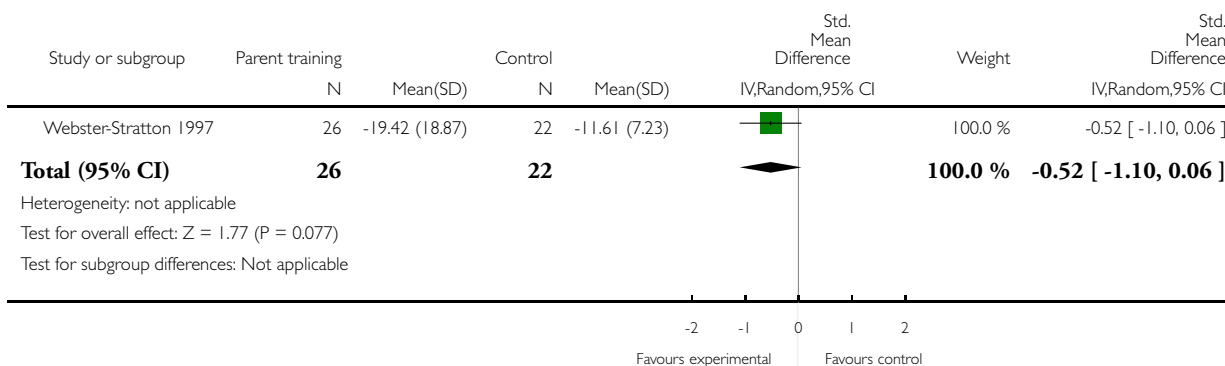


**Analysis 1.51. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 51 Child conduct problems (DPICS child positive affect with mother - observation at home).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 51 Child conduct problems (DPICS child positive affect with mother - observation at home)

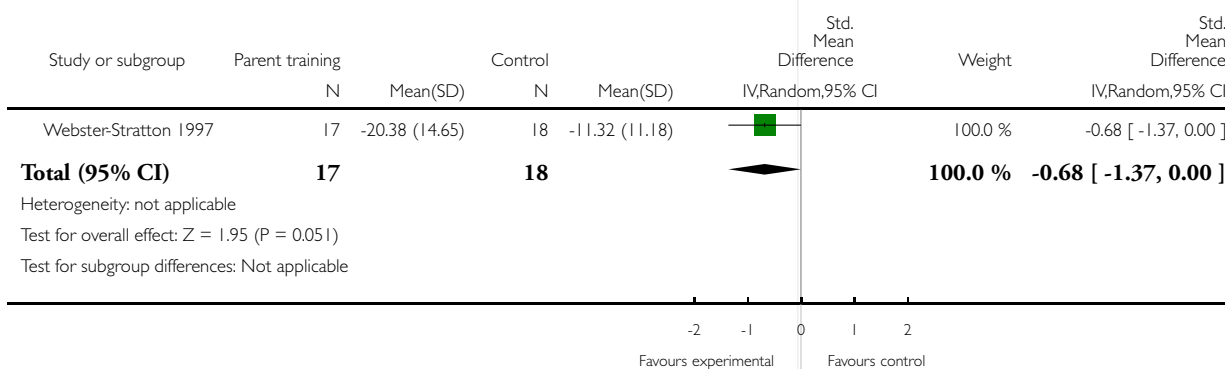


**Analysis 1.52. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 52 Child conduct problems (DPICS child positive affect with father - observation at home).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 52 Child conduct problems (DPICS child positive affect with father - observation at home)

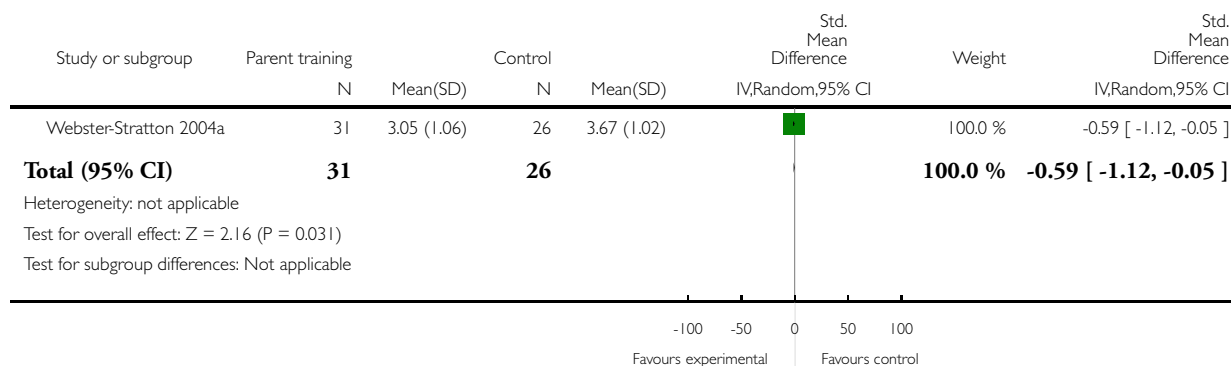


**Analysis 1.53. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 53 Child conduct problems (C-II Child observation overall poor conduct with mother - home observation).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 53 Child conduct problems (C-II Child observation overall poor conduct with mother - home observation)

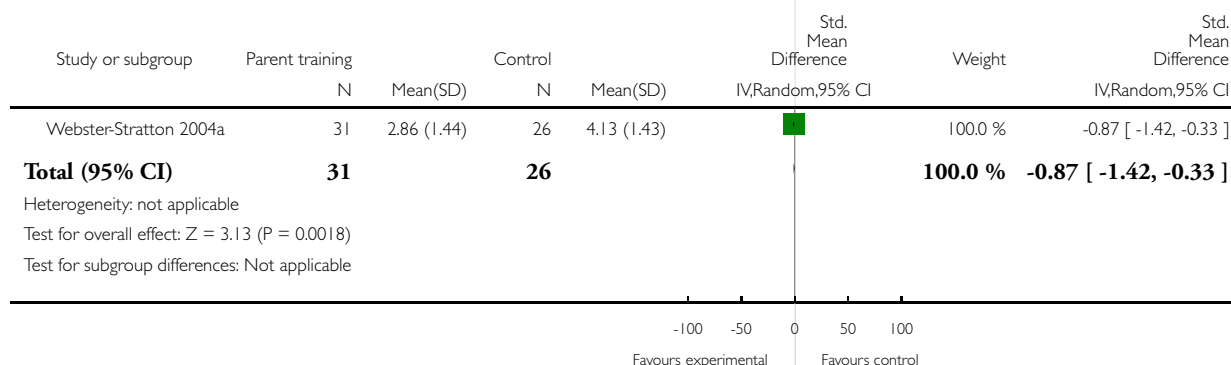


**Analysis 1.54. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 54 Child conduct problems (C-II Child observation per cent time inappropriate with mother - home observation).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 54 Child conduct problems (C-II Child observation per cent time inappropriate with mother - home observation)

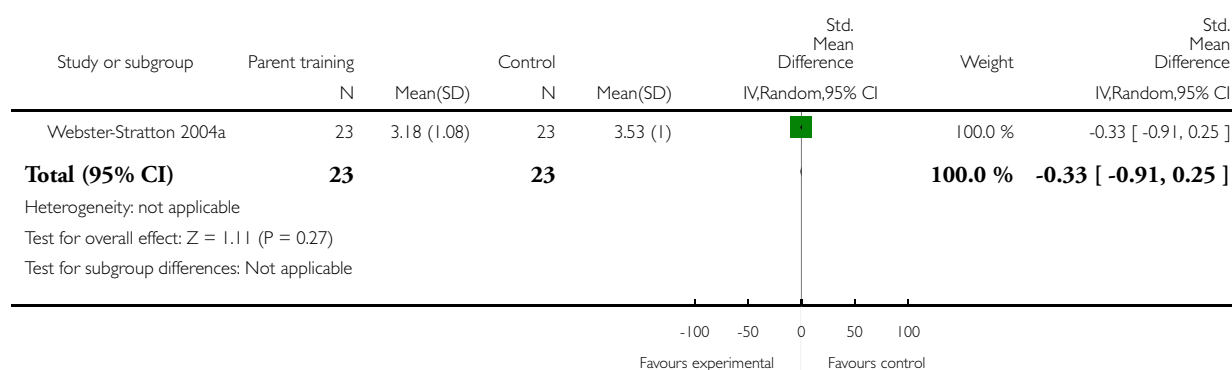


**Analysis 1.55. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 55 Child conduct problems (C-II Child observation overall poor conduct with father - home observation.**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 55 Child conduct problems (C-II Child observation overall poor conduct with father - home observation)

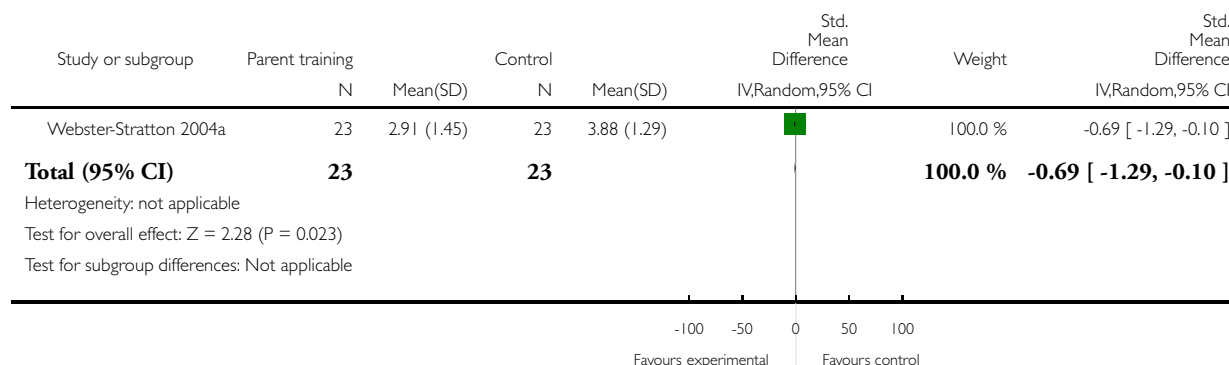


**Analysis 1.56. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 56 Child conduct problems (C-II Child observation percent time inappropriate with father - home observation).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 56 Child conduct problems (C-II Child observation percent time inappropriate with father - home observation)

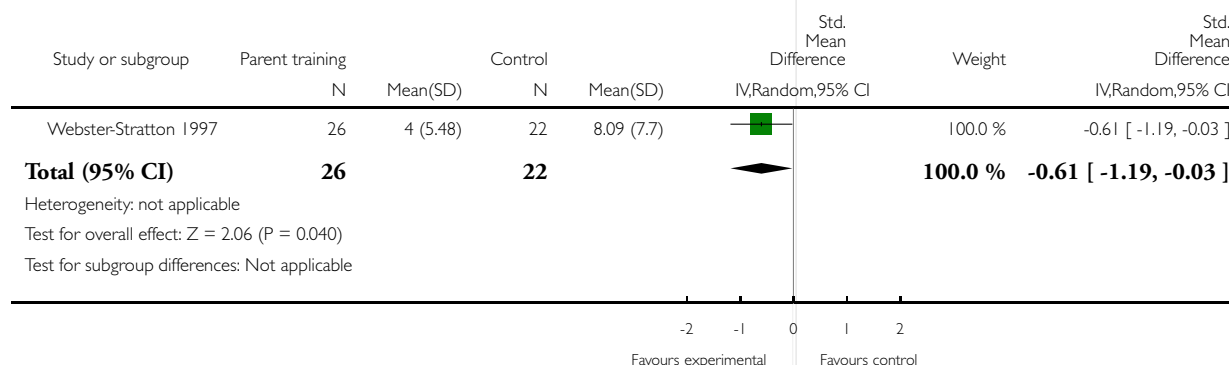


**Analysis 1.57. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 57 Child conduct problems (Conflict with peers - clinic observation).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 57 Child conduct problems (Conflict with peers - clinic observation)

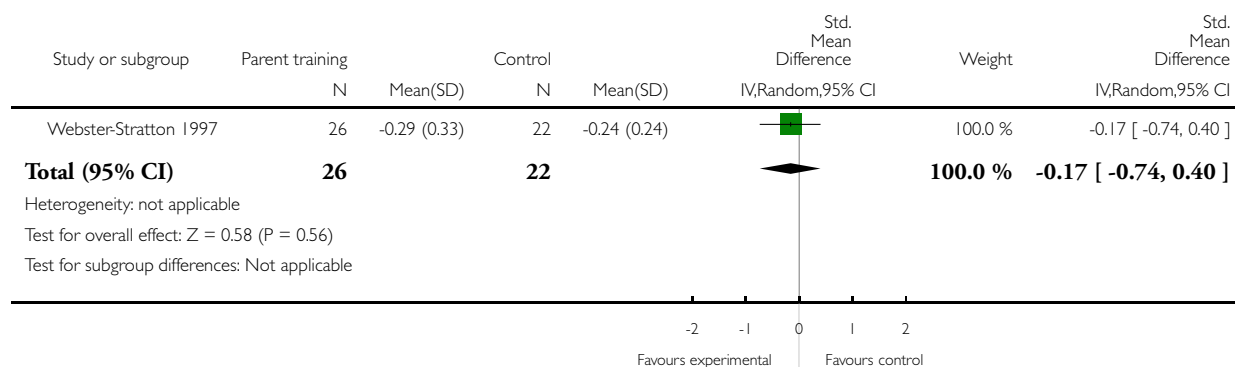


**Analysis 1.58. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 58 Child conduct problems (Ratio of positive to negative interactions with peers - clinic observation).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 58 Child conduct problems (Ratio of positive to negative interactions with peers - clinic observation)

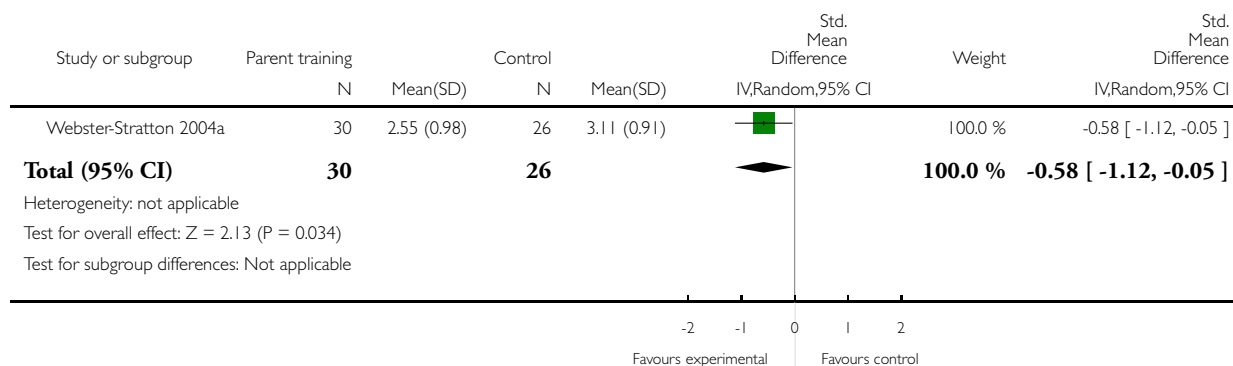


**Analysis 1.59. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 59 Child conduct problems (DPIS child inappropriate with peers - clinic observation).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 59 Child conduct problems (DPIS child inappropriate with peers - clinic observation)

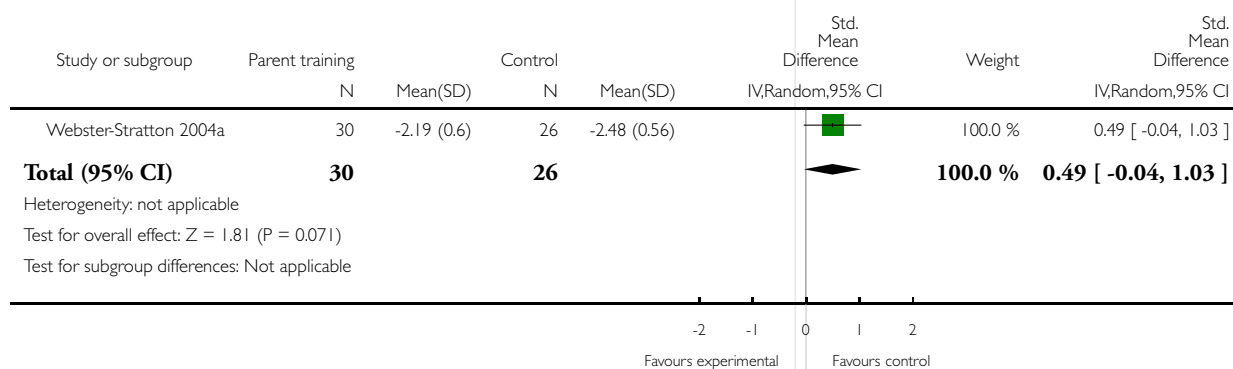


**Analysis 1.60. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 60 Child conduct problems (DPIS child positive with peers - clinic observation).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 60 Child conduct problems (DPIS child positive with peers - clinic observation)

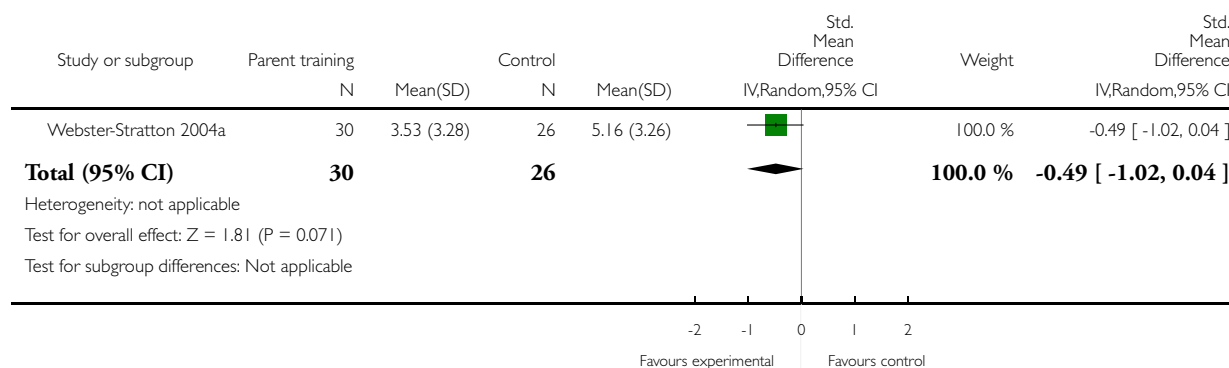


**Analysis 1.61. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 61 Child conduct problems (MOOSES child negative with peers and teacher in class - classroom observation).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 61 Child conduct problems (MOOSES child negative with peers and teacher in class - classroom observation)

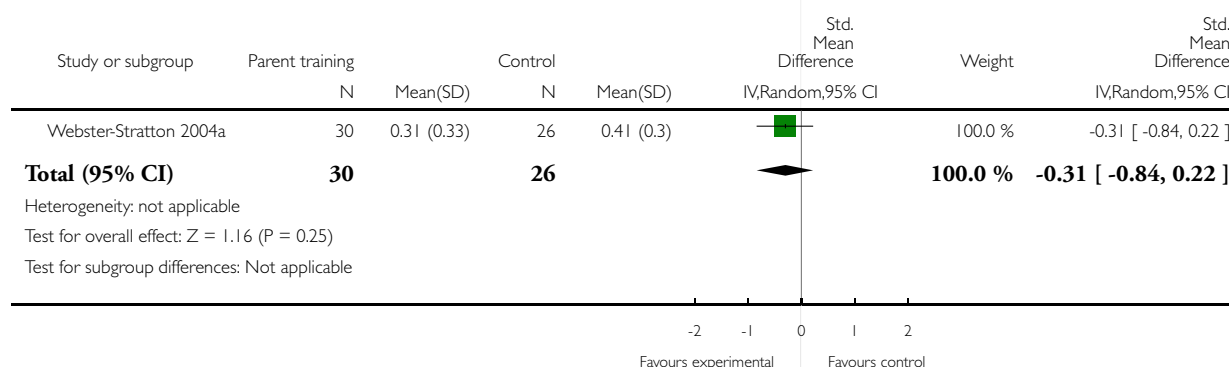


**Analysis 1.62. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 62 Child conduct problems (SHP child antisocial in classroom - classroom observation).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 62 Child conduct problems (SHP child antisocial in classroom - classroom observation)

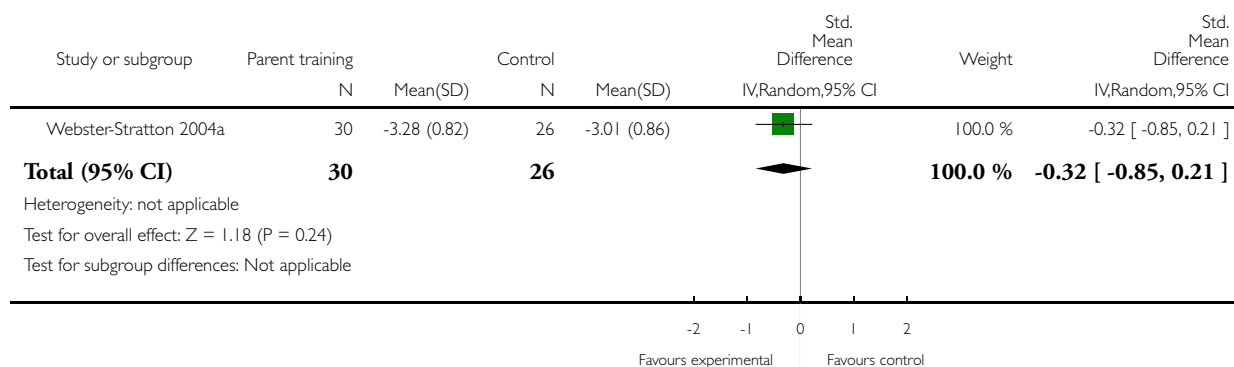


**Analysis 1.63. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 63 Child conduct problems (SHP social contact in classroom - classroom observation).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 63 Child conduct problems (SHP social contact in classroom - classroom observation)



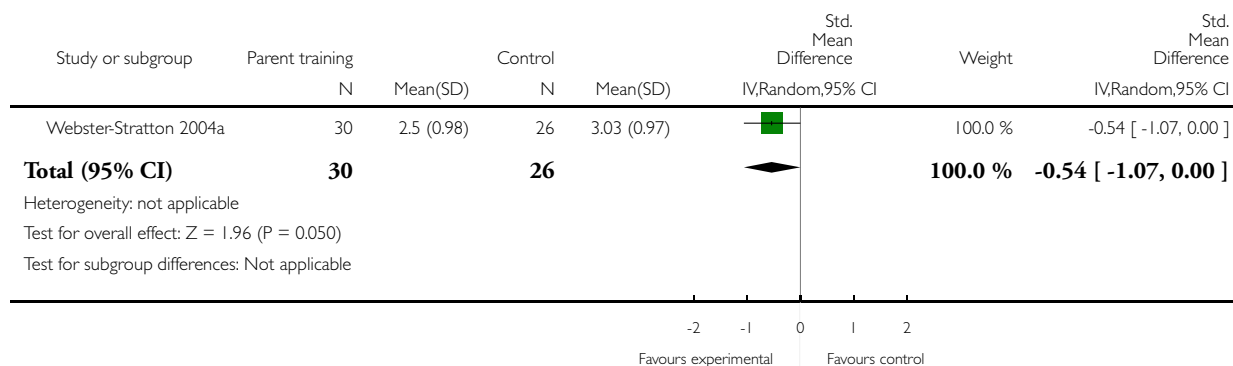


**Analysis 1.64. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 64 Child conduct problems (TASB child aggressive subscale - teacher report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 64 Child conduct problems (TASB child aggressive subscale - teacher report)

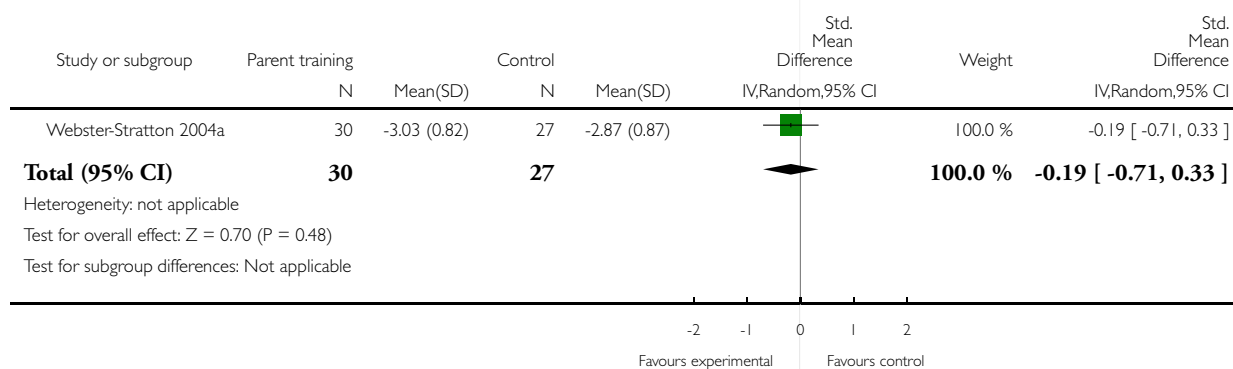


**Analysis 1.65. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 65 Child conduct problems (TASB prosocial subscale - teacher report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 65 Child conduct problems (TASB prosocial subscale - teacher report)

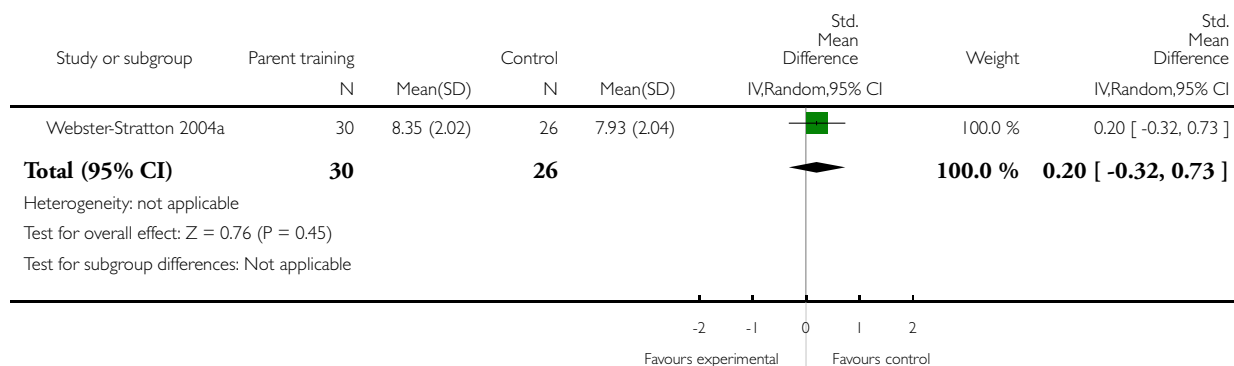


**Analysis 1.66. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 66 Child conduct problems (PCSC child poor conduct - teacher report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 66 Child conduct problems (PCSC child poor conduct - teacher report)

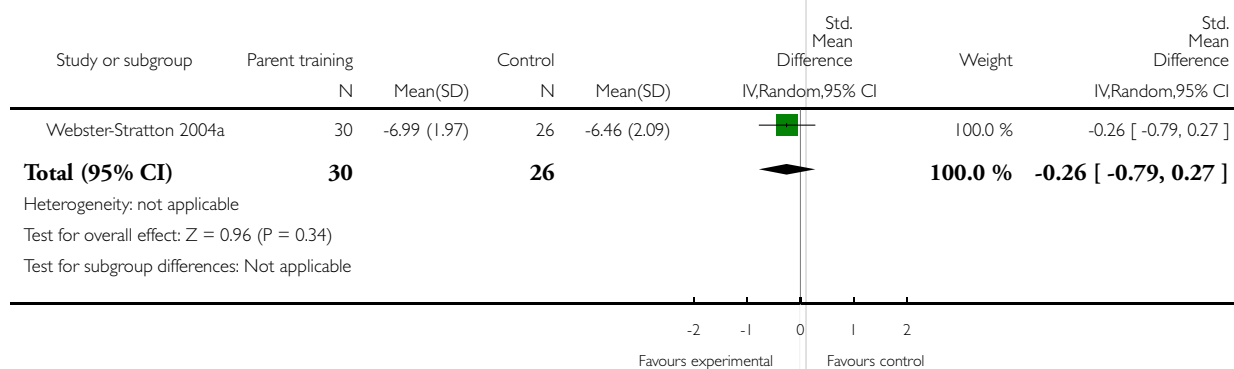


**Analysis 1.67. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 67 Child conduct problems (PCSC child social competence scale - teacher report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 67 Child conduct problems (PCSC child social competence scale - teacher report)

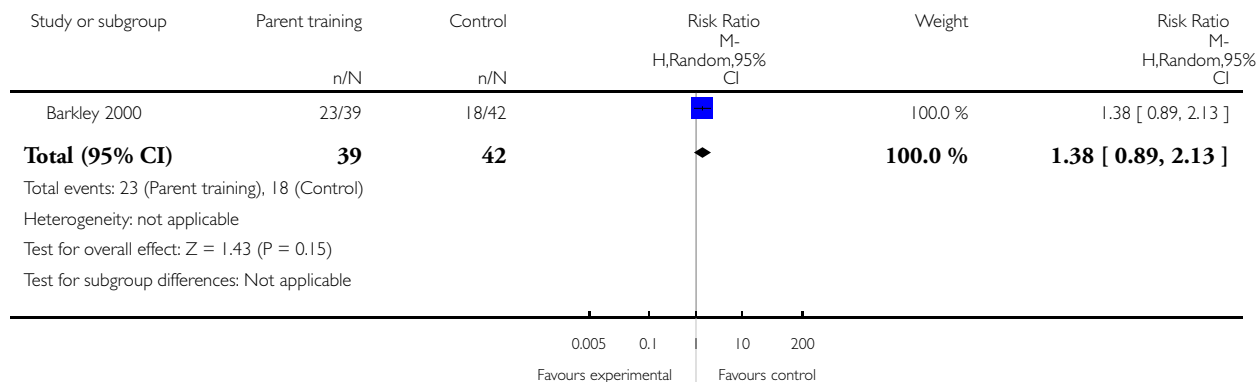


**Analysis 1.68. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 68 Child conduct problems (DSM diagnosis of Oppositional Defiant Disorder (ODD) - clinical interview).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 68 Child conduct problems (DSM diagnosis of Oppositional Defiant Disorder (ODD) - clinical interview)

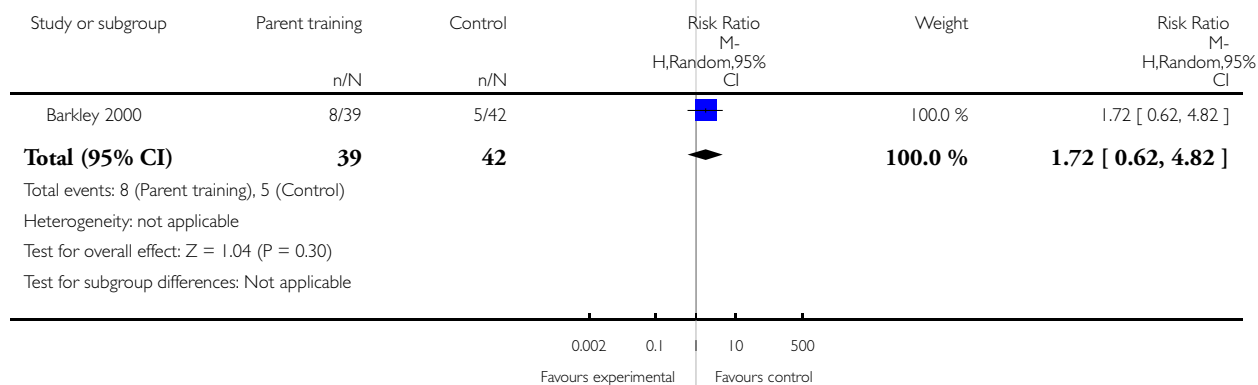


**Analysis 1.69. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 69 Child conduct problems (DSM diagnosis of Conduct Disorder - clinical interview).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 69 Child conduct problems (DSM diagnosis of Conduct Disorder - clinical interview)

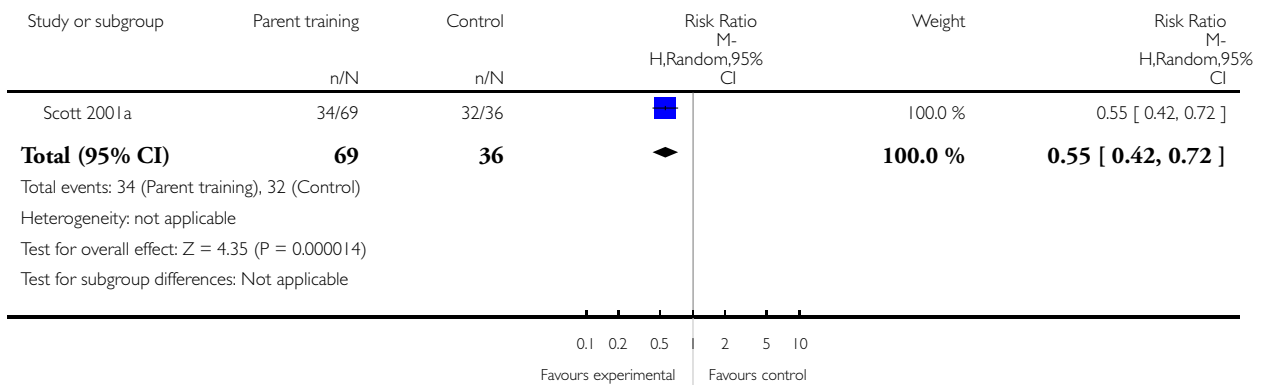


**Analysis 1.70. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 70 Child conduct problems (ICD-10 diagnosis of ODD - clinical interview).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 70 Child conduct problems (ICD-10 diagnosis of ODD - clinical interview)

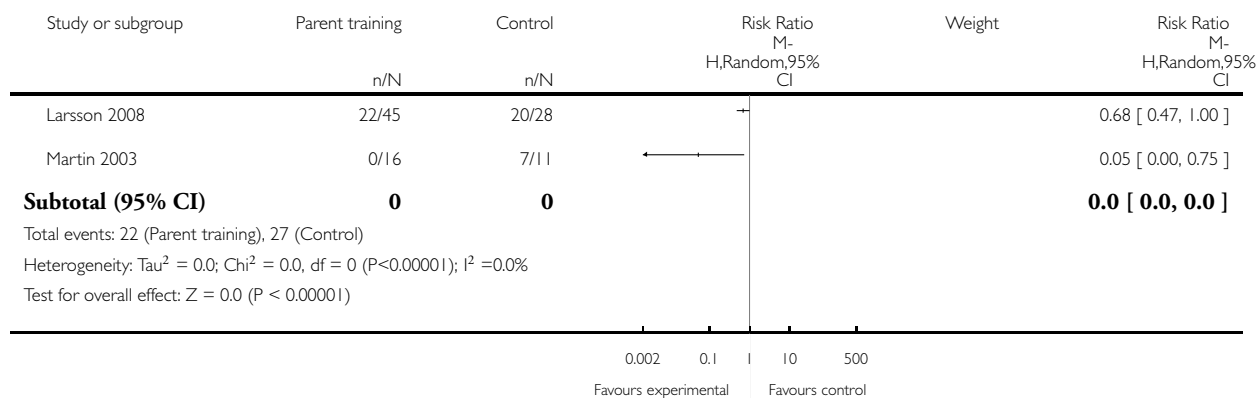


### Analysis 1.71. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 71 Child conduct problems (ECBI above 90th percentile - parent report).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 71 Child conduct problems (ECBI above 90th percentile - parent report)

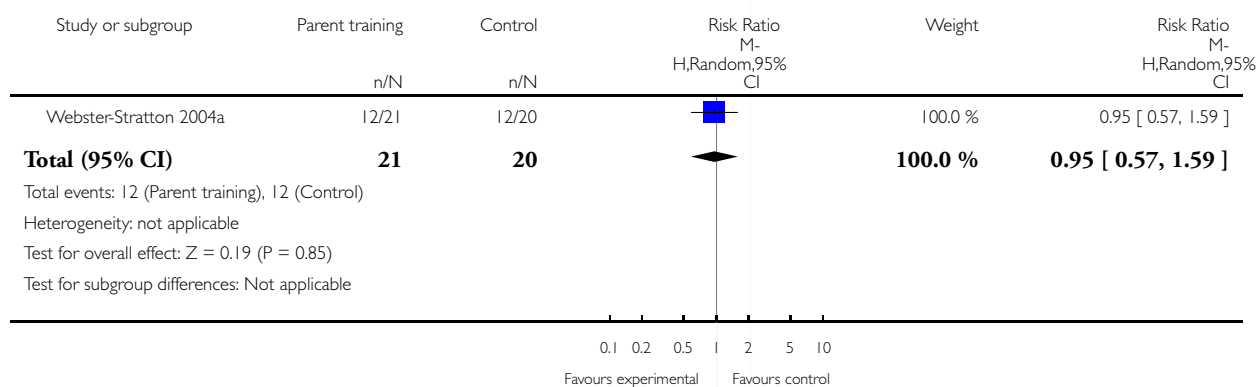


### Analysis 1.72. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 72 Child conduct problems (ECBI above 142 - parent report).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 72 Child conduct problems (ECBI above 142 - parent report)

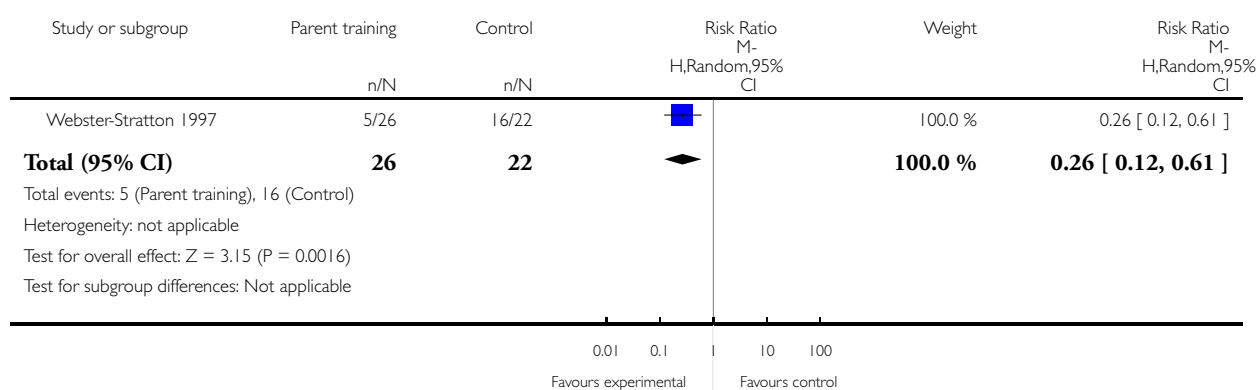


**Analysis 1.73. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 73 Child conduct problems (CBCL above 60, clinical score - parent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 73 Child conduct problems (CBCL above 60, clinical score - parent report)

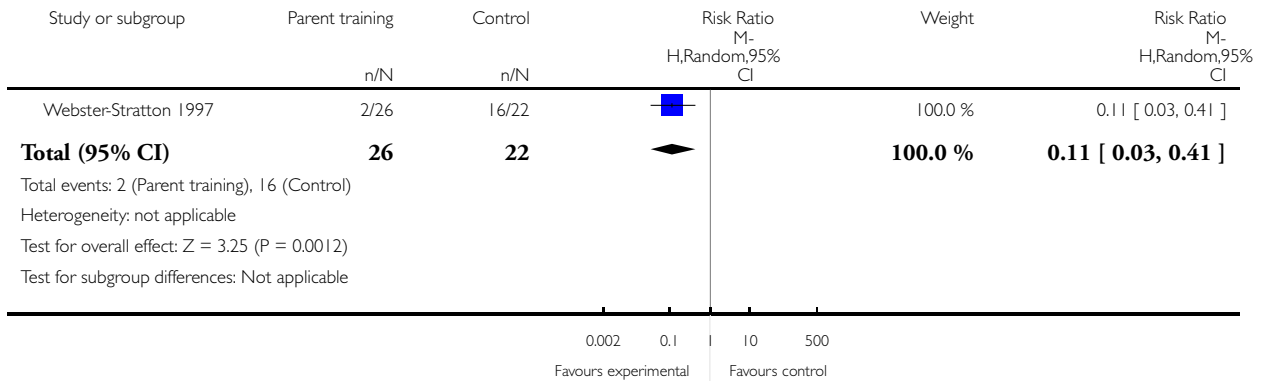


**Analysis 1.74. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 74 Child conduct problems (PDR above 30% reduction - parent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 74 Child conduct problems (PDR above 30% reduction - parent report)

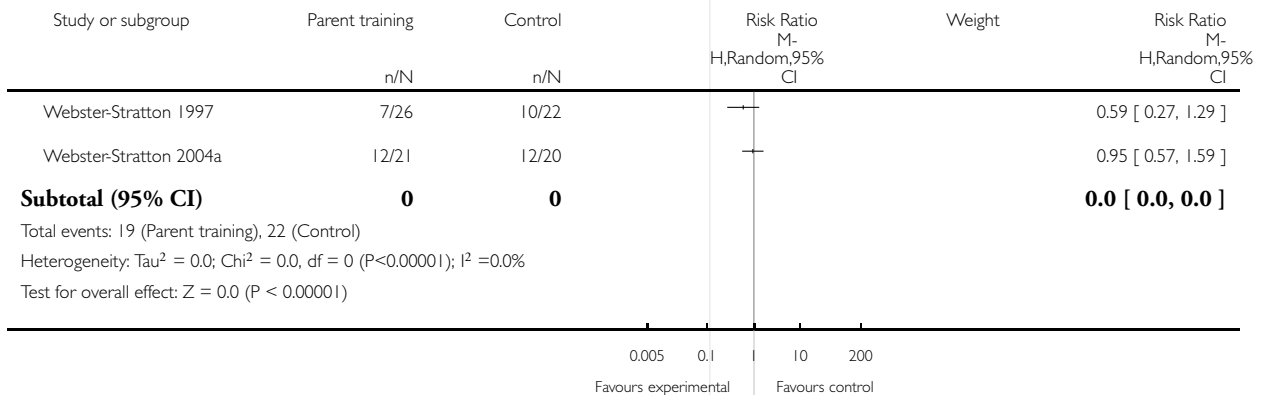


**Analysis 1.75. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 75 Child conduct problems (DPICS below 30% reduction in negative behaviour - observation in home).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 75 Child conduct problems (DPICS below 30% reduction in negative behaviour - observation in home)

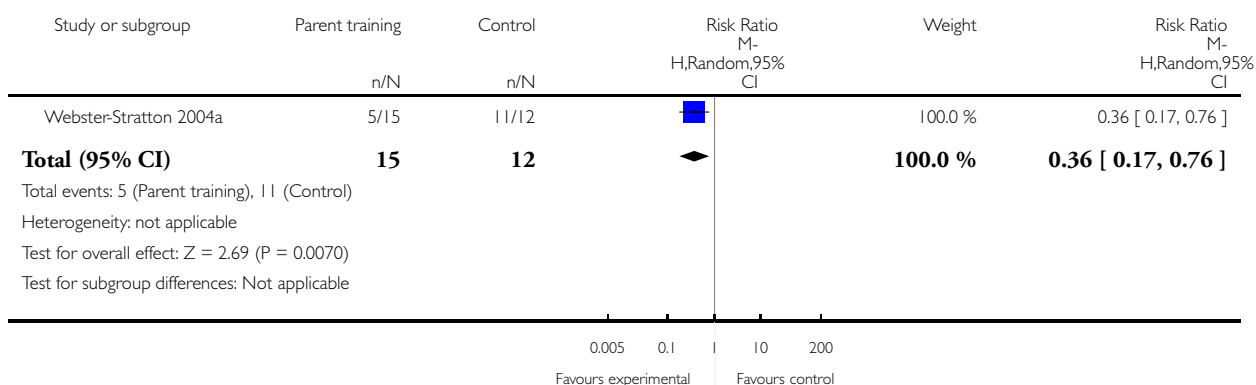


**Analysis 1.76. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 76 Child conduct problems (TASB below 20% reduction in behaviour - teacher report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 76 Child conduct problems (TASB below 20% reduction in behaviour - teacher report)



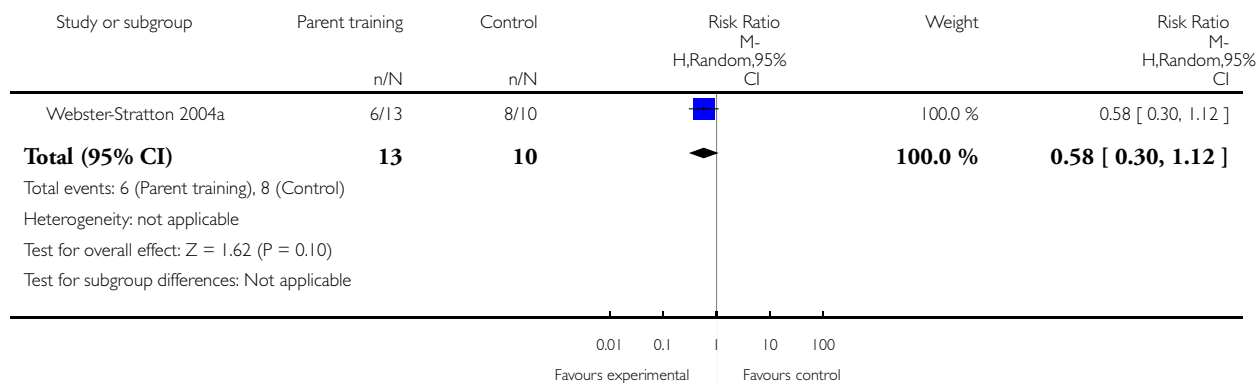


**Analysis 1.77. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 77 Child conduct problems (MOOSEs - teacher report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 77 Child conduct problems (MOOSEs - teacher report)

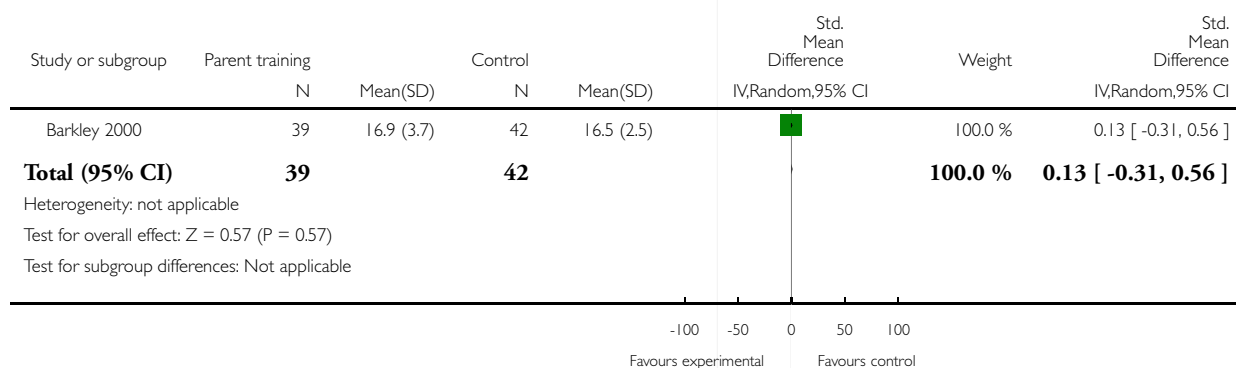


**Analysis 1.78. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 78 Child conduct problems (Mother-child free play - clinic observation).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 78 Child conduct problems (Mother-child free play - clinic observation)

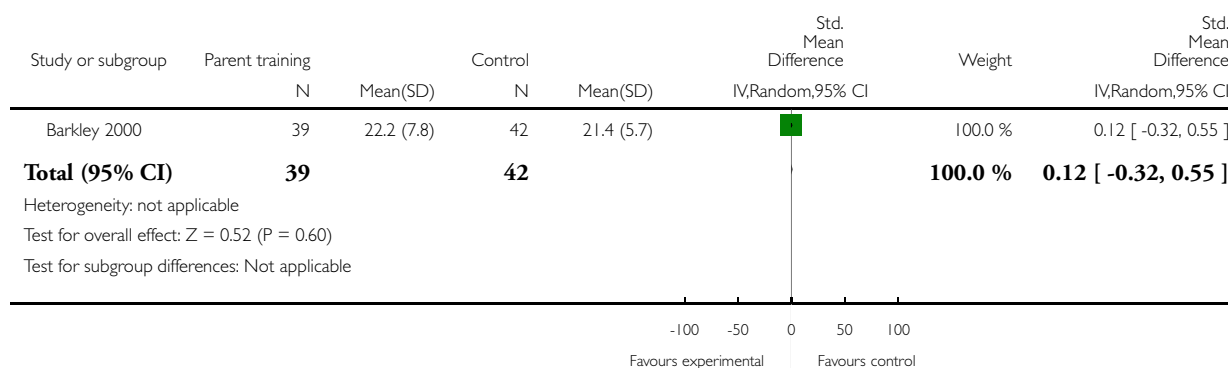


**Analysis 1.79. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 79 Child conduct problems (Mother-child task - clinic observation).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 79 Child conduct problems (Mother-child task - clinic observation)

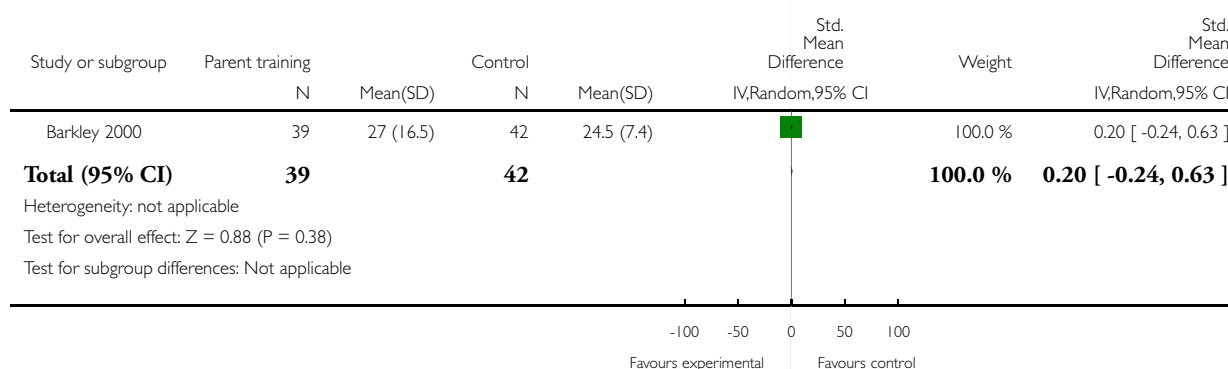


**Analysis 1.80. Comparison 1 Parent training versus control for individual studies (child conduct problems), Outcome 80 Child conduct problems (Examiner rating - clinic observation).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 1 Parent training versus control for individual studies (child conduct problems)

Outcome: 80 Child conduct problems (Examiner rating - clinic observation)

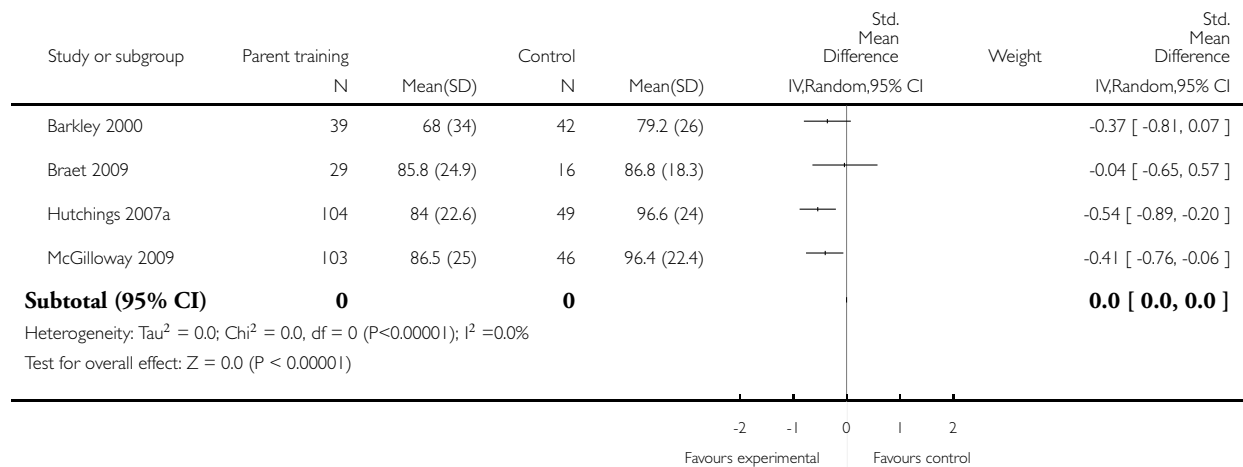


## Analysis 2.1. Comparison 2 Parent training versus control for individual studies (parental mental health), Outcome 1 Parental mental health (Parenting Stress Index (PSI) total score - parent report).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 2 Parent training versus control for individual studies (parental mental health)

Outcome: 1 Parental mental health (Parenting Stress Index (PSI) total score - parent report)

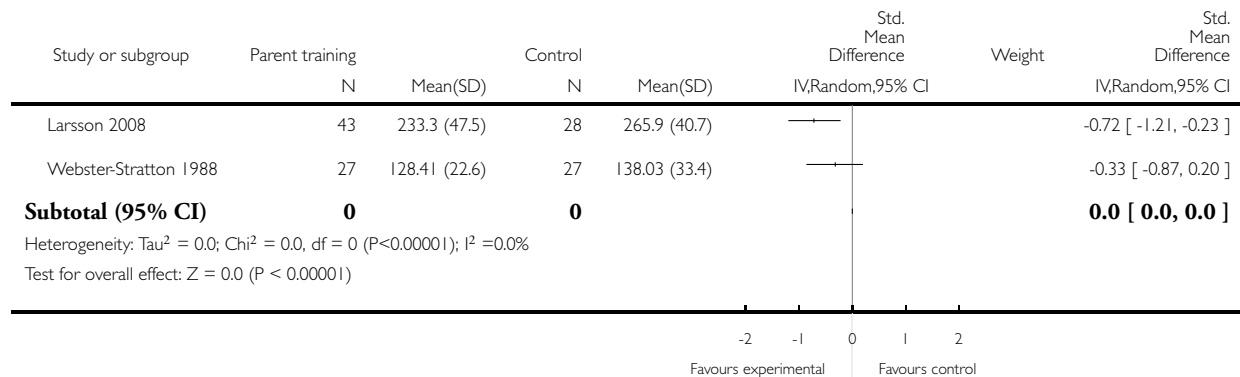


## Analysis 2.2. Comparison 2 Parent training versus control for individual studies (parental mental health), Outcome 2 Parental mental health (PSI total score - mother report).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 2 Parent training versus control for individual studies (parental mental health)

Outcome: 2 Parental mental health (PSI total score - mother report)

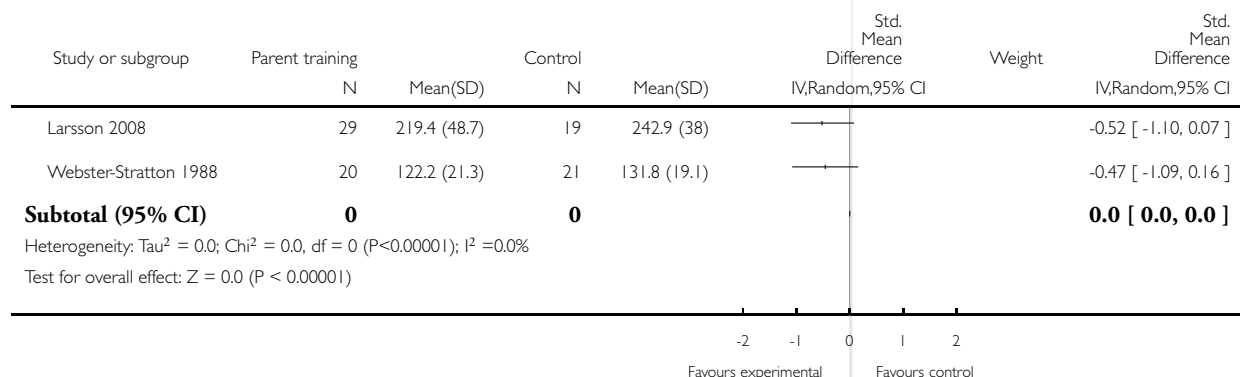


## Analysis 2.3. Comparison 2 Parent training versus control for individual studies (parental mental health), Outcome 3 Parental mental health (PSI - father report).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 2 Parent training versus control for individual studies (parental mental health)

Outcome: 3 Parental mental health (PSI - father report)

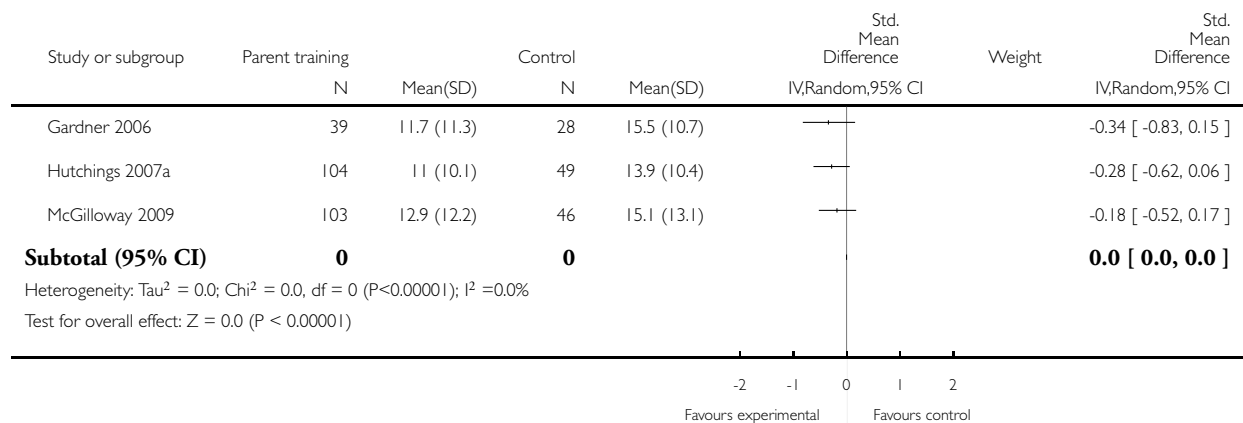


# **Analysis 2.4. Comparison 2 Parent training versus control for individual studies (parental mental health), Outcome 4 Parental mental health (Beck Depression Inventory - parent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 2 Parent training versus control for individual studies (parental mental health)

Outcome: 4 Parental mental health (Beck Depression Inventory - parent report)

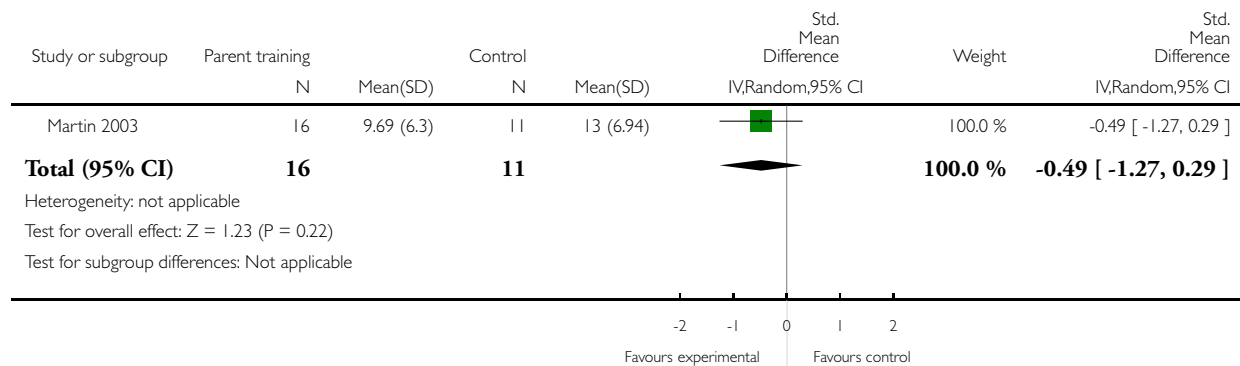


**Analysis 2.5. Comparison 2 Parent training versus control for individual studies (parental mental health), Outcome 5 Parental mental health (Depression-Anxiety-Stress Adjustment scale - parent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 2 Parent training versus control for individual studies (parental mental health)

Outcome: 5 Parental mental health (Depression-Anxiety-Stress Adjustment scale - parent report)

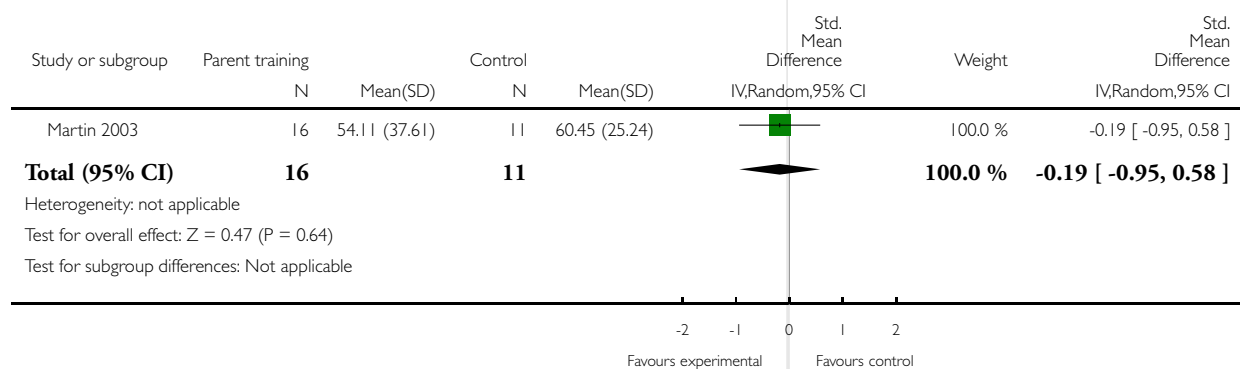


**Analysis 2.6. Comparison 2 Parent training versus control for individual studies (parental mental health), Outcome 6 Parental mental health (Work Stress scale - parent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 2 Parent training versus control for individual studies (parental mental health)

Outcome: 6 Parental mental health (Work Stress scale - parent report)

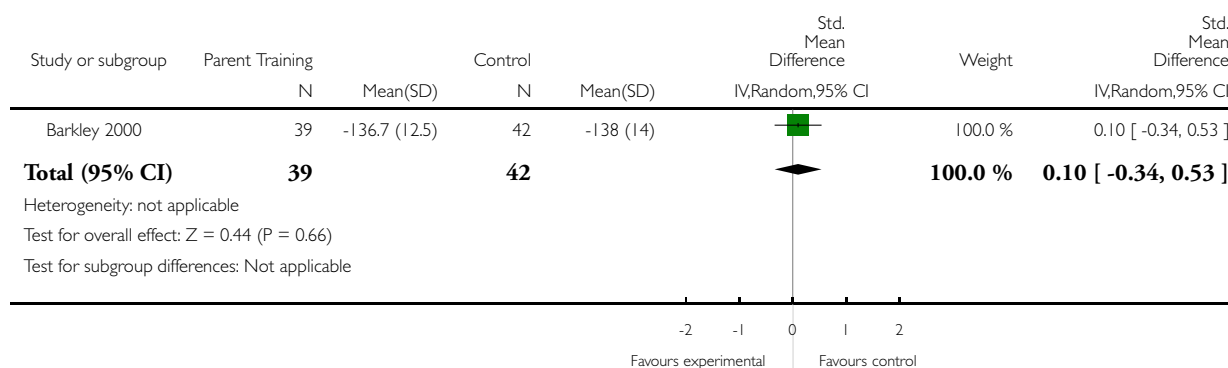


### Analysis 3.1. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 1 Parenting practices (Parenting Practices Scale - mother report).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 1 Parenting practices (Parenting Practices Scale - mother report)

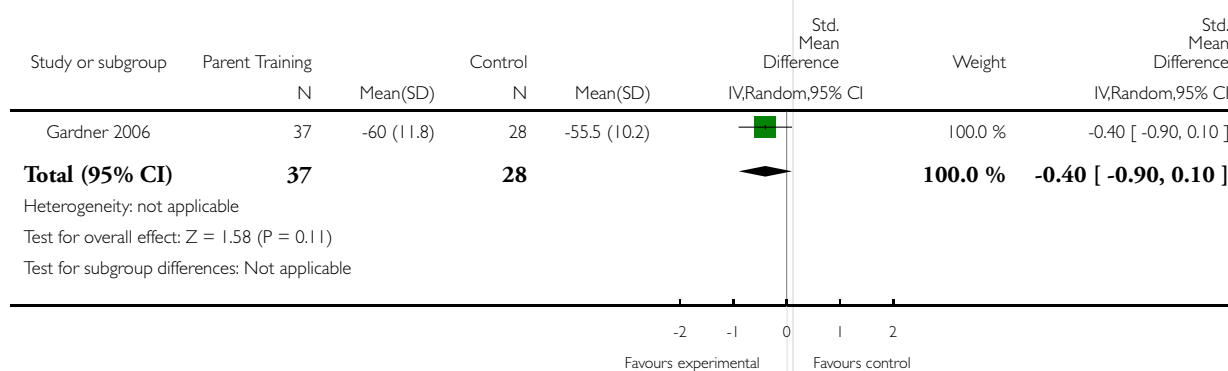


### Analysis 3.2. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 2 Parenting practices (Parenting Competence total score - parent report).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 2 Parenting practices (Parenting Competence total score - parent report)

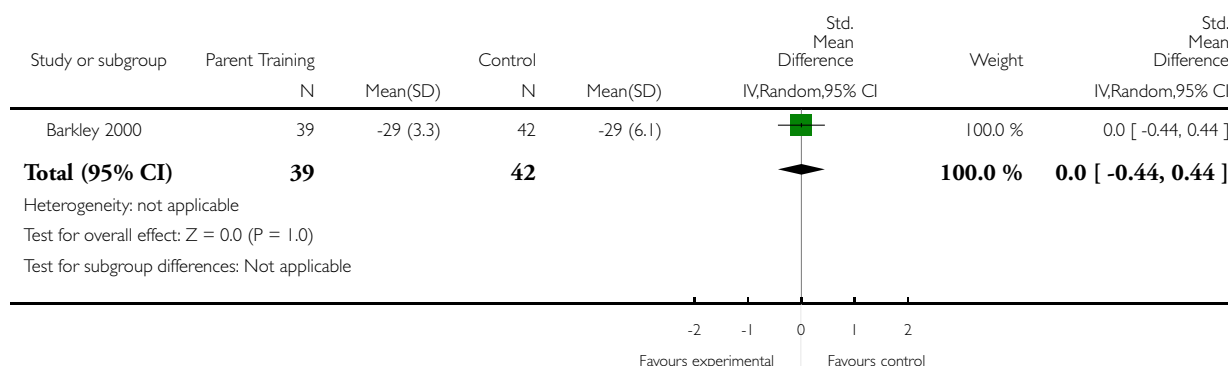


### Analysis 3.3. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 3 Parenting practices (Parenting competency efficacy subscale - parent report).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 3 Parenting practices (Parenting competency efficacy subscale - parent report)

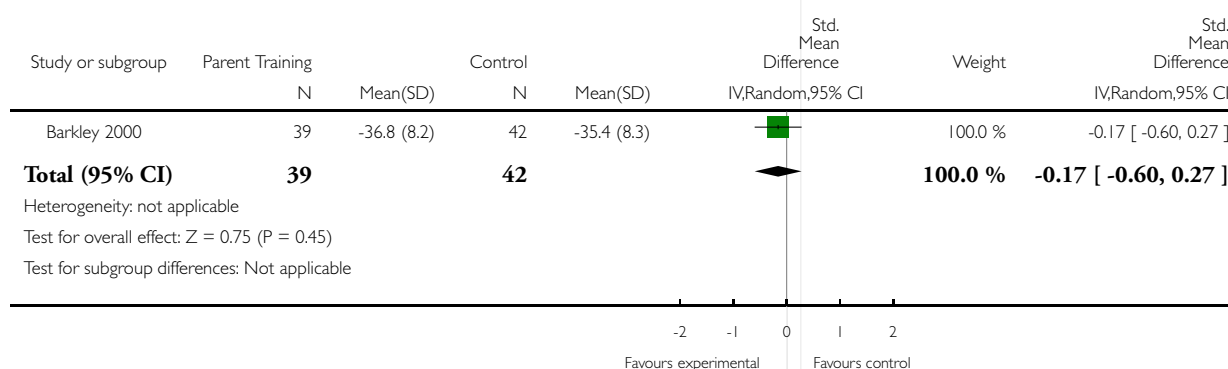


### Analysis 3.4. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 4 Parenting practices (Parenting competency satisfaction subscale - parent report).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 4 Parenting practices (Parenting competency satisfaction subscale - parent report)



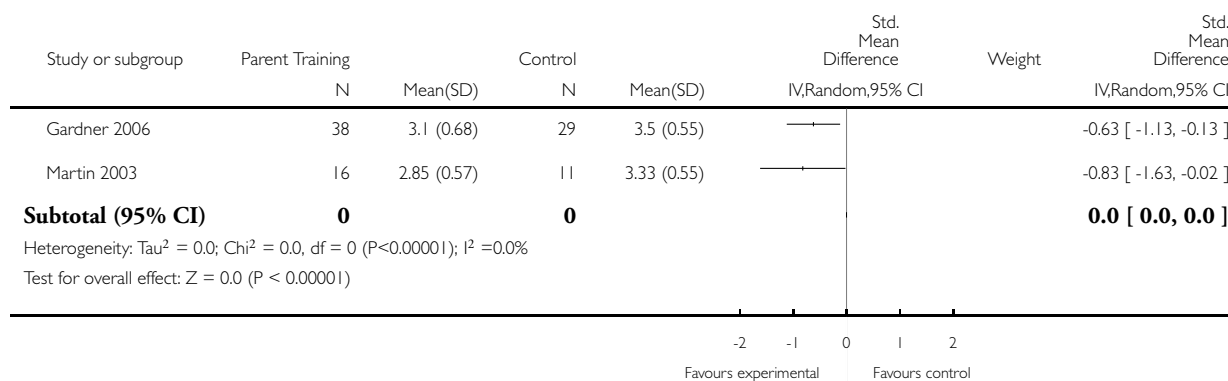


### Analysis 3.5. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 5 Parenting practices (Parenting Scale total score - parent report).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 5 Parenting practices (Parenting Scale total score - parent report)

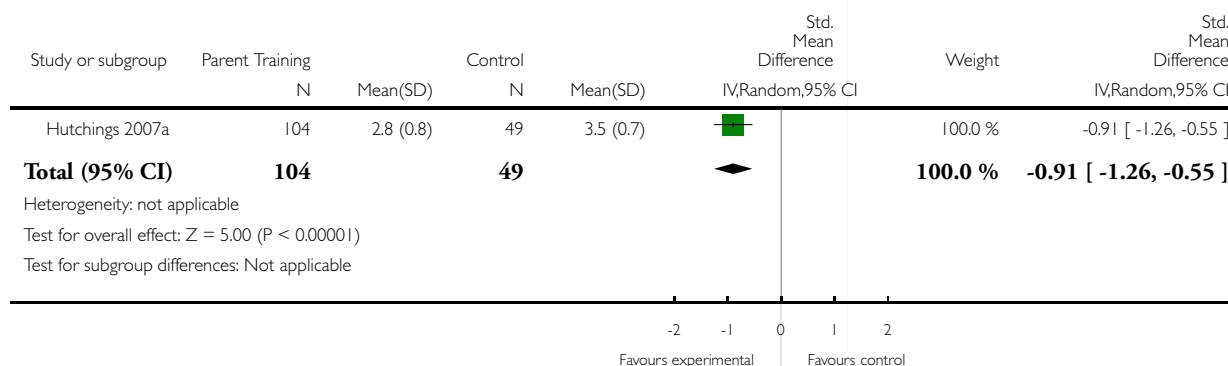


### Analysis 3.6. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 6 Parenting practices (Parental sense of competence scale - parent report).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 6 Parenting practices (Parental sense of competence scale - parent report)

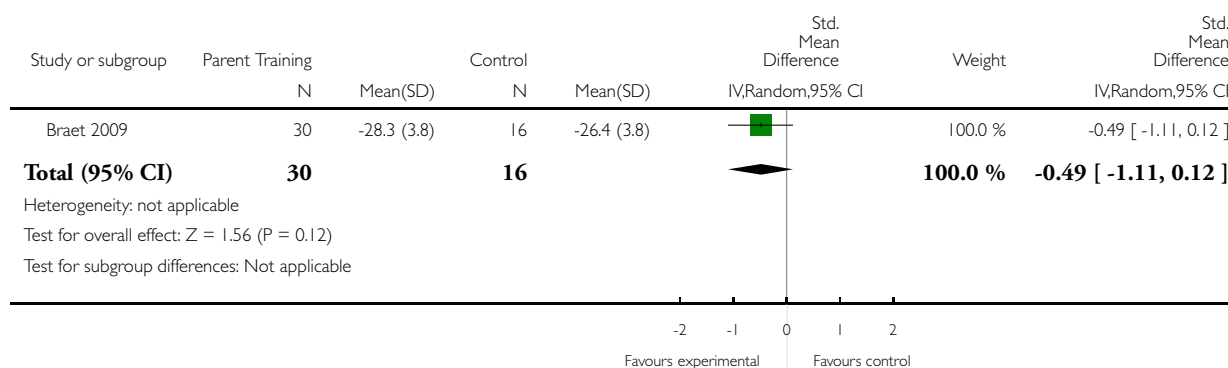


### Analysis 3.7. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 7 Parenting practices (Ghent positive parental behaviour subscale - parent report).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 7 Parenting practices (Ghent positive parental behaviour subscale - parent report)

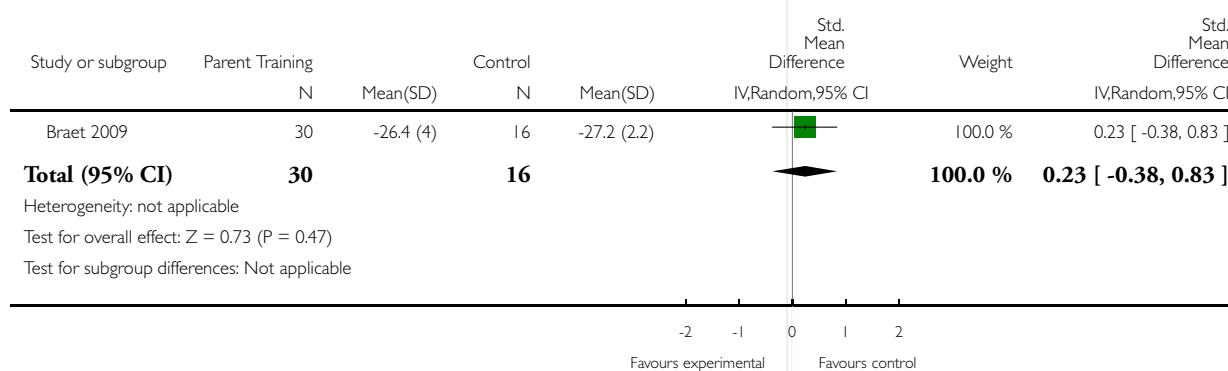


### Analysis 3.8. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 8 Parenting practices (Ghent rule setting subscale - parent report).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 8 Parenting practices (Ghent rule setting subscale - parent report)

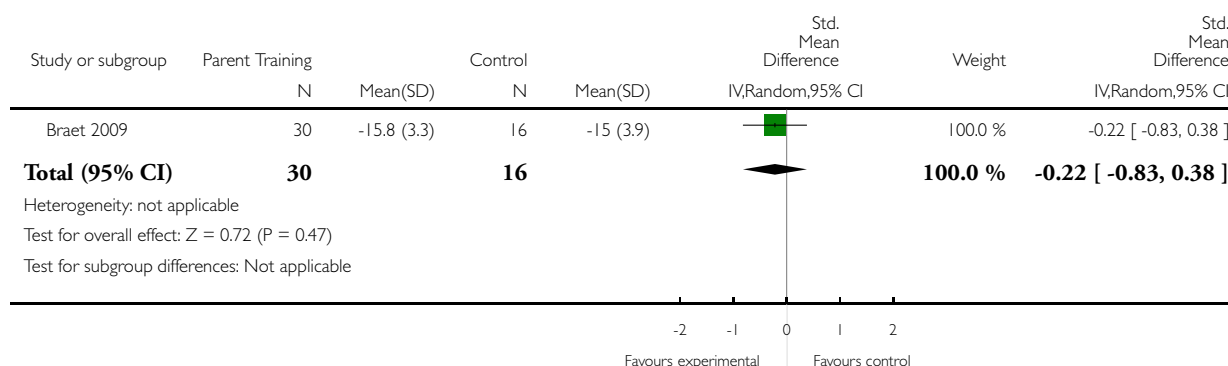


### Analysis 3.9. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 9 Parenting practices (Ghent disciplining subscale - parent report).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 9 Parenting practices (Ghent disciplining subscale - parent report)

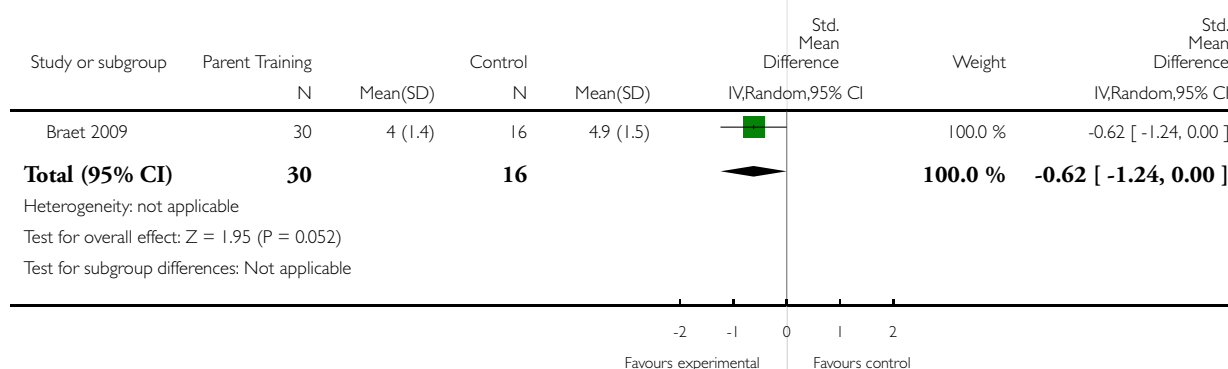


### Analysis 3.10. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 10 Parenting practices (Ghent harsh punishment subscale - parent report).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 10 Parenting practices (Ghent harsh punishment subscale - parent report)

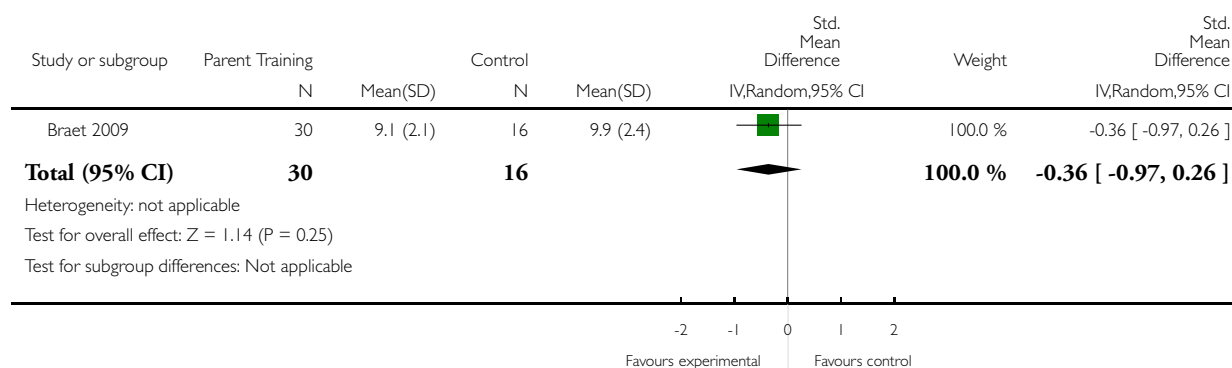


### Analysis 3.11. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 11 Parenting practices (Ghent inconsistent disciplining - parent report).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 11 Parenting practices (Ghent inconsistent disciplining - parent report)

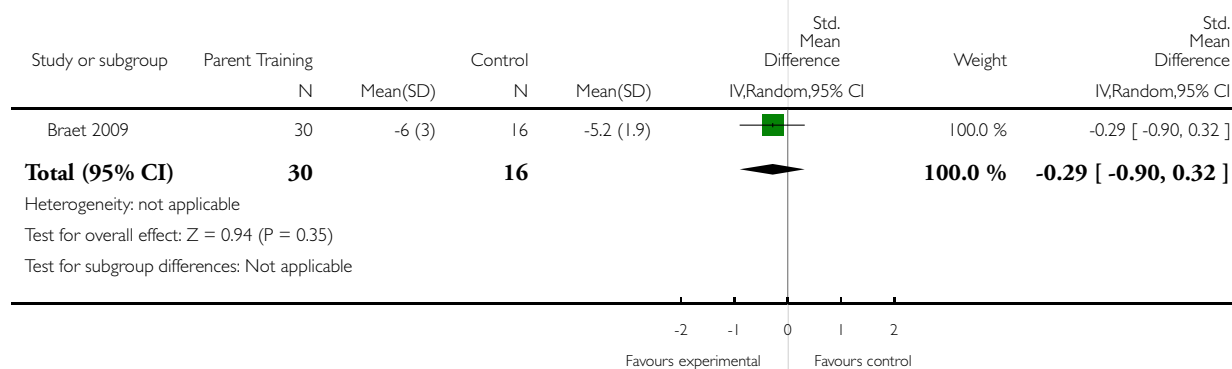


### Analysis 3.12. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 12 Parenting practices (Ghent ignoring subscale - parent report).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 12 Parenting practices (Ghent ignoring subscale - parent report)

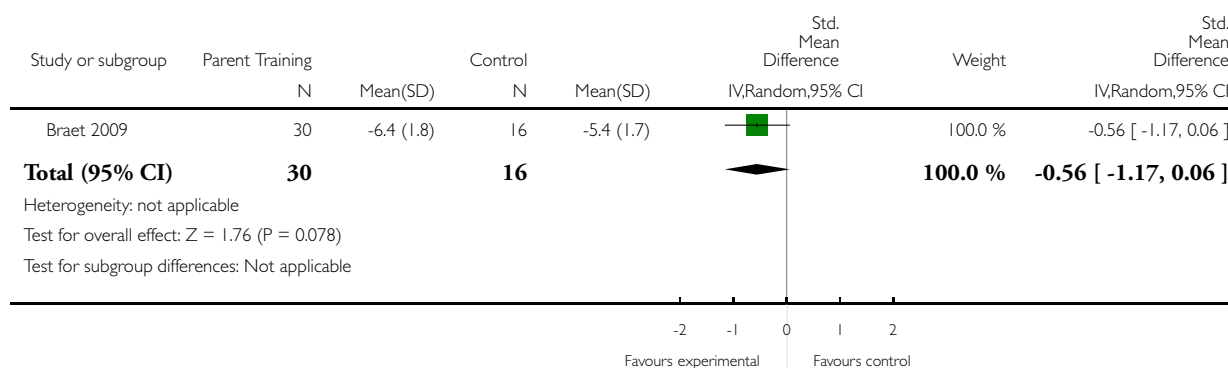


### Analysis 3.13. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 13 Parenting practices (Ghent maternal rewarding subscale - parent report).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 13 Parenting practices (Ghent maternal rewarding subscale - parent report)

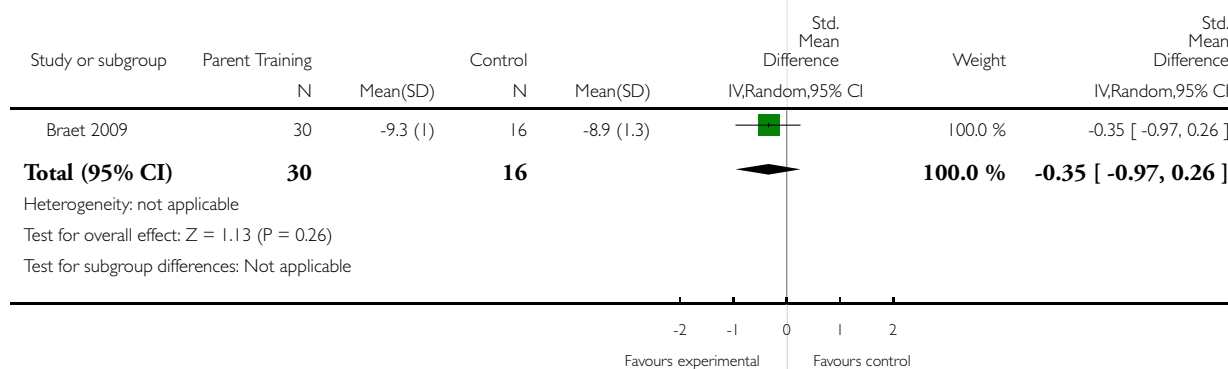


### Analysis 3.14. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 14 Parenting practices (Ghent social rewarding subscale - parent report).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 14 Parenting practices (Ghent social rewarding subscale - parent report)

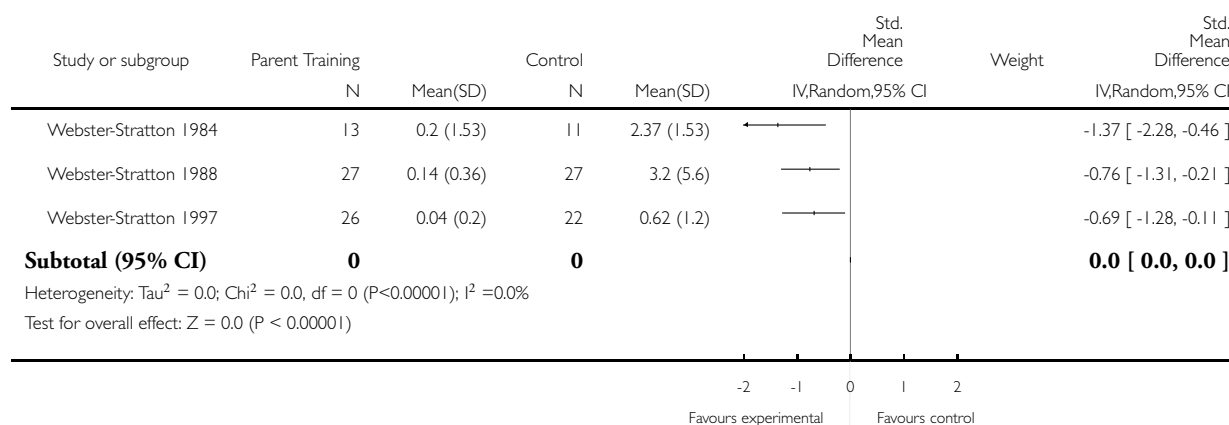


### Analysis 3.15. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 15 Parenting practices (Parent Daily Report spans subscale - mother report).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 15 Parenting practices (Parent Daily Report spans subscale - mother report)

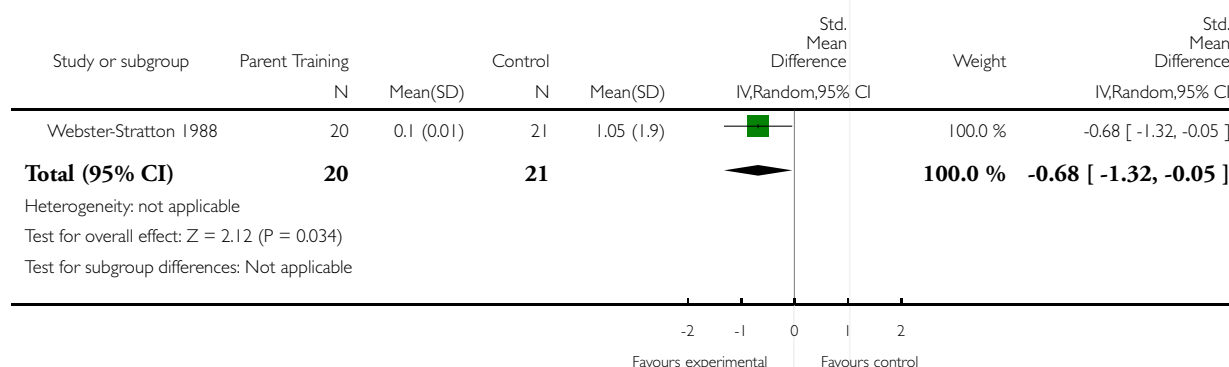


### Analysis 3.16. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 16 Parenting practices (PDR spans - father report).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 16 Parenting practices (PDR spans - father report)

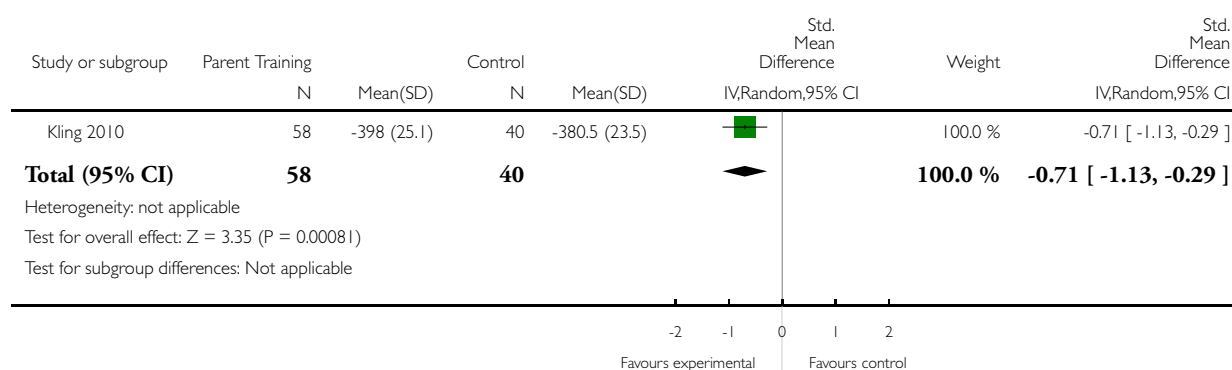


**Analysis 3.17. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 17 Parenting Practices (Parenting practices interview - parent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 17 Parenting Practices (Parenting practices interview - parent report)

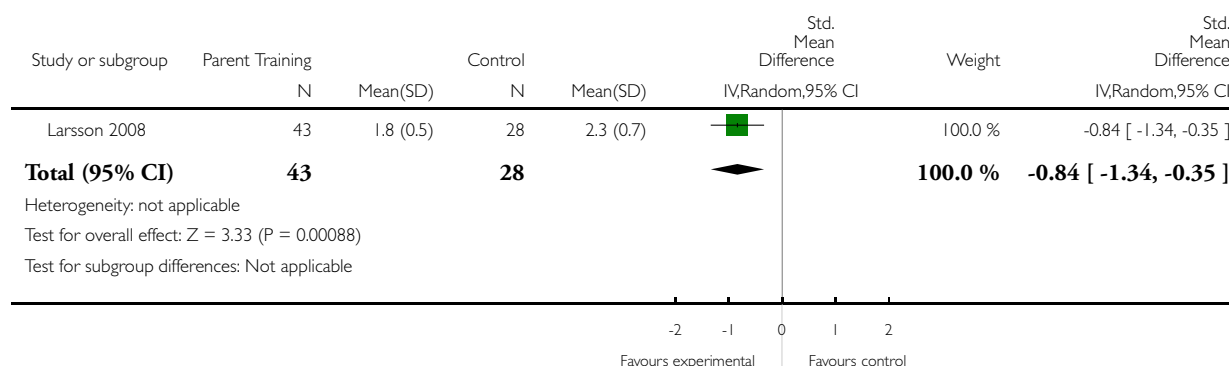


### Analysis 3.18. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 18 Parenting practices (PPI harsh discipline subscale - mother report).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 18 Parenting practices (PPI harsh discipline subscale - mother report)

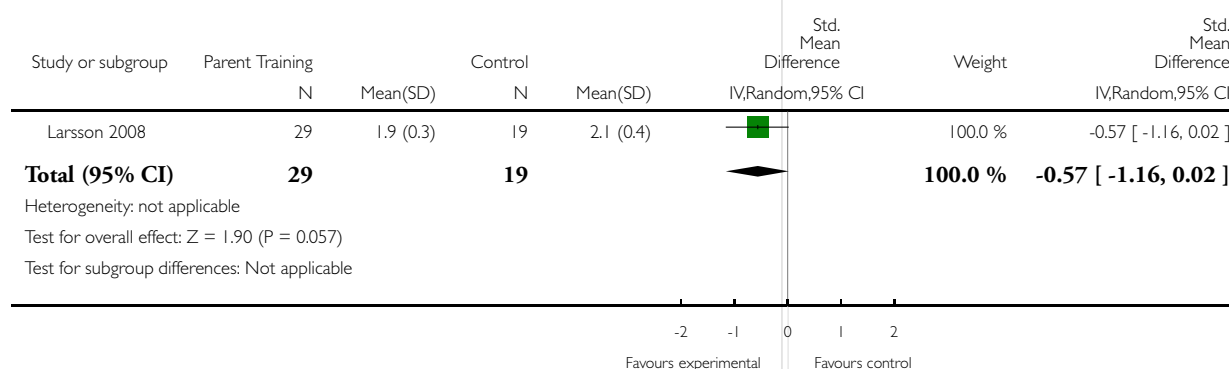


### Analysis 3.19. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 19 Parenting practices (PPI harsh discipline subscale - father report).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 19 Parenting practices (PPI harsh discipline subscale - father report)



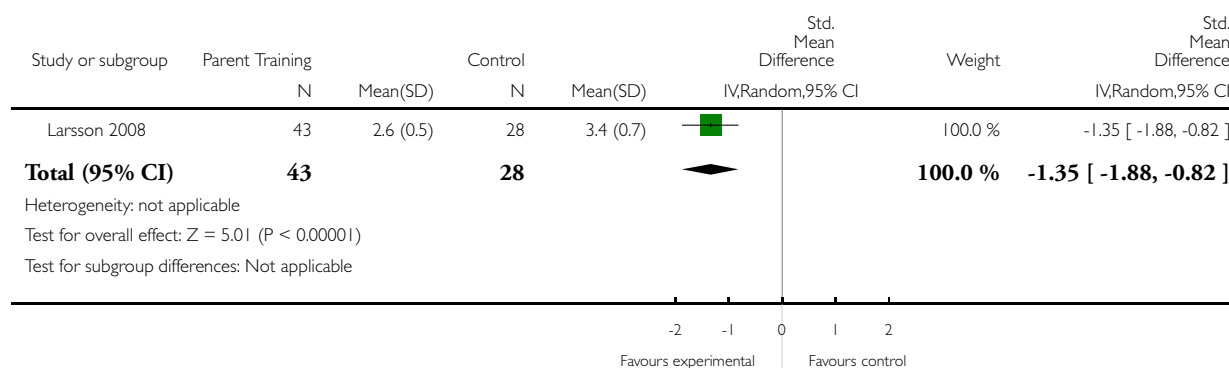


### Analysis 3.20. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 20 Parenting practices (PPI inconsistent discipline - mother report).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 20 Parenting practices (PPI inconsistent discipline - mother report)

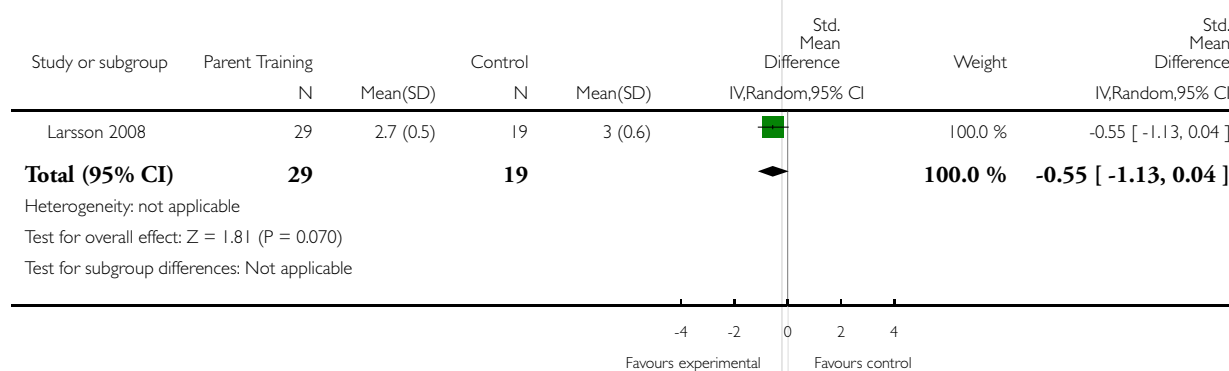


### Analysis 3.21. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 21 Parenting practices (PPI inconsistent discipline - father report).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 21 Parenting practices (PPI inconsistent discipline - father report)

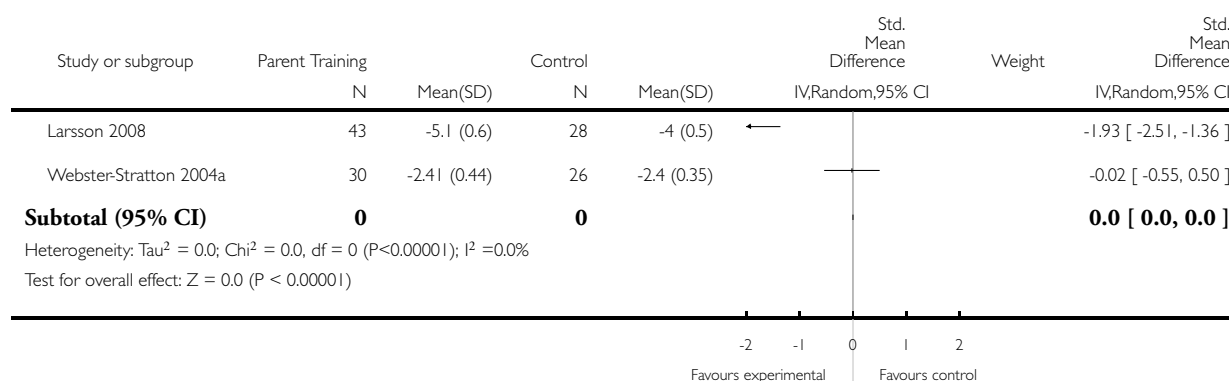


### Analysis 3.22. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 22 Parenting practices (PPI positive/supportive parenting subscale - mother report).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 22 Parenting practices (PPI positive/supportive parenting subscale - mother report)

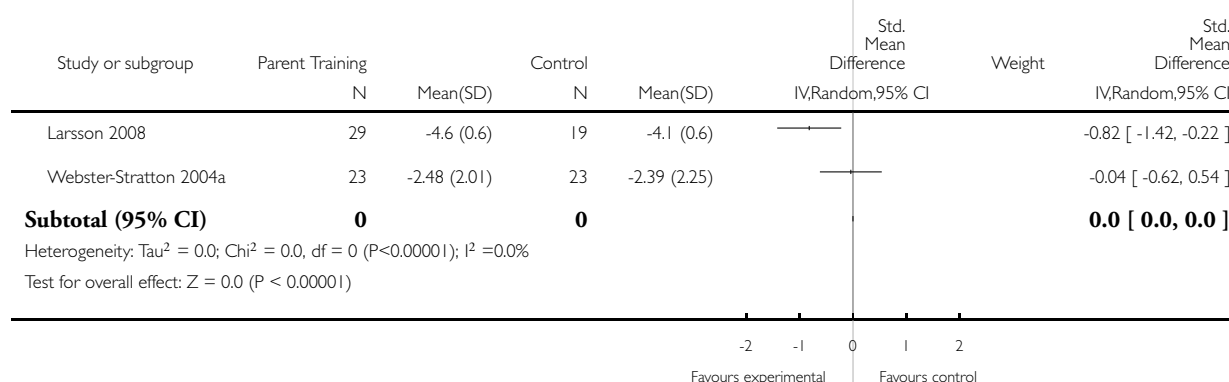


### Analysis 3.23. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 23 Parenting practices (PPI positive/supportive parenting - father report).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 23 Parenting practices (PPI positive/supportive parenting - father report)

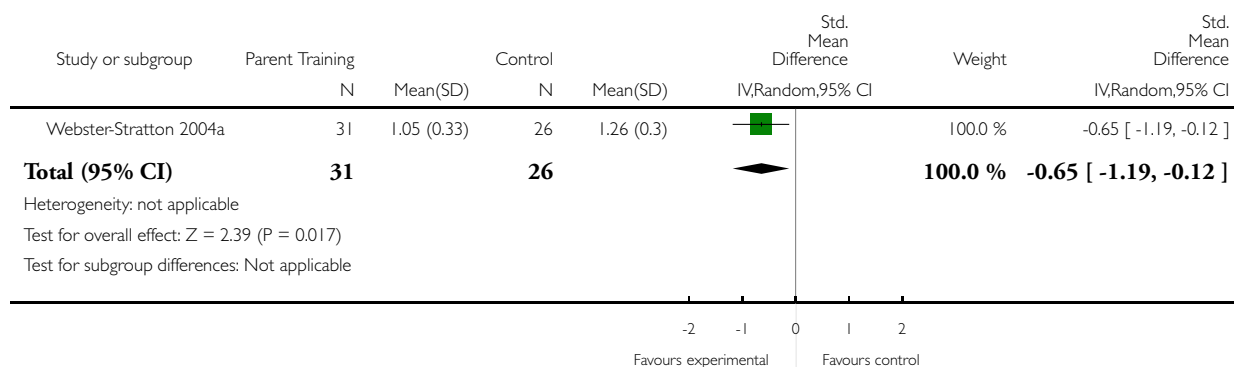


**Analysis 3.24. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 24 Parenting practices (PPI harsh inappropriate - mother report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 24 Parenting practices (PPI harsh inappropriate - mother report)

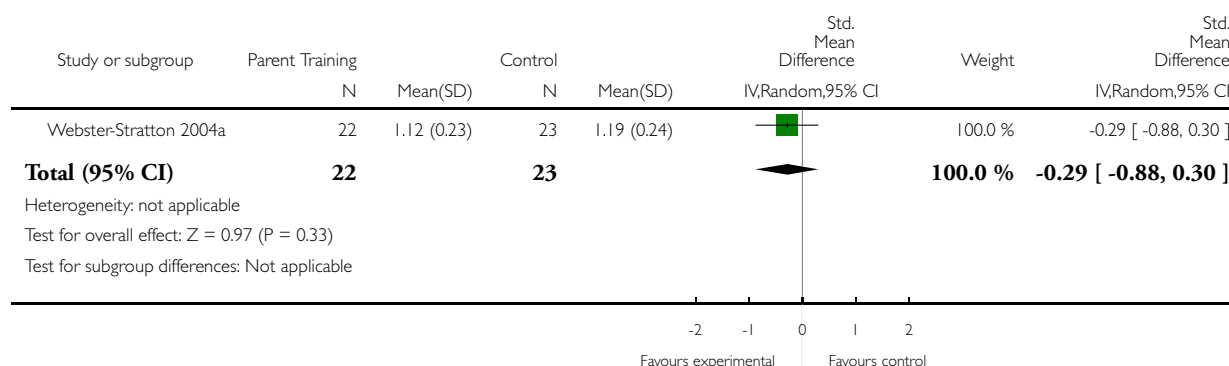


### Analysis 3.25. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 25 Parenting practices (PPI harsh inappropriate - father report).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 25 Parenting practices (PPI harsh inappropriate - father report)

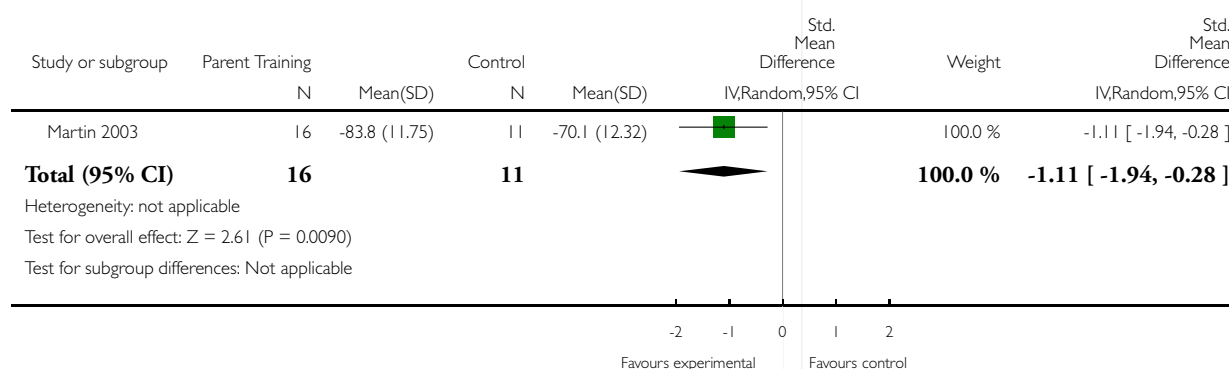


### Analysis 3.26. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 26 Parenting practices (Problem-solving behaviour checklist - parent report).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 26 Parenting practices (Problem-solving behaviour checklist - parent report)

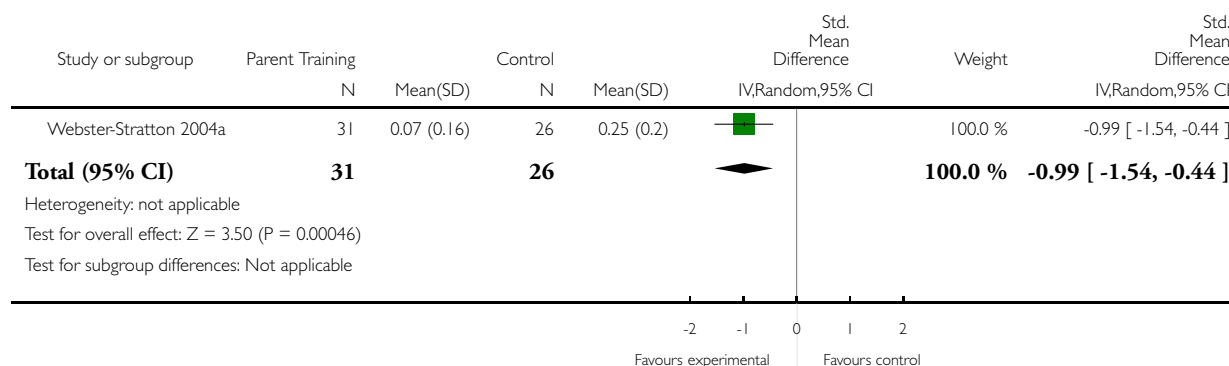


### Analysis 3.27. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 27 Parenting practices (DDI critical verbal ratio - mother report).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 27 Parenting practices (DDI critical verbal ratio - mother report)

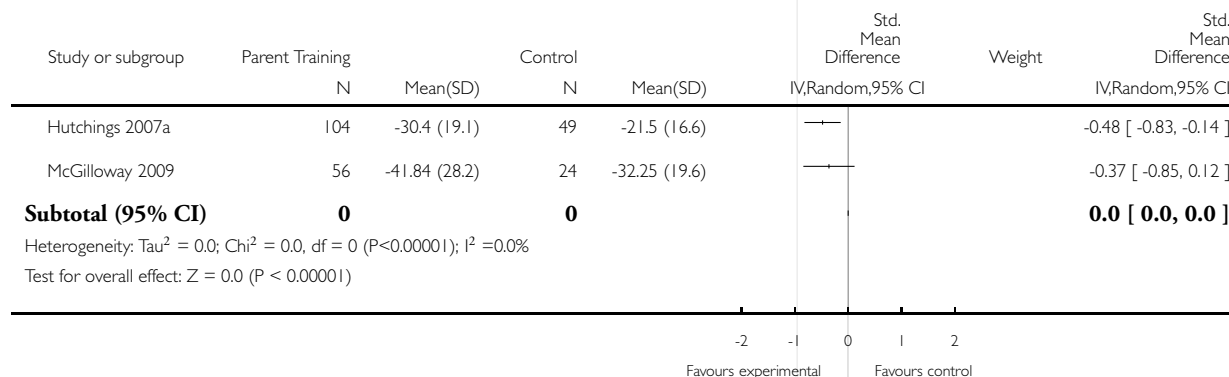


### Analysis 3.28. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 28 Parenting practices (DPICS positive parenting - observation of parent at home).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 28 Parenting practices (DPICS positive parenting - observation of parent at home)

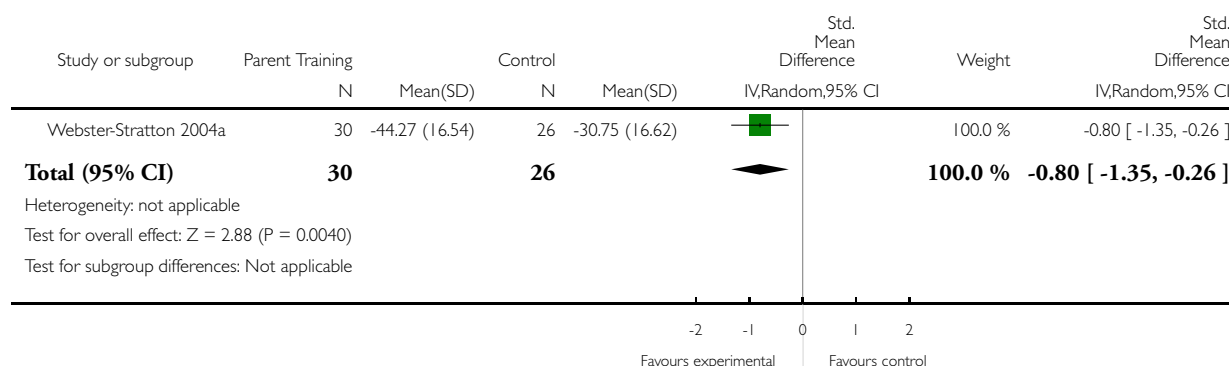


### Analysis 3.29. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 29 Parenting practices (DPICS positive parenting - observation of mother at home).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 29 Parenting practices (DPICS positive parenting - observation of mother at home)

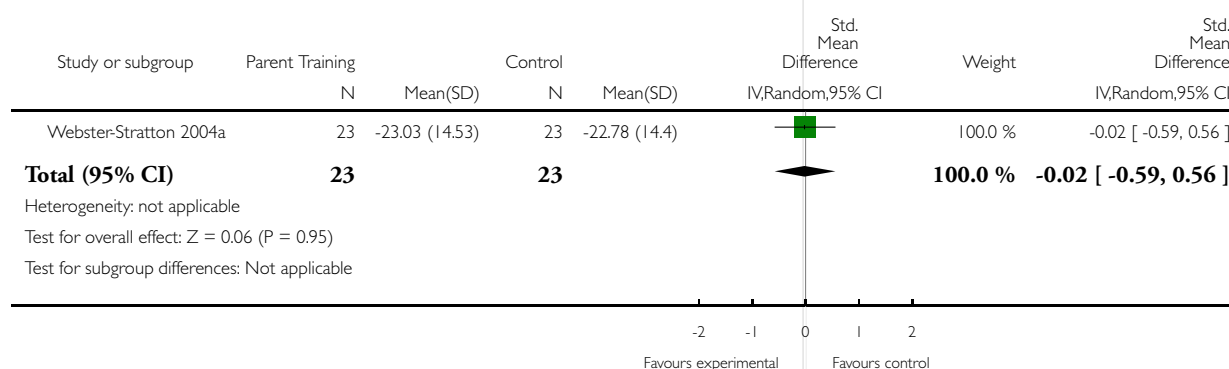


### Analysis 3.30. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 30 Parenting practices (DPICS positive parenting - observation of father at home).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 30 Parenting practices (DPICS positive parenting - observation of father at home)

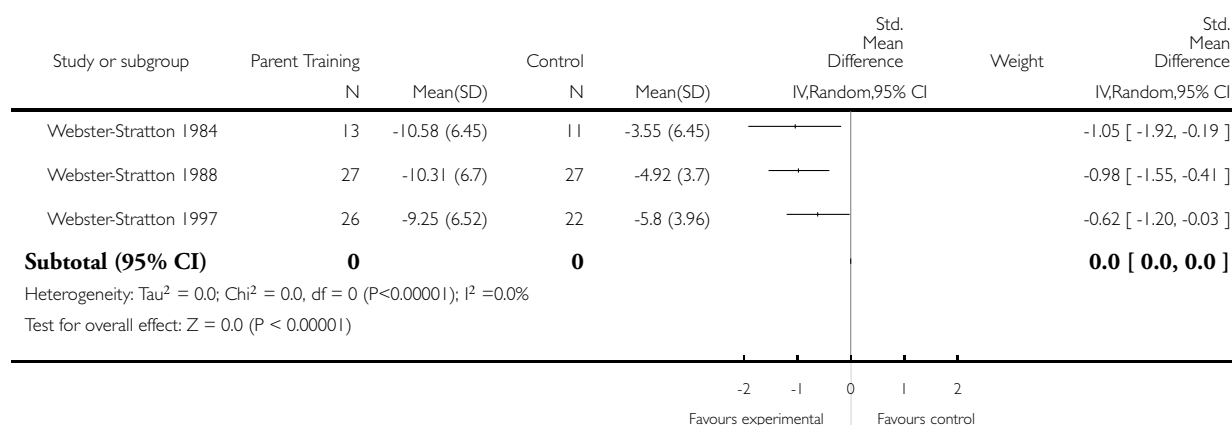


### Analysis 3.31. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 31 Parenting practices (DPICS total praise - observation of mother at home).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 31 Parenting practices (DPICS total praise - observation of mother at home)

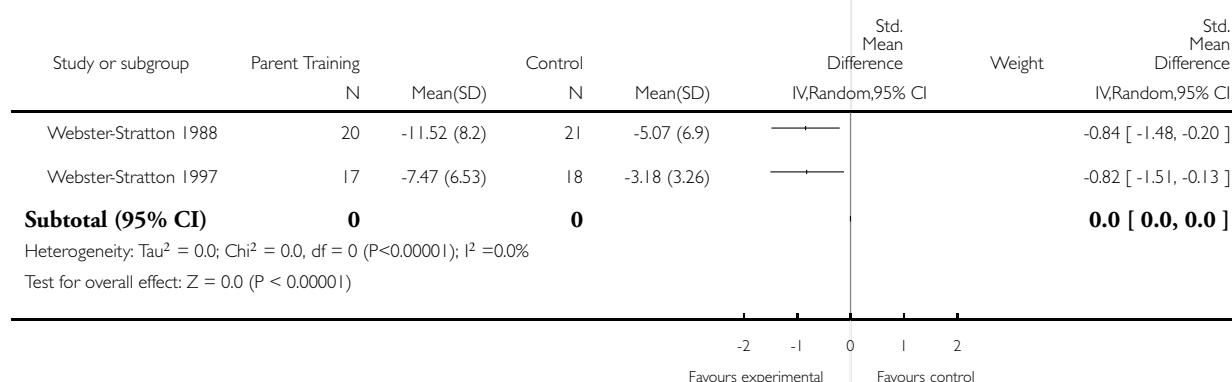


### Analysis 3.32. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 32 Parenting practices (DPICS total praise - observation of father at home).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 32 Parenting practices (DPICS total praise - observation of father at home)

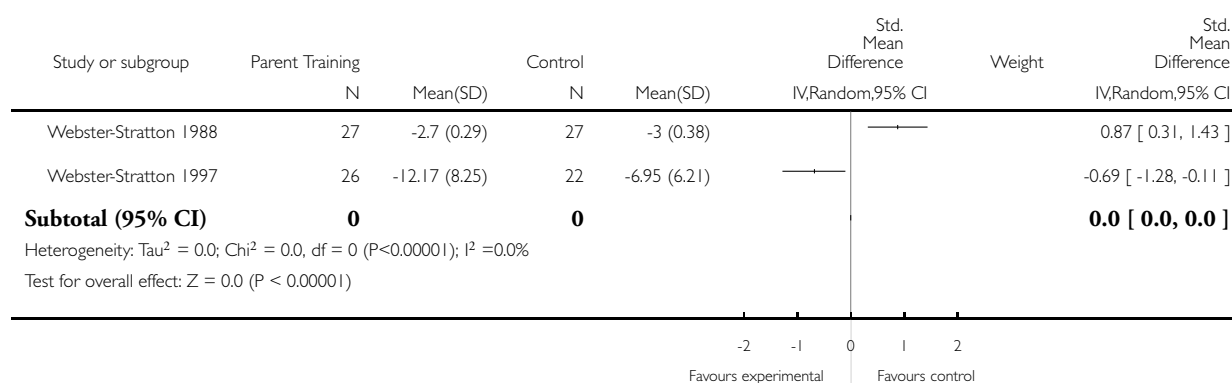


**Analysis 3.33. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 33 Parenting practices (DPICS positive affect -observation of mother at home).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 33 Parenting practices (DPICS positive affect -observation of mother at home)



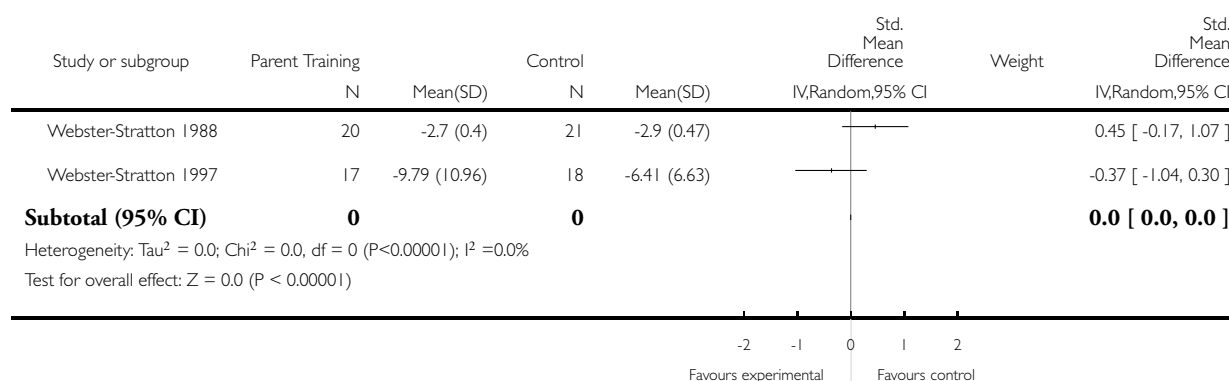


### Analysis 3.34. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 34 Parenting practices (DPICS positive affect - observation of father at home).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 34 Parenting practices (DPICS positive affect - observation of father at home)

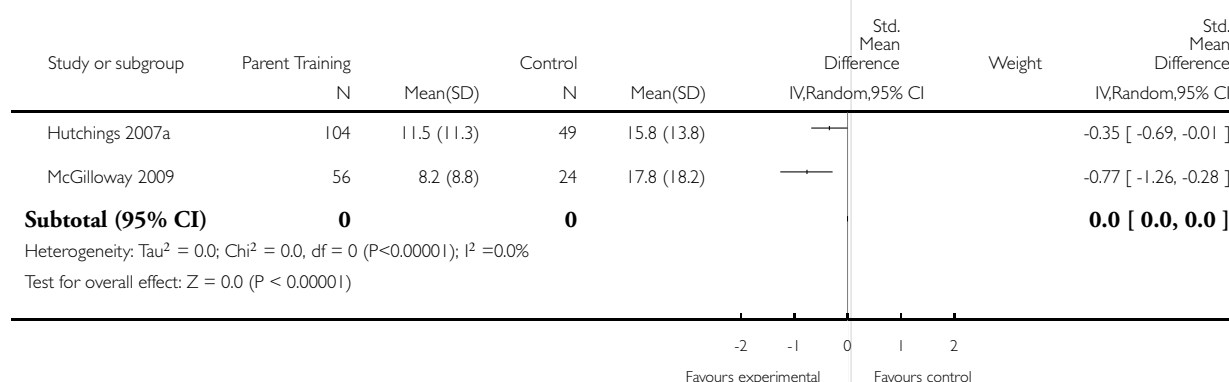


### Analysis 3.35. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 35 Parenting practices (DPICS critical parenting - observation of parent at home).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 35 Parenting practices (DPICS critical parenting - observation of parent at home)

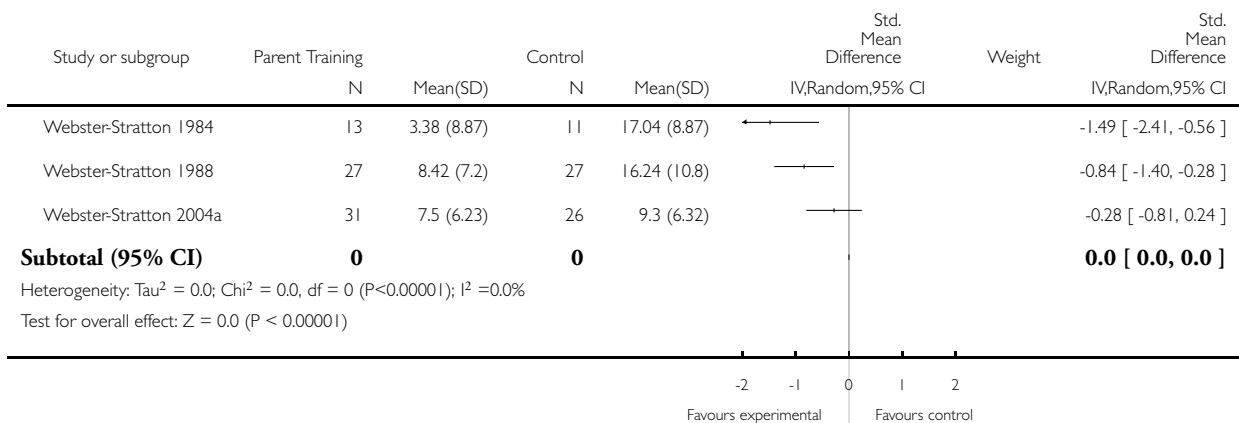


**Analysis 3.36. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 36 Parenting practices (DPICS total criticism - observation of mother at home).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 36 Parenting practices (DPICS total criticism - observation of mother at home)

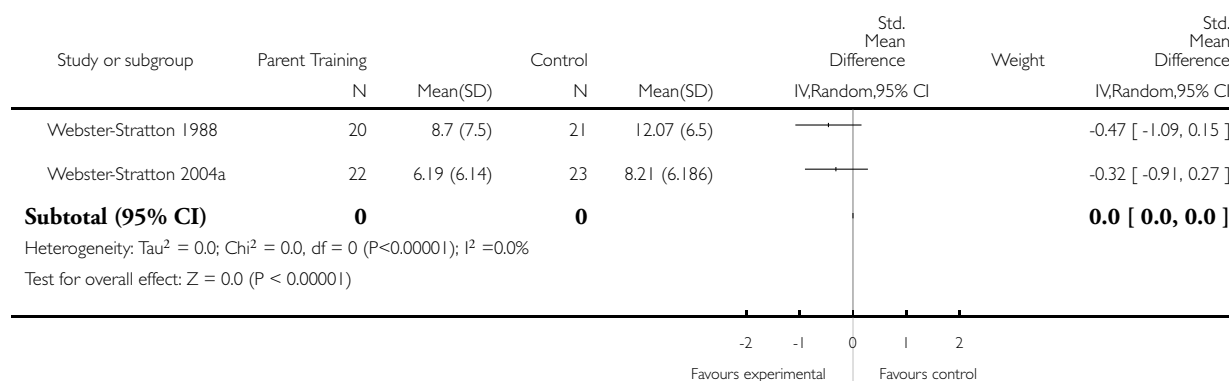


### Analysis 3.37. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 37 Parenting practices (DPICS total criticism - observation of father at home).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 37 Parenting practices (DPICS total criticism - observation of father at home)

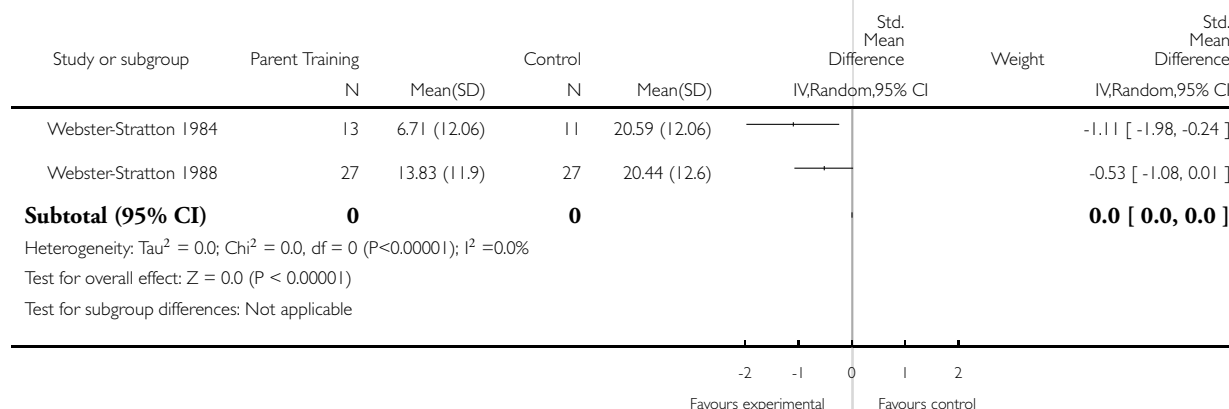


### Analysis 3.38. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 38 Parenting practices (DPICS no opportunity commands - observation of mother at home).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 38 Parenting practices (DPICS no opportunity commands - observation of mother at home)

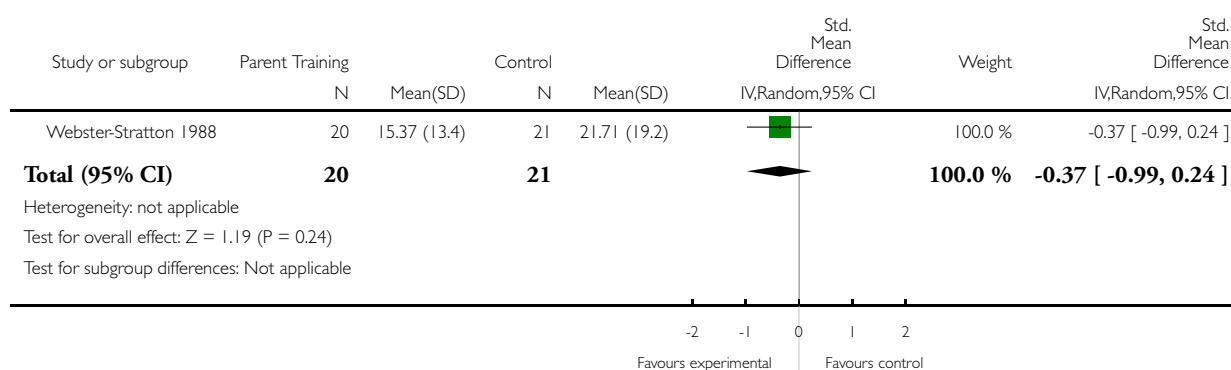


**Analysis 3.39. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 39 Parenting practices (DPICS no opportunity commands - observation of father at home).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 39 Parenting practices (DPICS no opportunity commands - observation of father at home)

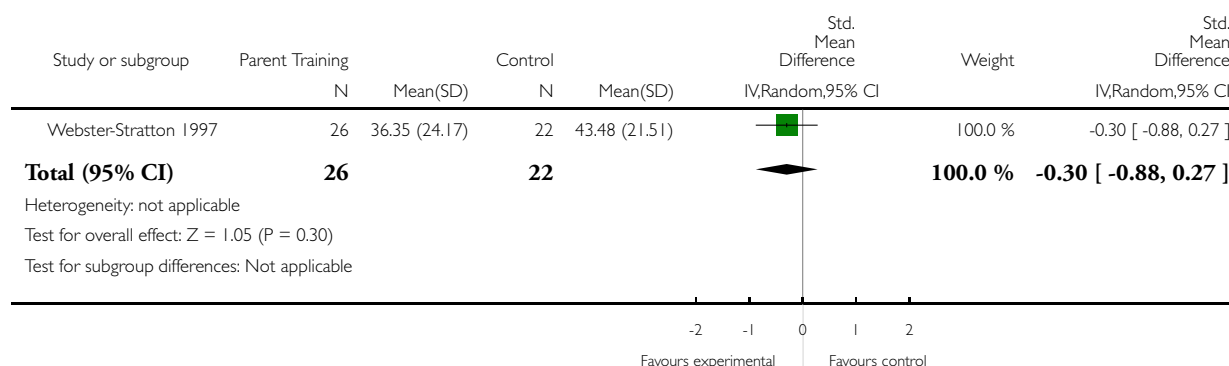


### Analysis 3.40. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 40 Parenting practices (DPICS commands and criticism - observation of mother at home).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 40 Parenting practices (DPICS commands and criticism - observation of mother at home)

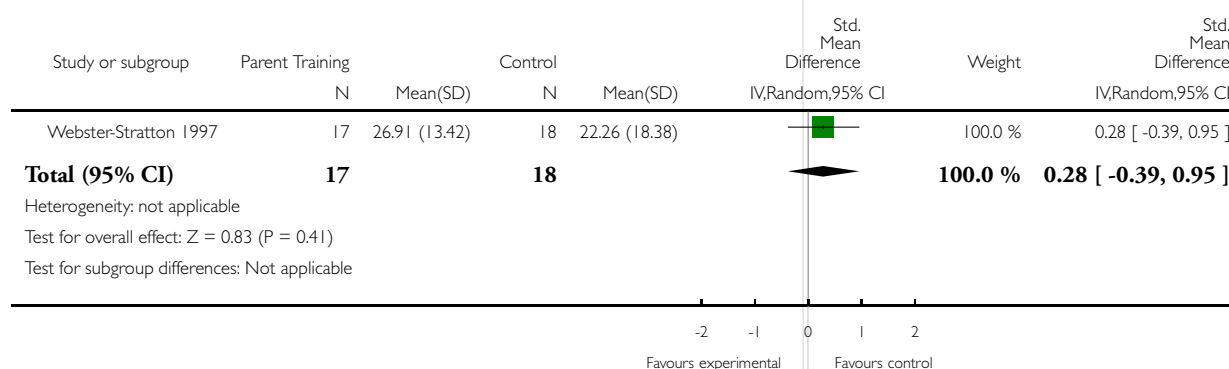


### Analysis 3.41. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 41 Parenting practices (DPICS commands and criticism - observation of father at home).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 41 Parenting practices (DPICS commands and criticism - observation of father at home)

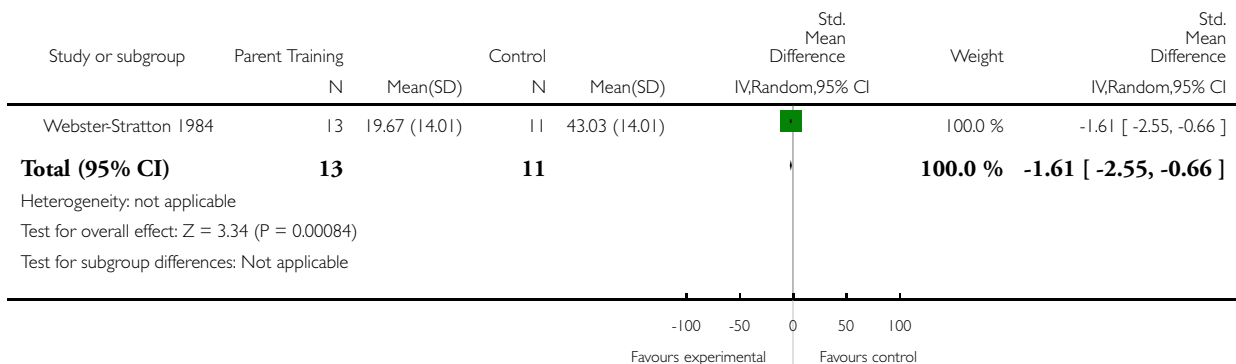


**Analysis 3.42. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 42 Parenting practices (DPICS total commands mother - observation of mother at home).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 42 Parenting practices (DPICS total commands mother - observation of mother at home)

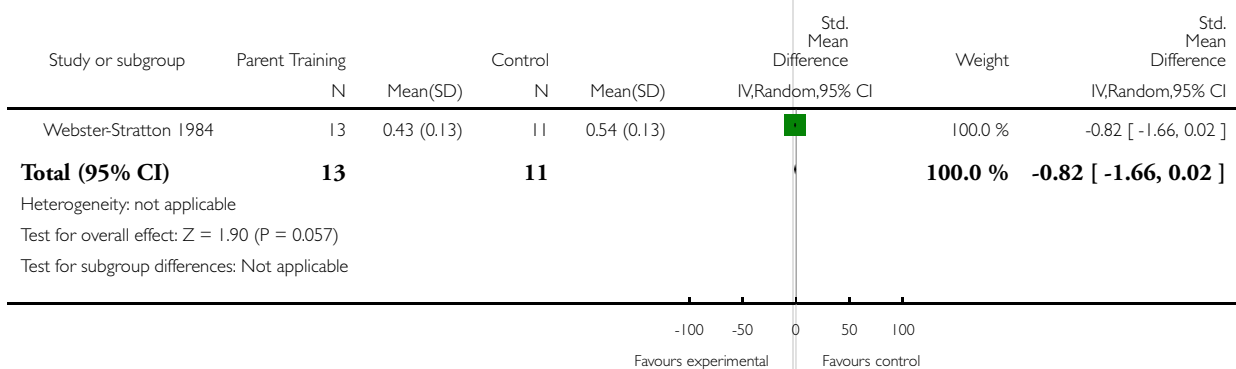


**Analysis 3.43. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 43 Parenting practices (DPICS direct commands ratio - observation of parent at home).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 43 Parenting practices (DPICS direct commands ratio - observation of parent at home)

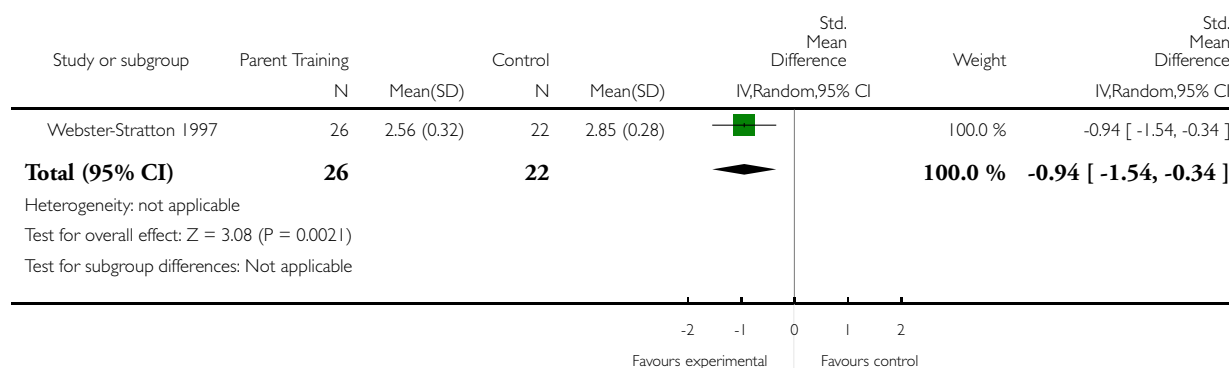


### Analysis 3.44. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 44 Parenting practices (DPICS negative valence - observation of mother at home).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 44 Parenting practices (DPICS negative valence - observation of mother at home)

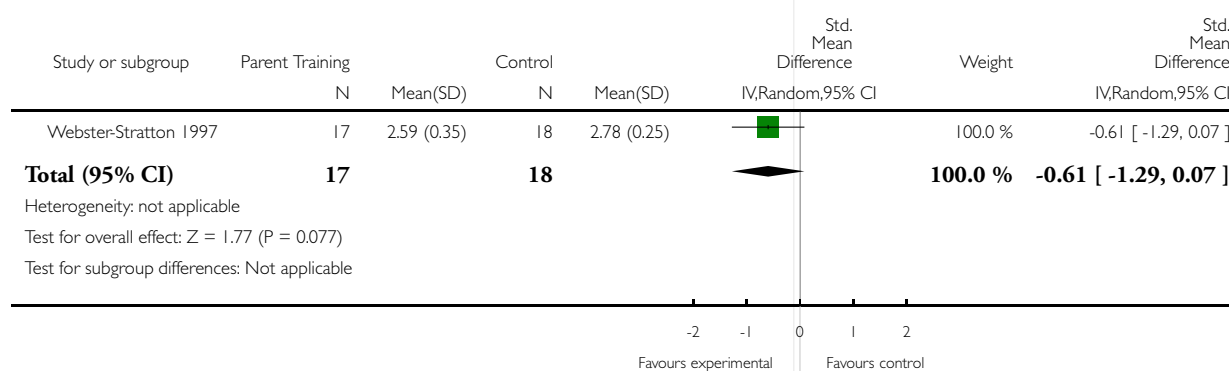


### Analysis 3.45. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 45 Parenting practices (DPICS negative valence - observation of father at home).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 45 Parenting practices (DPICS negative valence - observation of father at home)

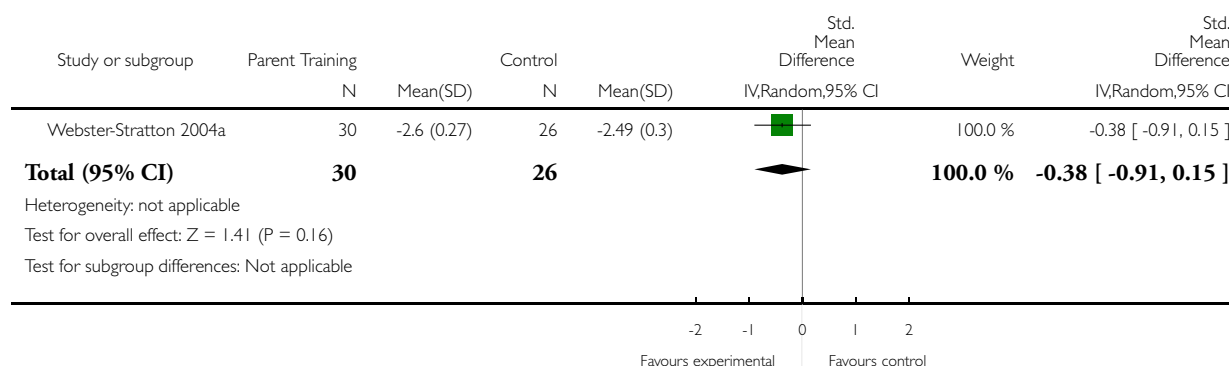


### Analysis 3.46. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 46 Parenting practices (C-II supportive parenting - observation of mother at home).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 46 Parenting practices (C-II supportive parenting - observation of mother at home)

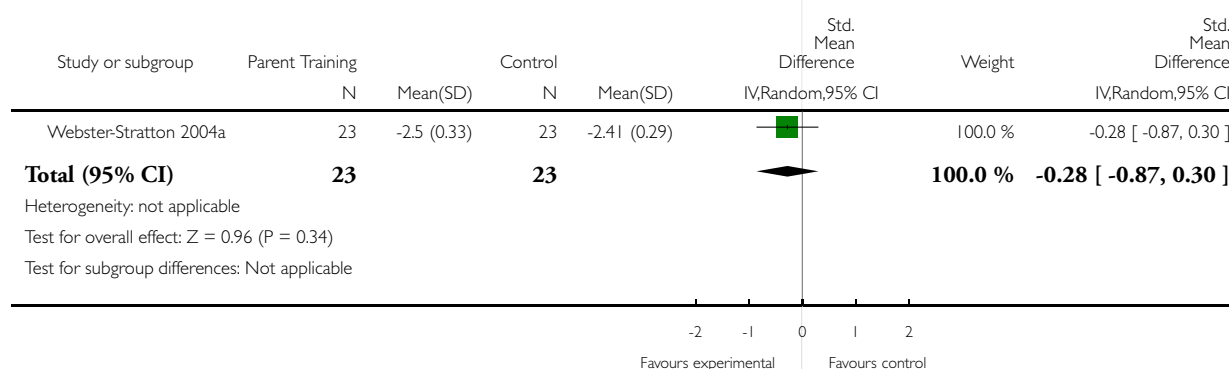


### Analysis 3.47. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 47 Parenting practices (C-II supportive parenting - observation of father at home).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 47 Parenting practices (C-II supportive parenting - observation of father at home)



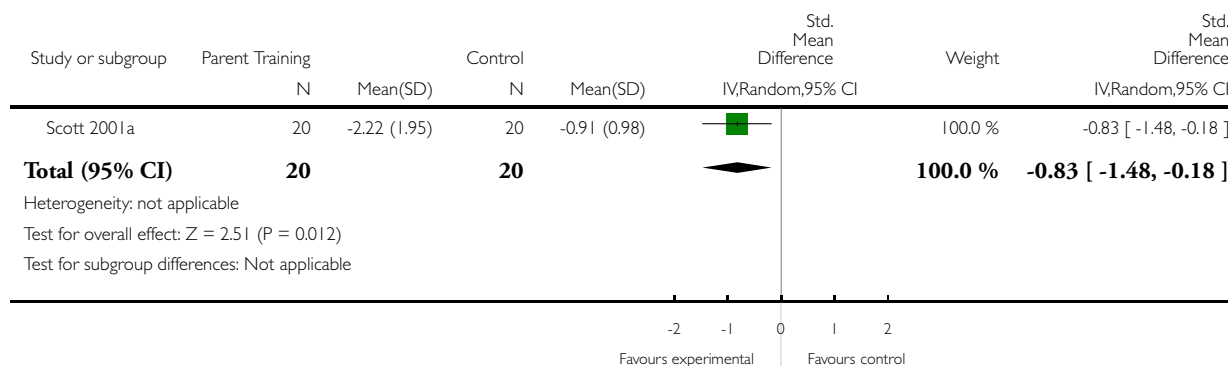


**Analysis 3.48. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 48 Parenting practices (FAST TRACK ratio of praise to inappropriate commands - observation of parent at home).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 48 Parenting practices (FAST TRACK ratio of praise to inappropriate commands - observation of parent at home)

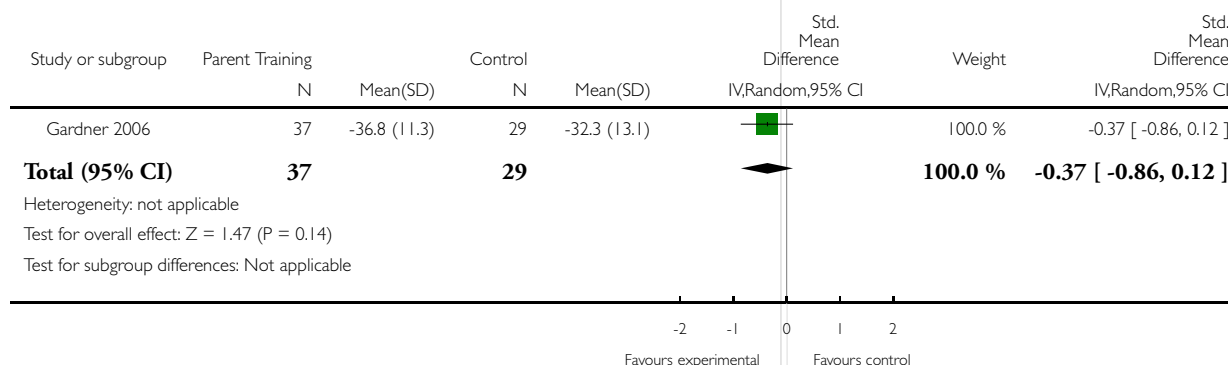


**Analysis 3.49. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 49 Parenting practices (Gardner's observation system positive strategies - observation of parent at home).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 49 Parenting practices (Gardner's observation system positive strategies - observation of parent at home)

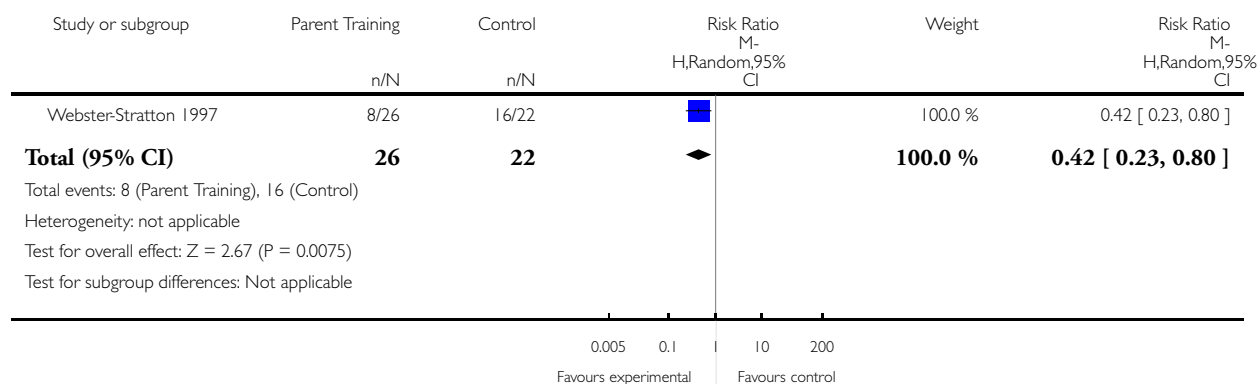


**Analysis 3.50. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 50 Parenting practices (DPICS below 30% reduction in parenting criticism - observation of mother at home).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 50 Parenting practices (DPICS below 30% reduction in parenting criticism - observation of mother at home)

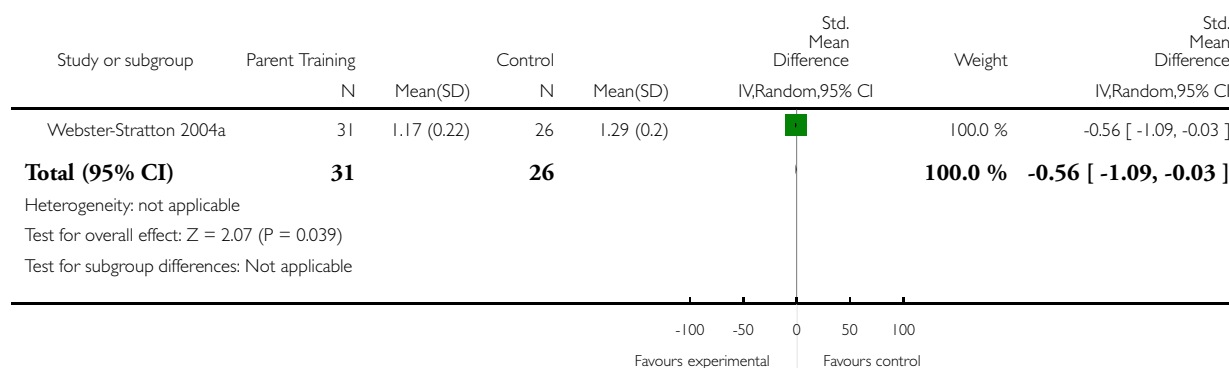


### Analysis 3.51. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 51 Parenting practices (CII harsh critical with mother - home observation).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 51 Parenting practices (CII harsh critical with mother - home observation)

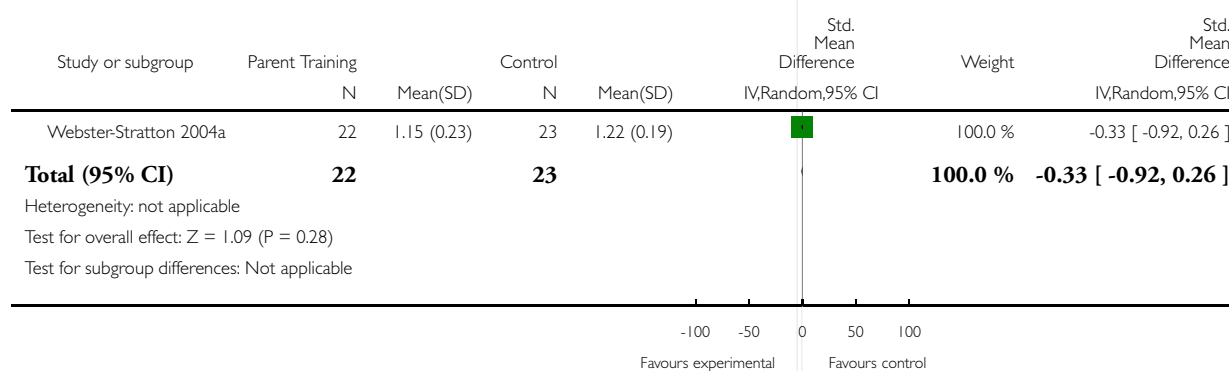


### Analysis 3.52. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 52 Parenting practices (CII harsh critical with father - home observation).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 52 Parenting practices (CII harsh critical with father - home observation)

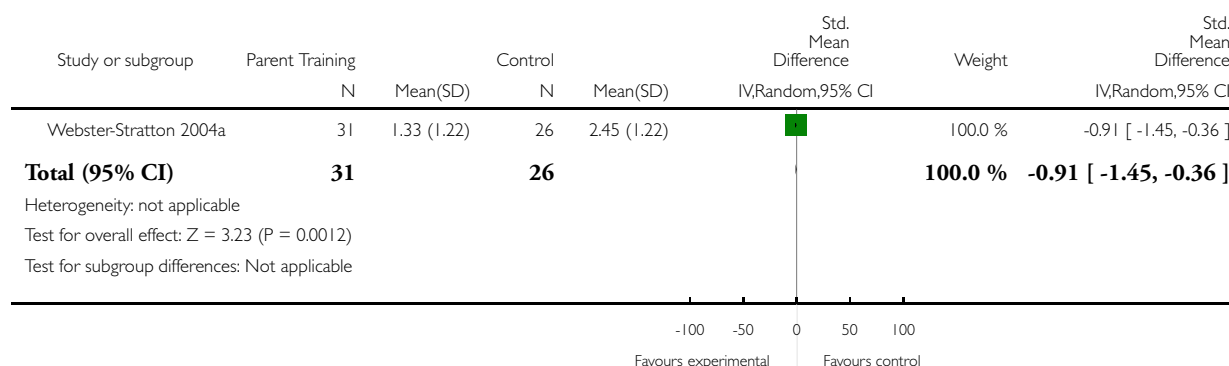


### Analysis 3.53. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 53 Parenting practices (CII family need intervention with mother - home observation).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 53 Parenting practices (CII family need intervention with mother - home observation)

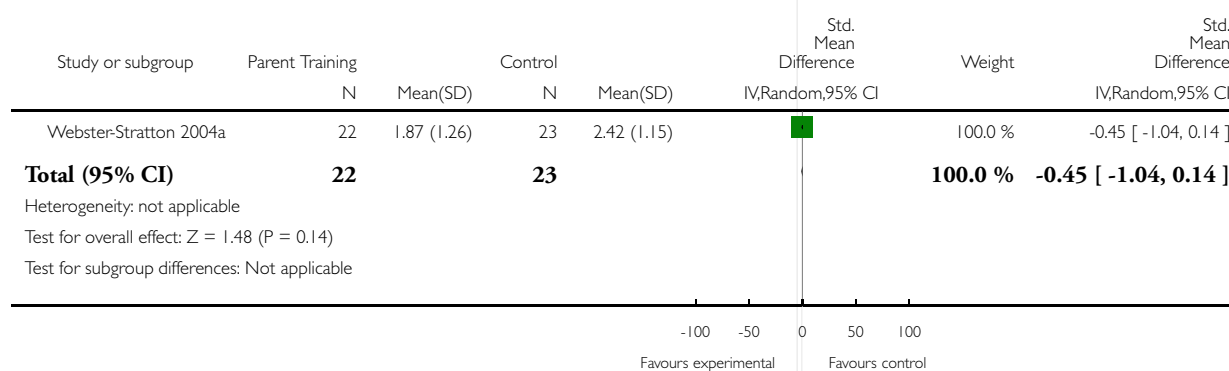


### Analysis 3.54. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 54 Parenting practices (CII family need intervention with father - home observation).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 54 Parenting practices (CII family need intervention with father - home observation)

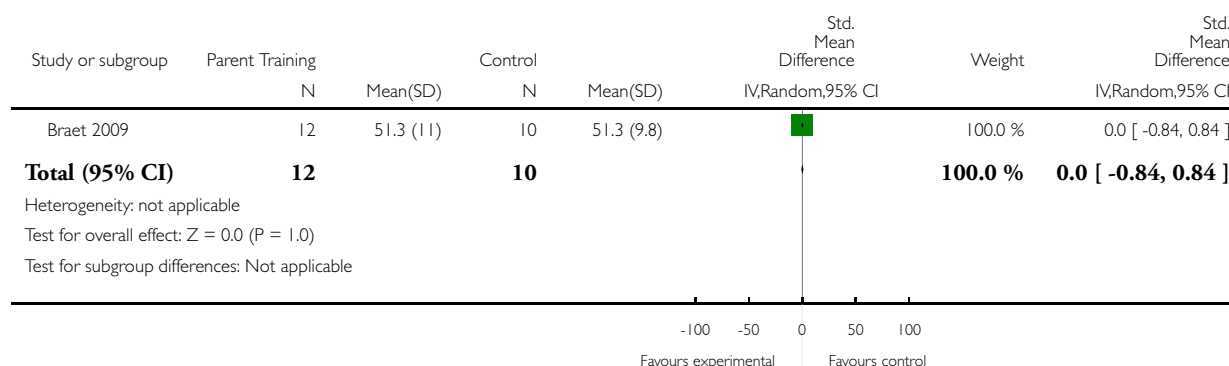


### Analysis 3.55. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 55 Parenting practices (GRMB permissivity subscale - home observation).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 55 Parenting practices (GRMB permissivity subscale - home observation)

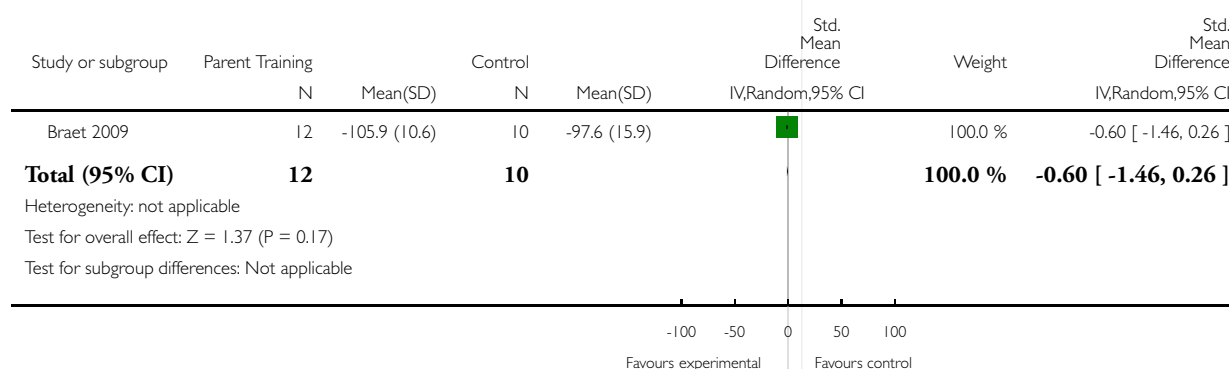


### Analysis 3.56. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 56 Parenting practices (GRMB control adjustment subscale - home observation).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 56 Parenting practices (GRMB control adjustment subscale - home observation)

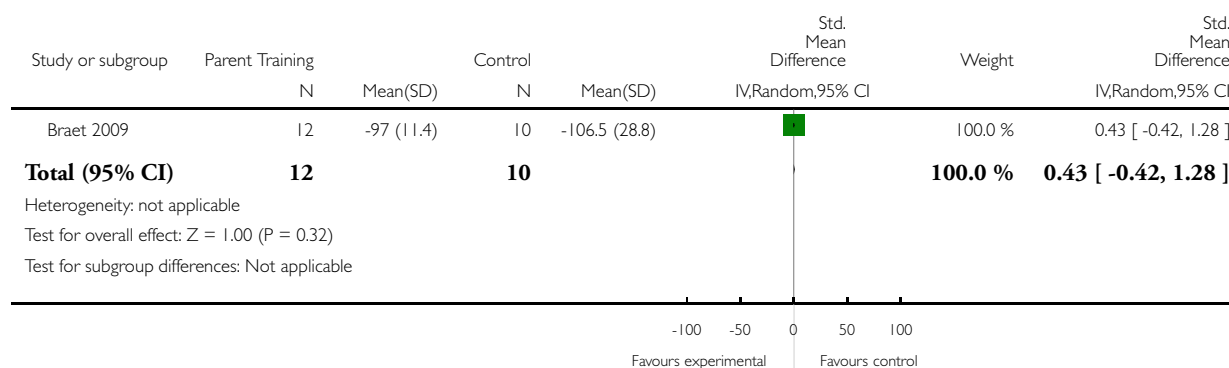


### Analysis 3.57. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 57 Parenting practices (GRMB maternal adjustment subscale - home observation).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 57 Parenting practices (GRMB maternal adjustment subscale - home observation)

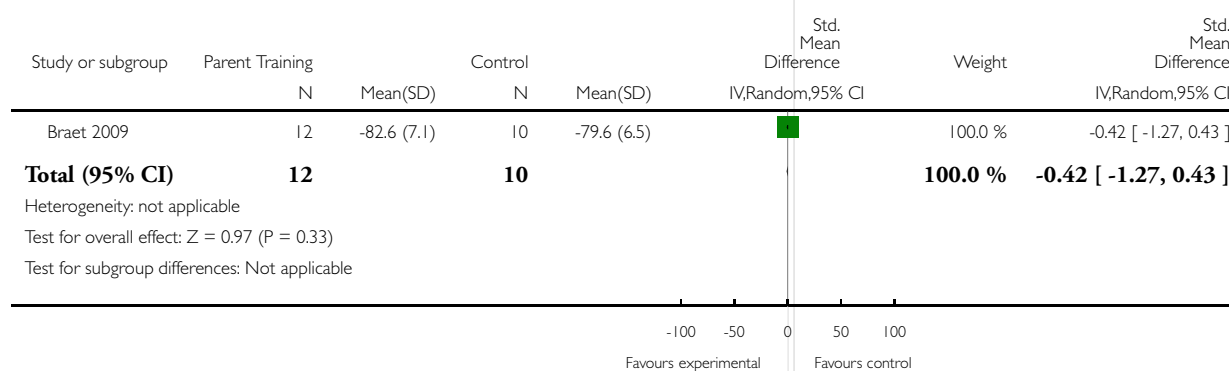


### Analysis 3.58. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 58 Parenting practices (GRMB acceptance of mother subscale - home observation).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 58 Parenting practices (GRMB acceptance of mother subscale - home observation)

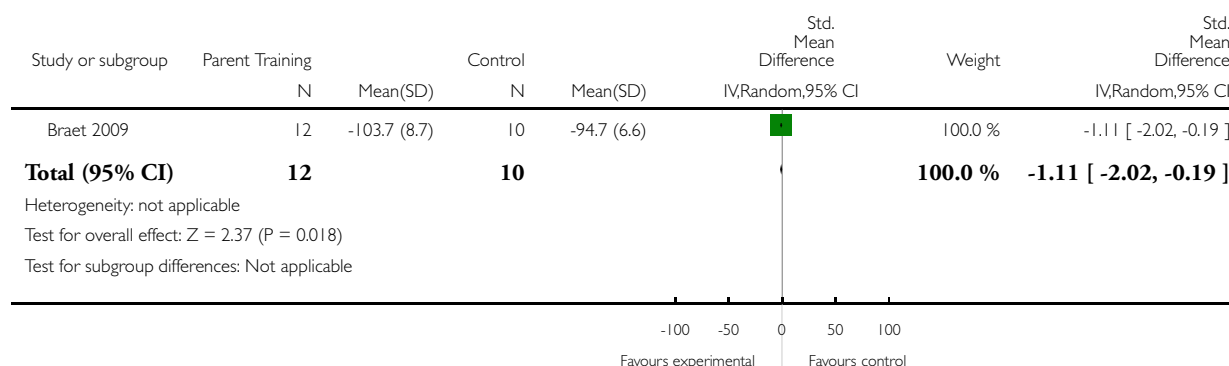


### Analysis 3.59. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 59 Parenting practices (GRMB mother involvement subscale - home observation).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 59 Parenting practices (GRMB mother involvement subscale - home observation)

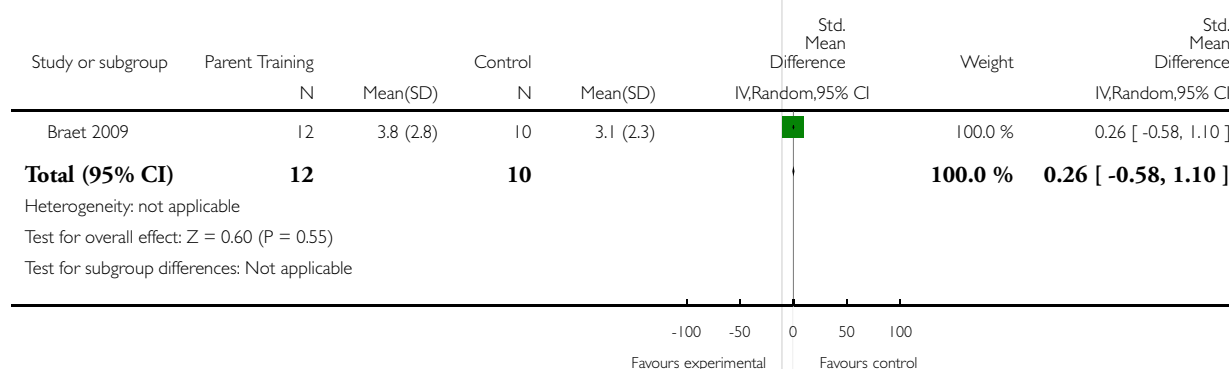


### Analysis 3.60. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 60 Parenting practices (GRMB minutes no control subscale - home observation).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 60 Parenting practices (GRMB minutes no control subscale - home observation)

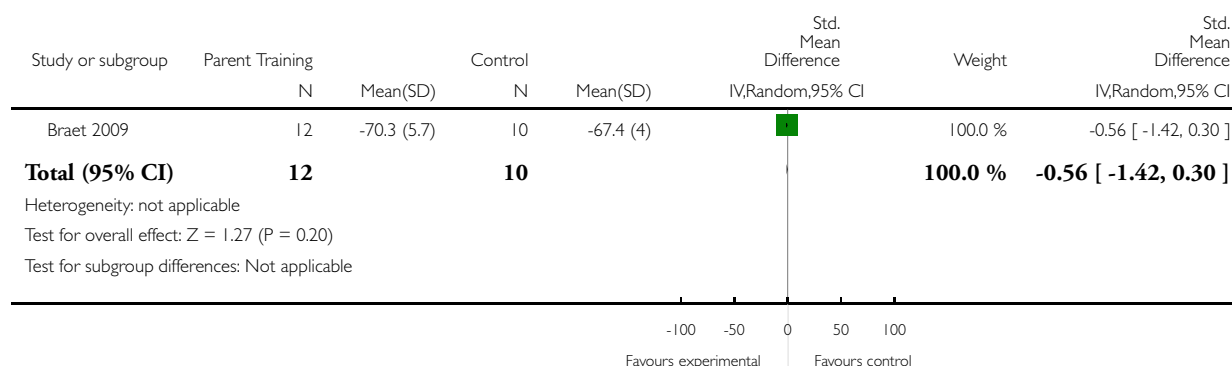


### Analysis 3.61. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 61 Parenting practices (GRMB mother feelings subscale - home observation).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 61 Parenting practices (GRMB mother feelings subscale - home observation)

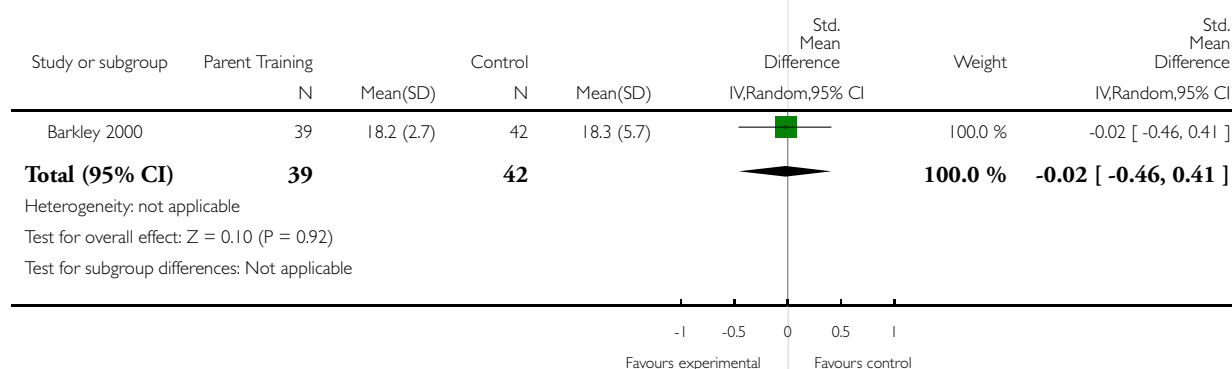


### Analysis 3.62. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 62 Parenting practices (Mother-child free play - clinic observation).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 62 Parenting practices (Mother-child free play - clinic observation)



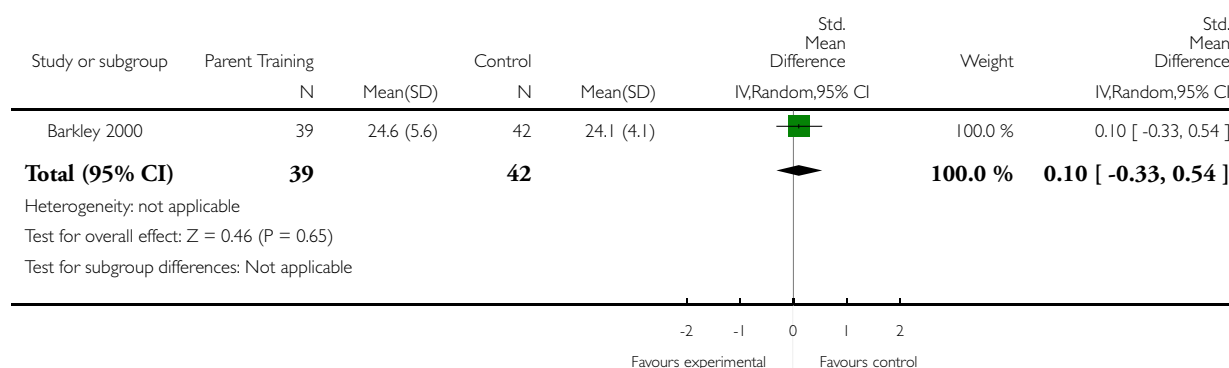


### Analysis 3.63. Comparison 3 Parent training versus control for individual studies (parenting practices), Outcome 63 Parenting practices (Mother-child task - clinic observation).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 3 Parent training versus control for individual studies (parenting practices)

Outcome: 63 Parenting practices (Mother-child task - clinic observation)

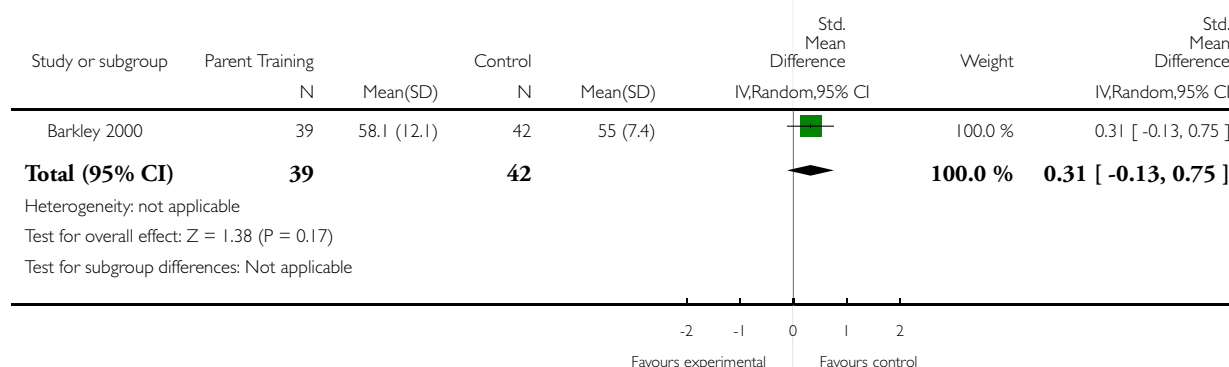


### Analysis 4.1. Comparison 4 Parent training versus control for individual studies (child emotional/internalising problems), Outcome 1 Child emotional problems (CBCL anxiety subscale - parent report).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 4 Parent training versus control for individual studies (child emotional/internalising problems)

Outcome: 1 Child emotional problems (CBCL anxiety subscale - parent report)

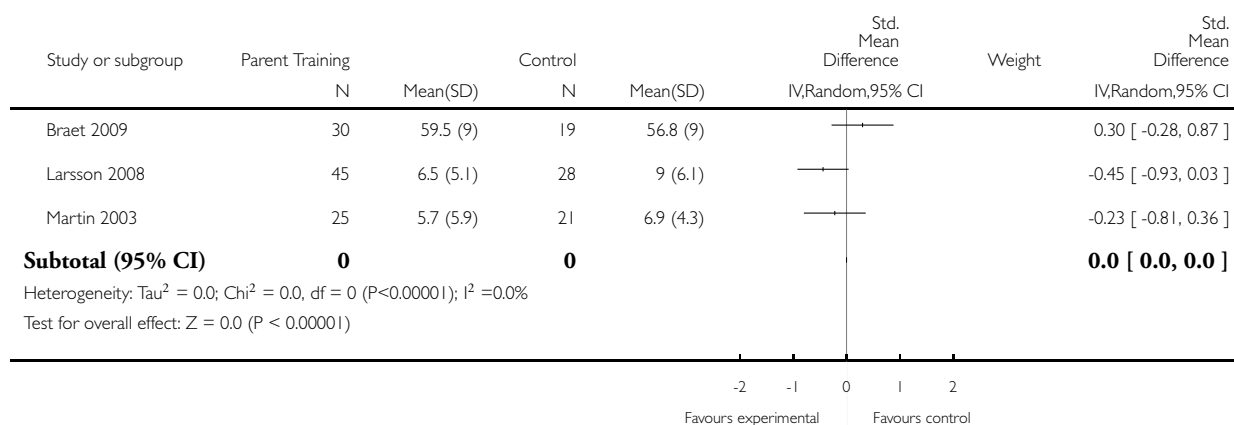


**Analysis 4.2. Comparison 4 Parent training versus control for individual studies (child emotional/internalising problems), Outcome 2 Child emotional problems (CBCL internalising subscale - mother report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 4 Parent training versus control for individual studies (child emotional/internalising problems)

Outcome: 2 Child emotional problems (CBCL internalising subscale - mother report)

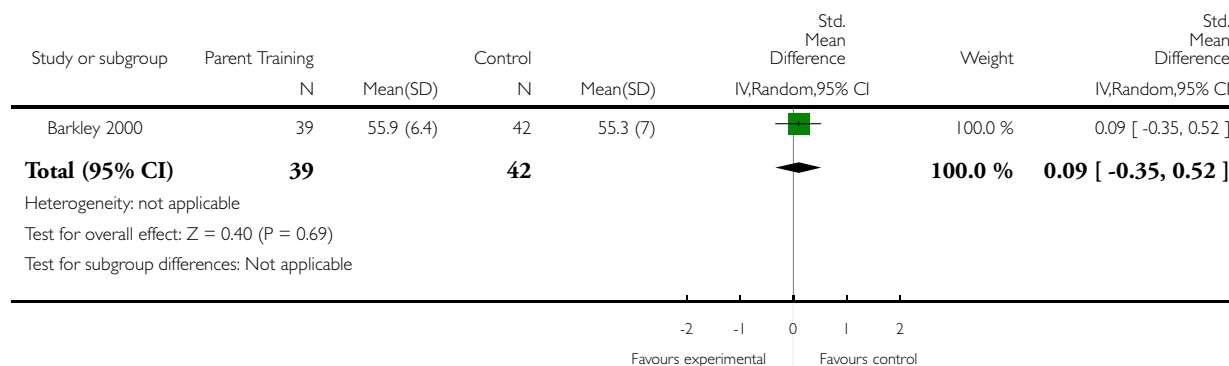


### Analysis 4.3. Comparison 4 Parent training versus control for individual studies (child emotional/internalising problems), Outcome 3 Child emotional problems (CBCL anxiety subscale - teacher report).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 4 Parent training versus control for individual studies (child emotional/internalising problems)

Outcome: 3 Child emotional problems (CBCL anxiety subscale - teacher report)

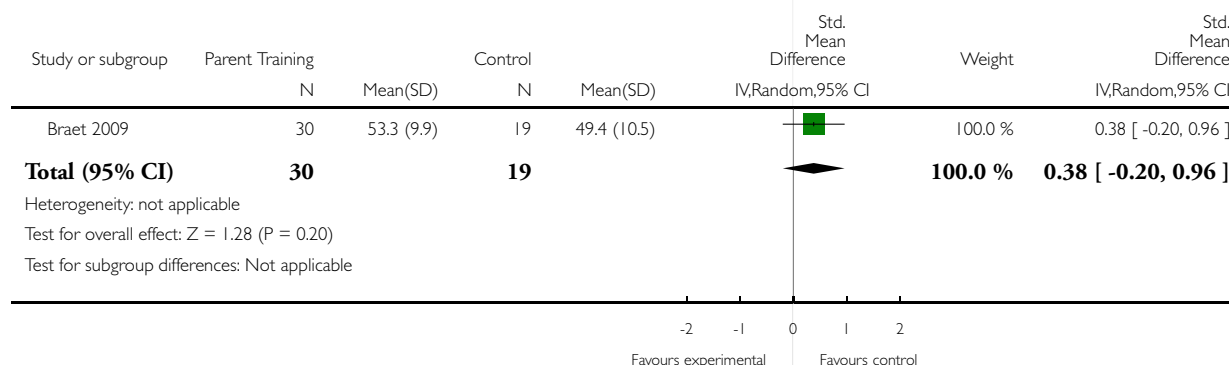


### Analysis 4.4. Comparison 4 Parent training versus control for individual studies (child emotional/internalising problems), Outcome 4 Child emotional problems (CBCL internalising subscale - teacher report).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 4 Parent training versus control for individual studies (child emotional/internalising problems)

Outcome: 4 Child emotional problems (CBCL internalising subscale - teacher report)

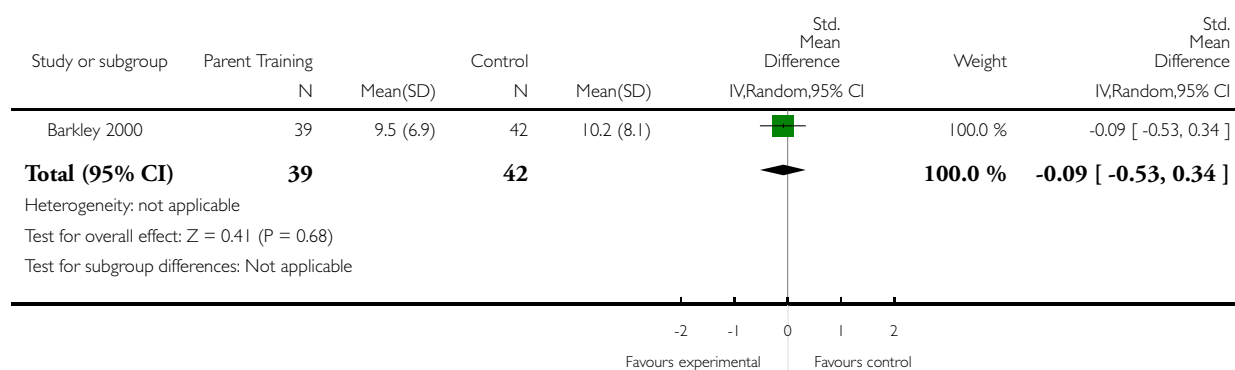


**Analysis 4.5. Comparison 4 Parent training versus control for individual studies (child emotional/internalising problems), Outcome 5 Child emotional problems (CBCL-DOF internalising subscale - observation of child in classroom).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 4 Parent training versus control for individual studies (child emotional/internalising problems)

Outcome: 5 Child emotional problems (CBCL-DOF internalising subscale - observation of child in classroom)

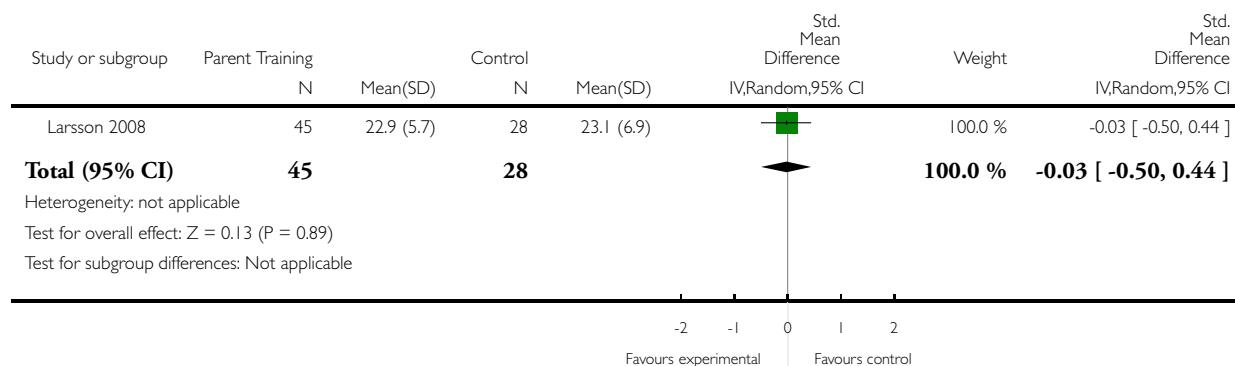


**Analysis 4.6. Comparison 4 Parent training versus control for individual studies (child emotional/internalising problems), Outcome 6 Child emotional problems (Child Loneliness Report Questionnaire - child report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 4 Parent training versus control for individual studies (child emotional/internalising problems)

Outcome: 6 Child emotional problems (Child Loneliness Report Questionnaire - child report)

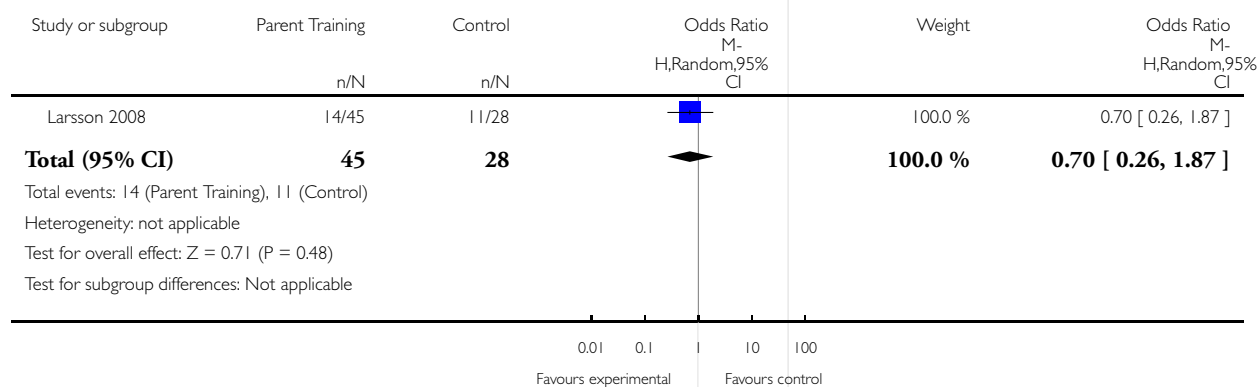


**Analysis 4.7. Comparison 4 Parent training versus control for individual studies (child emotional/internalising problems), Outcome 7 Child emotional problems (CBCL above clinical level of internalising subscale - parent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 4 Parent training versus control for individual studies (child emotional/internalising problems)

Outcome: 7 Child emotional problems (CBCL above clinical level of internalising subscale - parent report)

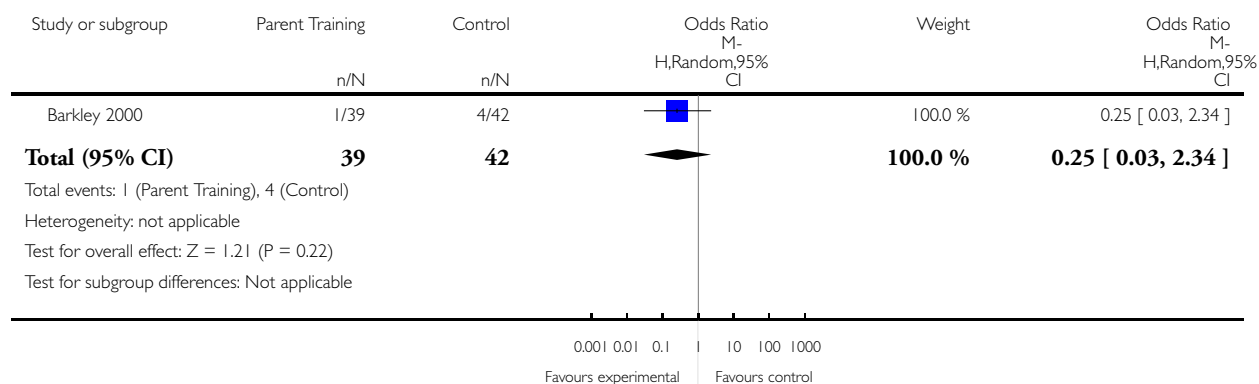


**Analysis 4.8. Comparison 4 Parent training versus control for individual studies (child emotional/internalising problems), Outcome 8 Child emotional problems (DSM diagnosis for anxiety - clinical report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 4 Parent training versus control for individual studies (child emotional/internalising problems)

Outcome: 8 Child emotional problems (DSM diagnosis for anxiety - clinical report)

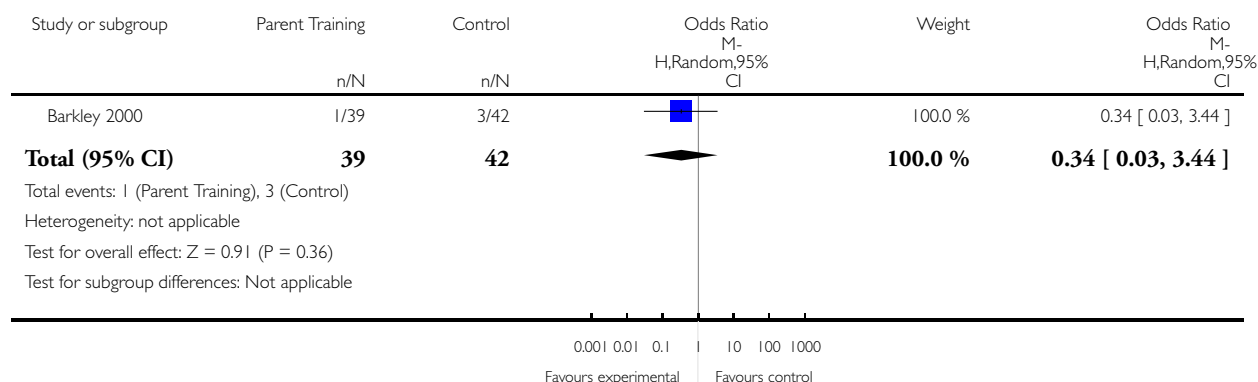


**Analysis 4.9. Comparison 4 Parent training versus control for individual studies (child emotional/internalising problems), Outcome 9 Child emotional problems (DSM diagnosis for depression - clinical report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 4 Parent training versus control for individual studies (child emotional/internalising problems)

Outcome: 9 Child emotional problems (DSM diagnosis for depression - clinical report)

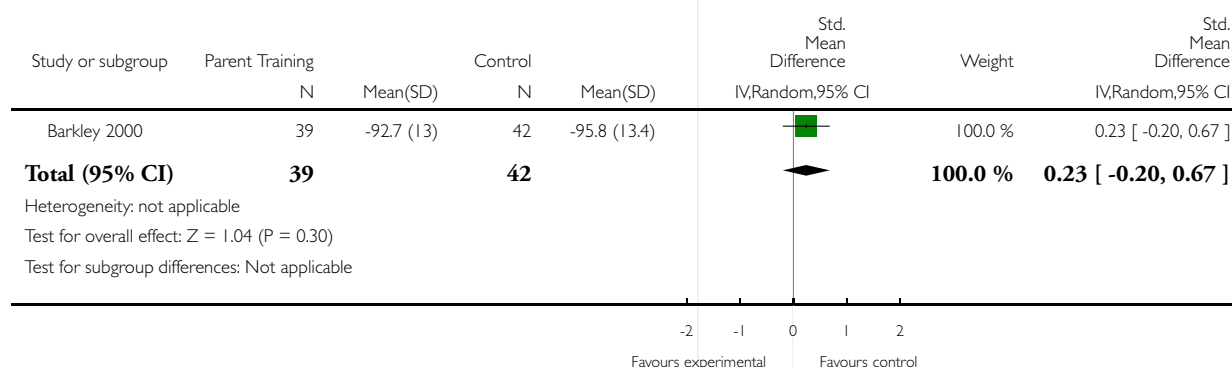


**Analysis 5.1. Comparison 5 Parent training versus control for individual studies (child educational/cognitive abilities), Outcome 1 Child cognitive abilities (SSRS academic subscale - teacher report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 5 Parent training versus control for individual studies (child educational/cognitive abilities)

Outcome: 1 Child cognitive abilities (SSRS academic subscale - teacher report)

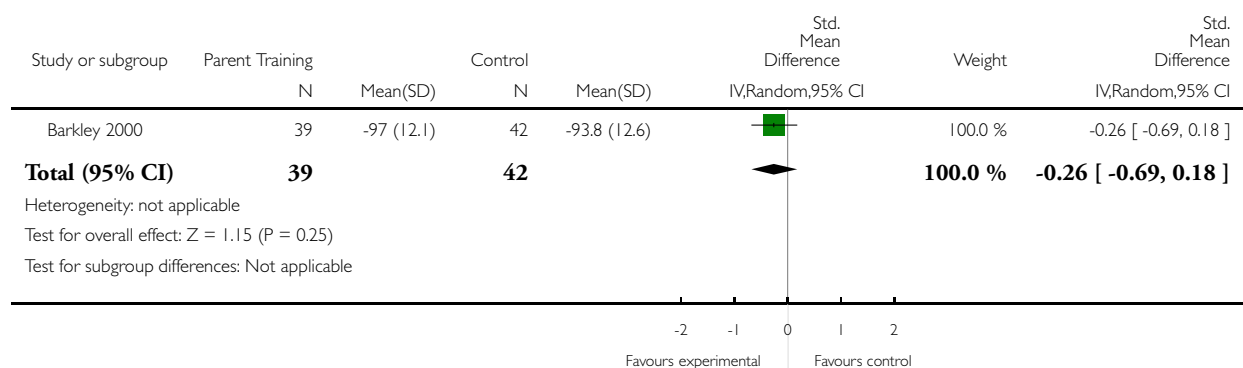


**Analysis 5.2. Comparison 5 Parent training versus control for individual studies (child educational/cognitive abilities), Outcome 2 Child cognitive abilities (Woodcock letter subscale - psycho-educational test).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 5 Parent training versus control for individual studies (child educational/cognitive abilities)

Outcome: 2 Child cognitive abilities (Woodcock letter subscale - psycho-educational test)



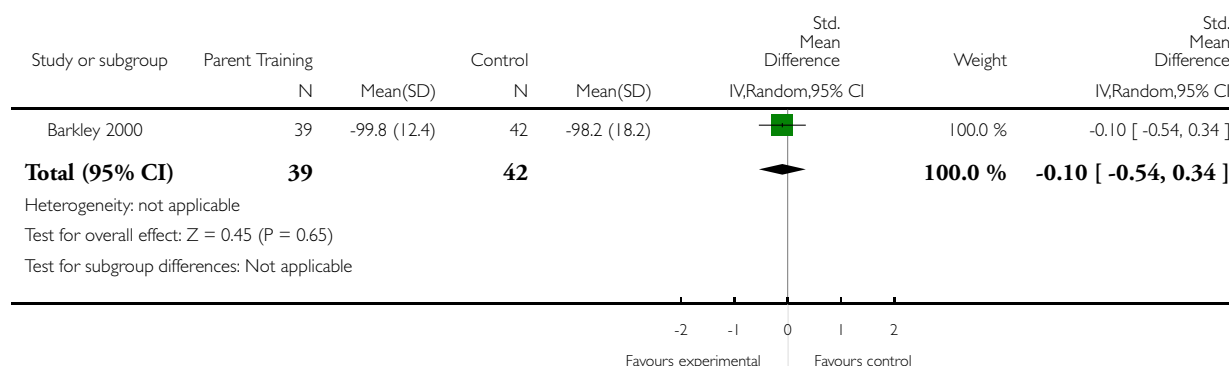


**Analysis 5.3. Comparison 5 Parent training versus control for individual studies (child educational/cognitive abilities), Outcome 3 Child cognitive abilities (Woodcock applied problems subscale - psycho-educational test).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 5 Parent training versus control for individual studies (child educational/cognitive abilities)

Outcome: 3 Child cognitive abilities (Woodcock applied problems subscale - psycho-educational test)

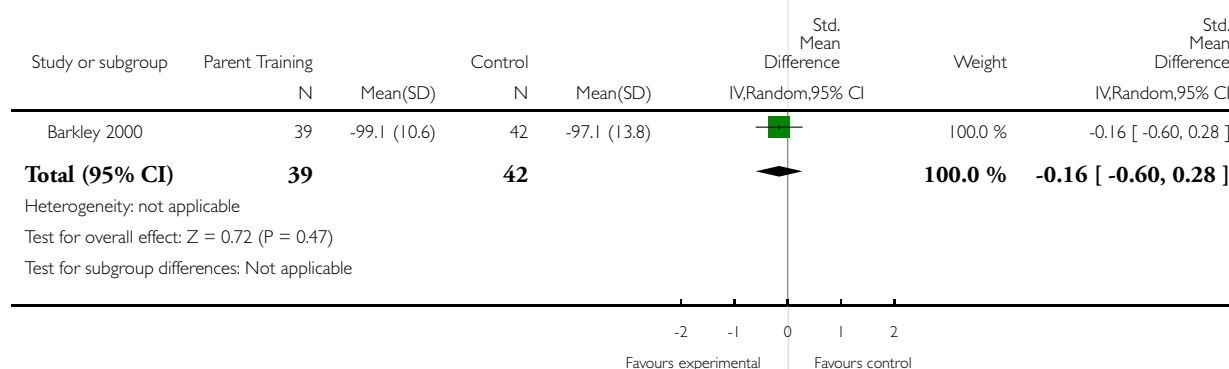


**Analysis 5.4. Comparison 5 Parent training versus control for individual studies (child educational/cognitive abilities), Outcome 4 Child cognitive abilities (Woodcock dictation subscale - psycho-educational test).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 5 Parent training versus control for individual studies (child educational/cognitive abilities)

Outcome: 4 Child cognitive abilities (Woodcock dictation subscale - psycho-educational test)

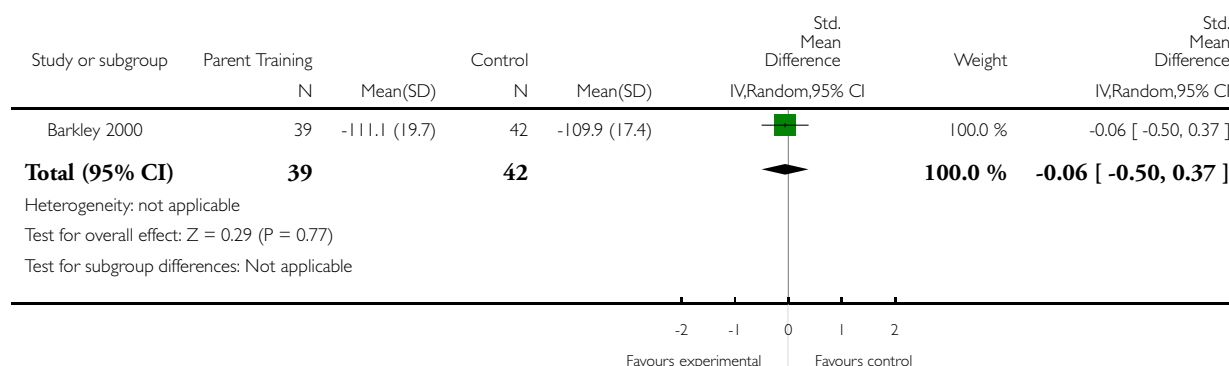


### Analysis 5.5. Comparison 5 Parent training versus control for individual studies (child educational/cognitive abilities), Outcome 5 Child cognitive abilities (Woodcock science subscale - psycho-educational test).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 5 Parent training versus control for individual studies (child educational/cognitive abilities)

Outcome: 5 Child cognitive abilities (Woodcock science subscale - psycho-educational test)

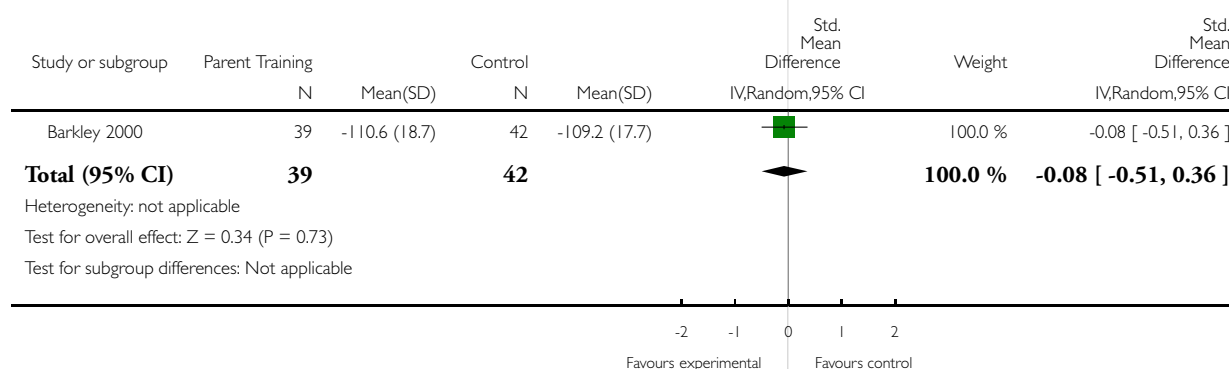


### Analysis 5.6. Comparison 5 Parent training versus control for individual studies (child educational/cognitive abilities), Outcome 6 Child cognitive abilities (Woodcock social studies subscale - psycho-educational test).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 5 Parent training versus control for individual studies (child educational/cognitive abilities)

Outcome: 6 Child cognitive abilities (Woodcock social studies subscale - psycho-educational test)

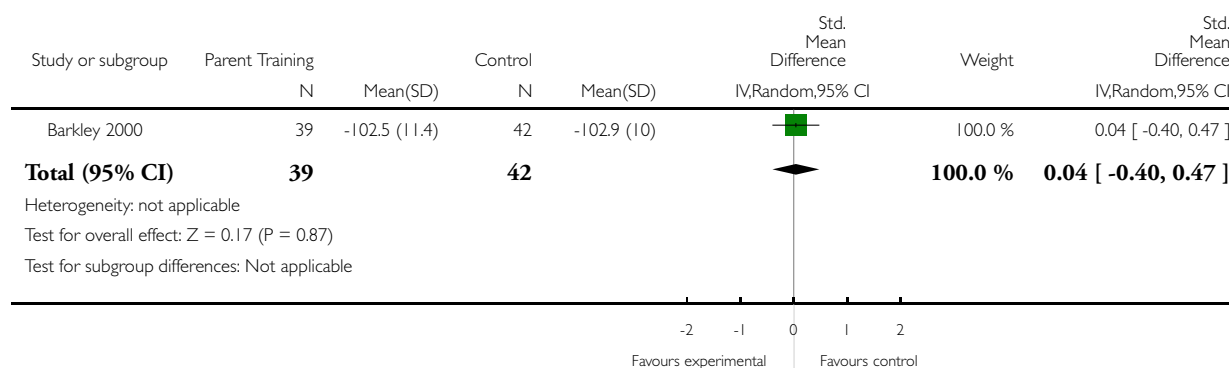


### Analysis 5.7. Comparison 5 Parent training versus control for individual studies (child educational/cognitive abilities), Outcome 7 Child cognitive abilities (Woodcock humanities subscale - psycho-educational test).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 5 Parent training versus control for individual studies (child educational/cognitive abilities)

Outcome: 7 Child cognitive abilities (Woodcock humanities subscale - psycho-educational test)

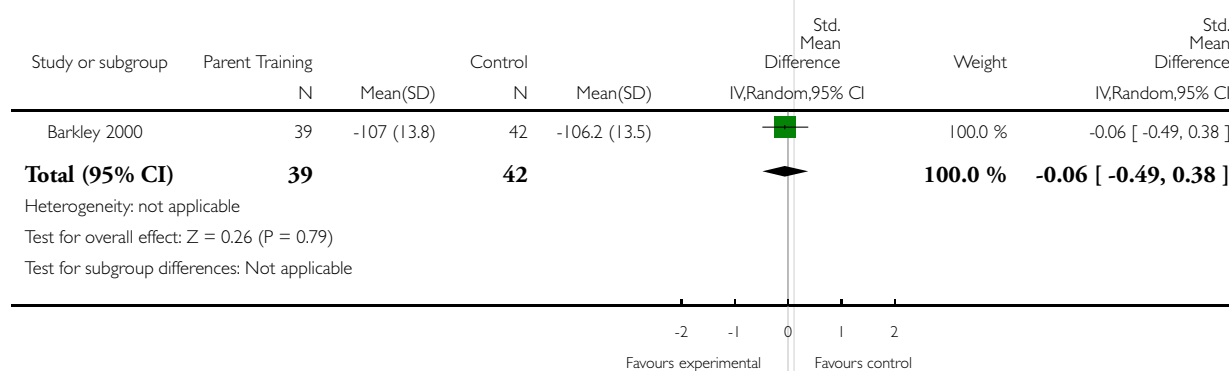


### Analysis 5.8. Comparison 5 Parent training versus control for individual studies (child educational/cognitive abilities), Outcome 8 Child cognitive abilities (Woodcock broad knowledge subscale - psycho-educational test).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 5 Parent training versus control for individual studies (child educational/cognitive abilities)

Outcome: 8 Child cognitive abilities (Woodcock broad knowledge subscale - psycho-educational test)

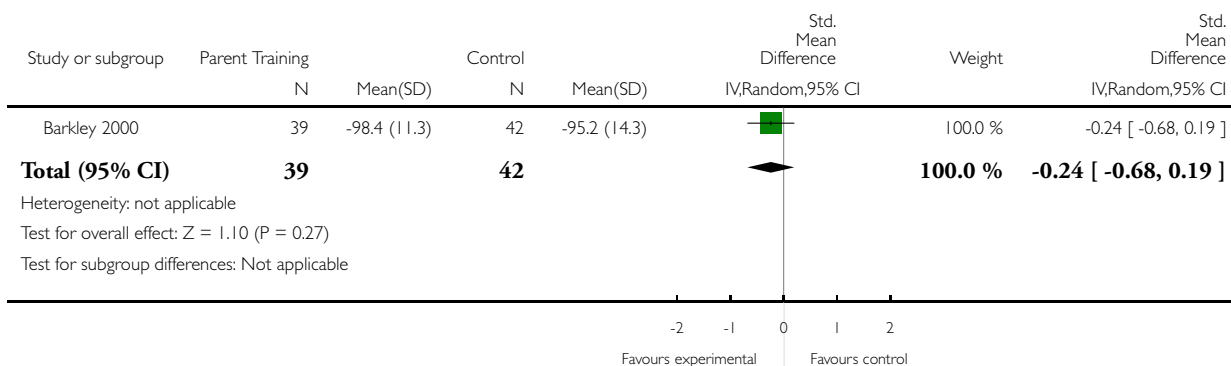


**Analysis 5.9. Comparison 5 Parent training versus control for individual studies (child educational/cognitive abilities), Outcome 9 Child cognitive abilities (Woodcock academic skills subscale - psycho-educational test).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 5 Parent training versus control for individual studies (child educational/cognitive abilities)

Outcome: 9 Child cognitive abilities (Woodcock academic skills subscale - psycho-educational test)

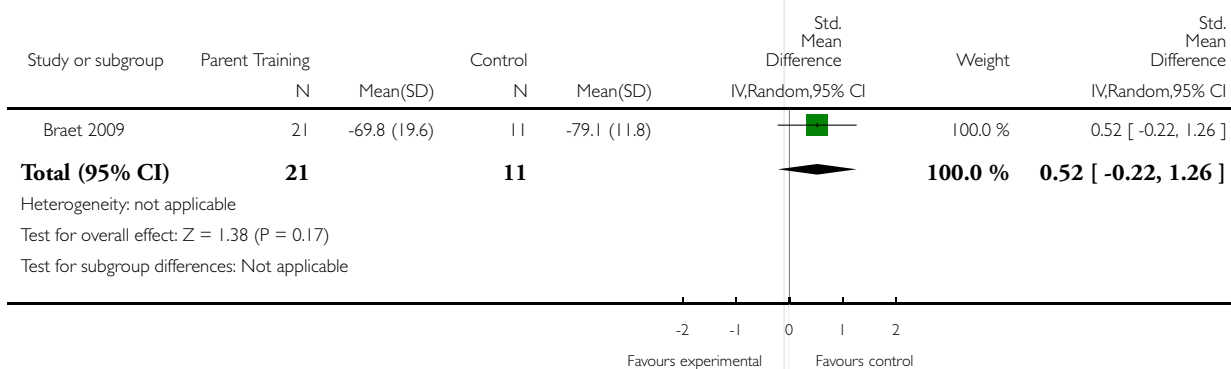


**Analysis 5.10. Comparison 5 Parent training versus control for individual studies (child educational/cognitive abilities), Outcome 10 Child cognitive abilities (Wally problem solving task - clinic report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 5 Parent training versus control for individual studies (child educational/cognitive abilities)

Outcome: 10 Child cognitive abilities (Wally problem solving task - clinic report)

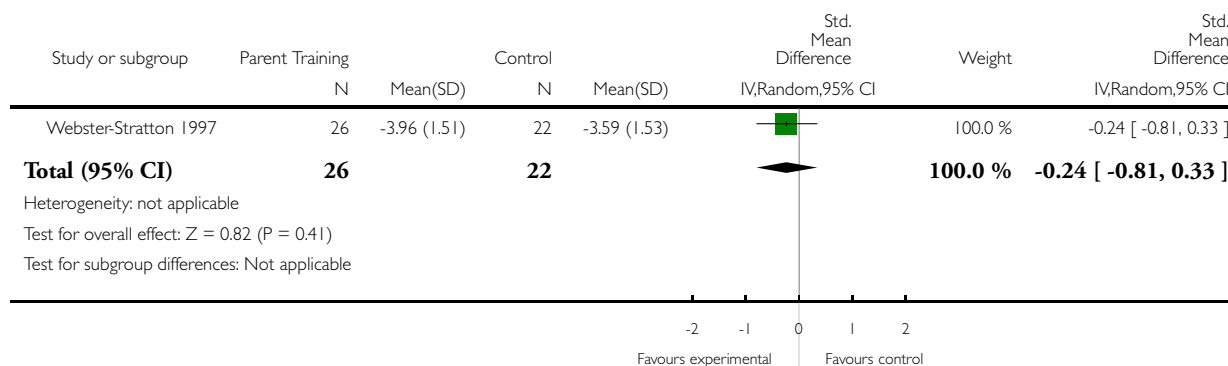


**Analysis 5.11. Comparison 5 Parent training versus control for individual studies (child educational/cognitive abilities), Outcome 11 Child cognitive abilities (Wally object acquisitions task, no of positive solutions - clinic report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 5 Parent training versus control for individual studies (child educational/cognitive abilities)

Outcome: 11 Child cognitive abilities (Wally object acquisitions task, no of positive solutions - clinic report)

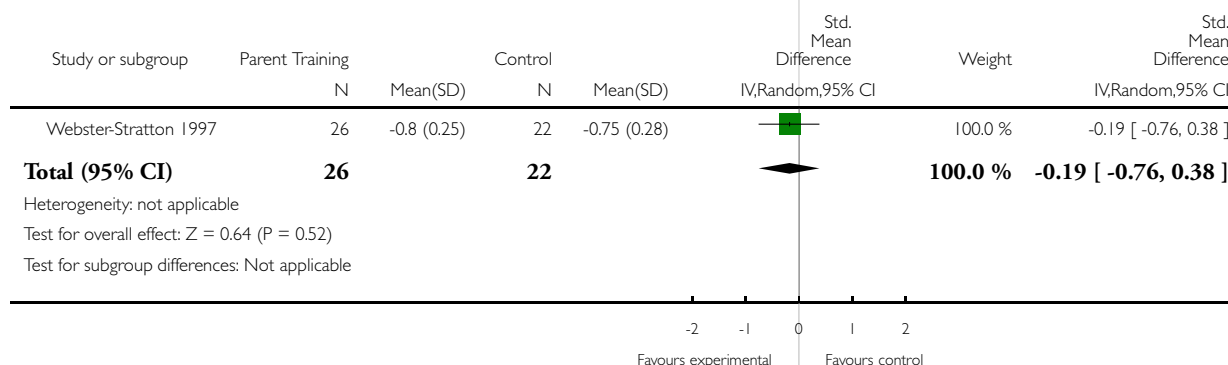


**Analysis 5.12. Comparison 5 Parent training versus control for individual studies (child educational/cognitive abilities), Outcome 12 Child cognitive abilities (Wally object acquisitions task proportion of positive to negative solutions - clinic report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 5 Parent training versus control for individual studies (child educational/cognitive abilities)

Outcome: 12 Child cognitive abilities (Wally object acquisitions task proportion of positive to negative solutions - clinic report)

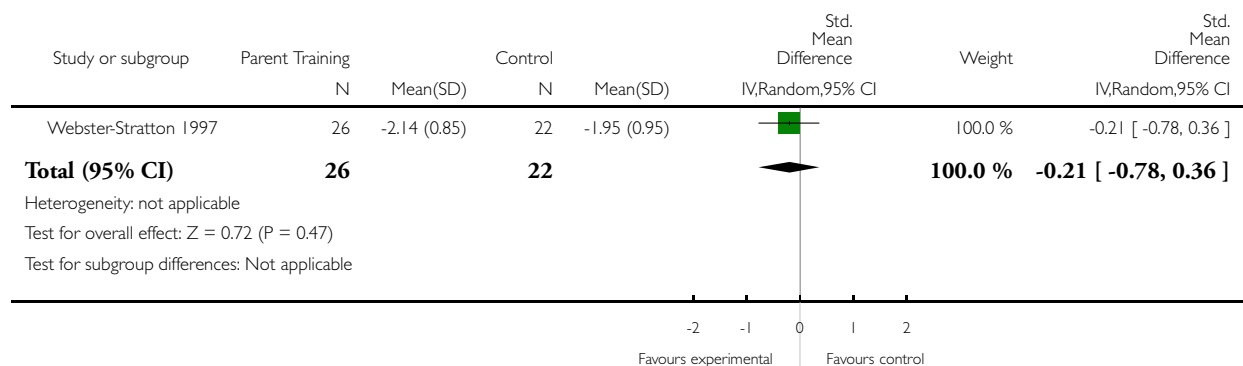


**Analysis 5.13. Comparison 5 Parent training versus control for individual studies (child educational/cognitive abilities), Outcome 13 Child cognitive abilities (Wally friendship task, no. of positive solutions - clinic report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 5 Parent training versus control for individual studies (child educational/cognitive abilities)

Outcome: 13 Child cognitive abilities (Wally friendship task, no. of positive solutions - clinic report)

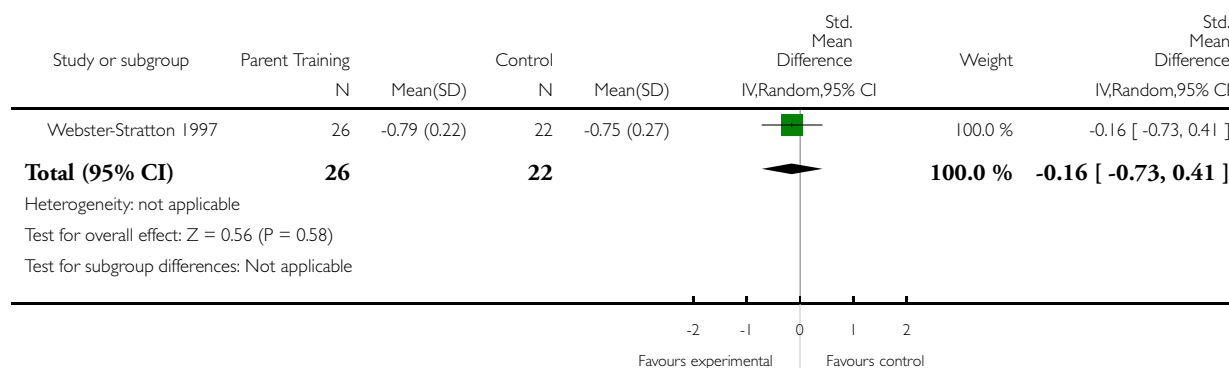


**Analysis 5.14. Comparison 5 Parent training versus control for individual studies (child educational/cognitive abilities), Outcome 14 Child cognitive abilities (Wally friendship task, no of positive to negative solutions - clinic report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 5 Parent training versus control for individual studies (child educational/cognitive abilities)

Outcome: 14 Child cognitive abilities (Wally friendship task, no of positive to negative solutions - clinic report)

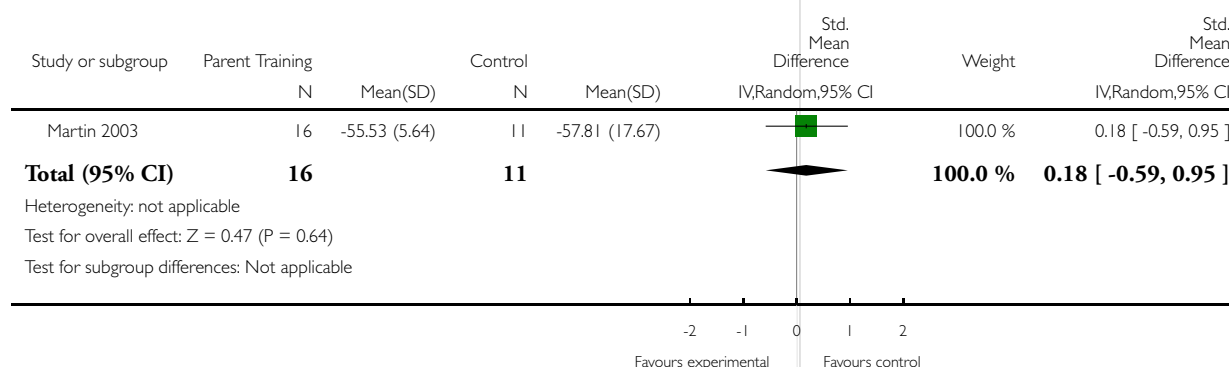


**Analysis 6.1. Comparison 6 Parent training versus control for individual studies (parental social support), Outcome 1 Parental social support (Social support scale - parent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 6 Parent training versus control for individual studies (parental social support)

Outcome: 1 Parental social support (Social support scale - parent report)

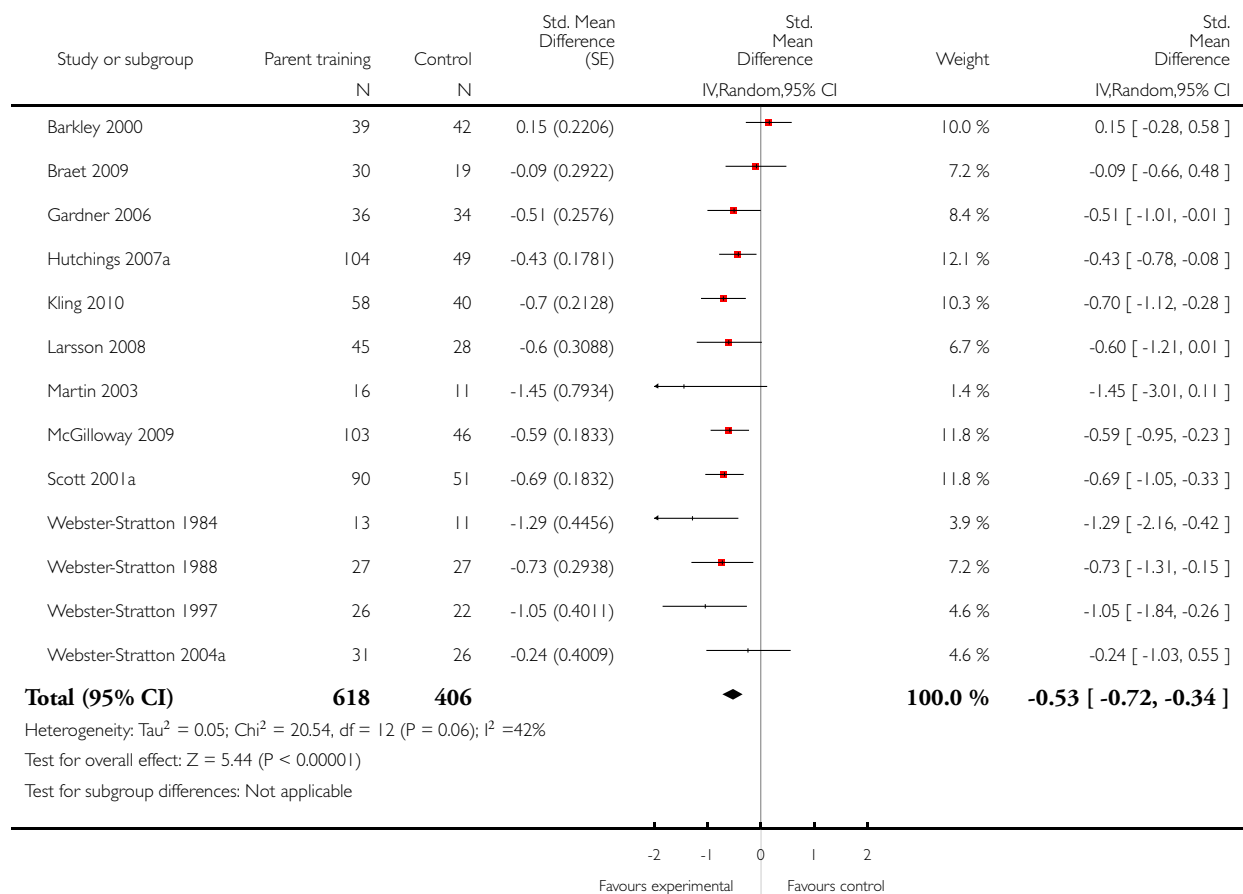


# **Analysis 7.1. Comparison 7 Parent training versus control meta-analysis of child conduct problems: parent-report, Outcome 1 Meta-analysis of child conduct problems: parent report.**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 7 Parent training versus control meta-analysis of child conduct problems: parent-report

Outcome: 1 Meta-analysis of child conduct problems: parent report



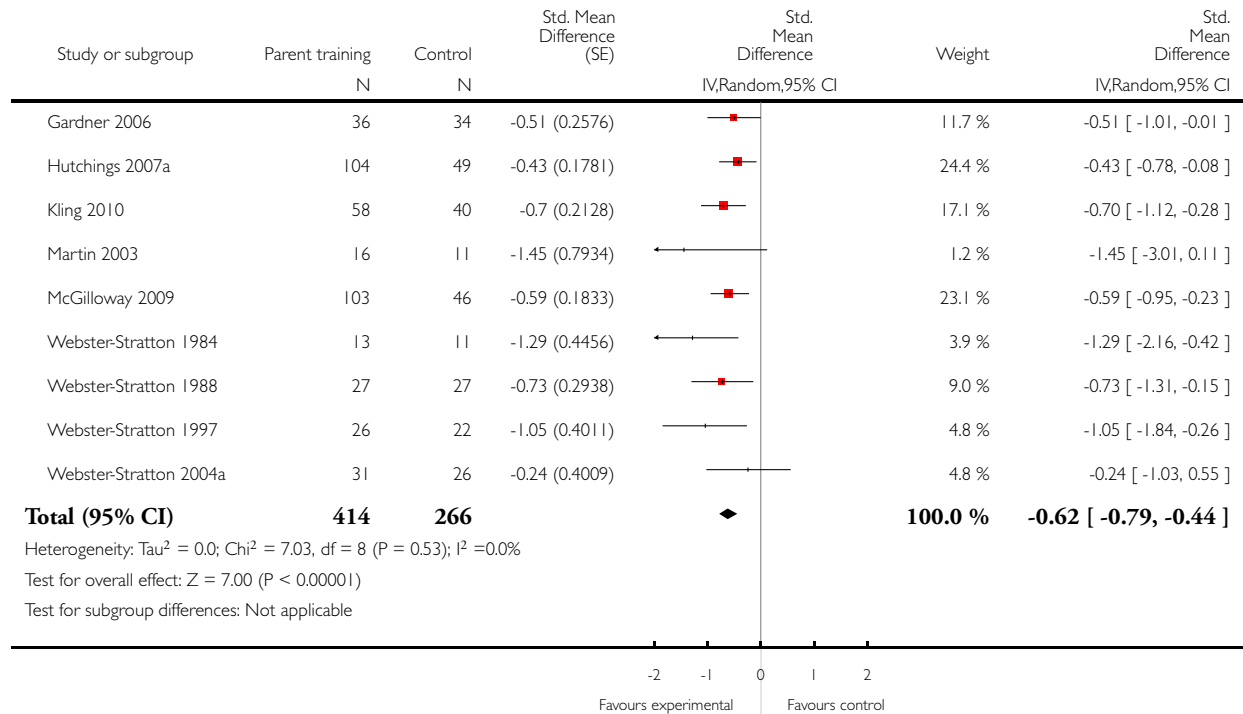


**Analysis 7.2. Comparison 7 Parent training versus control meta-analysis of child conduct problems: parent-report, Outcome 2 Sensitivity analysis remove studies with quasi randomisation (Child conduct problems: parent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 7 Parent training versus control meta-analysis of child conduct problems: parent-report

Outcome: 2 Sensitivity analysis remove studies with quasi randomisation (Child conduct problems: parent report)

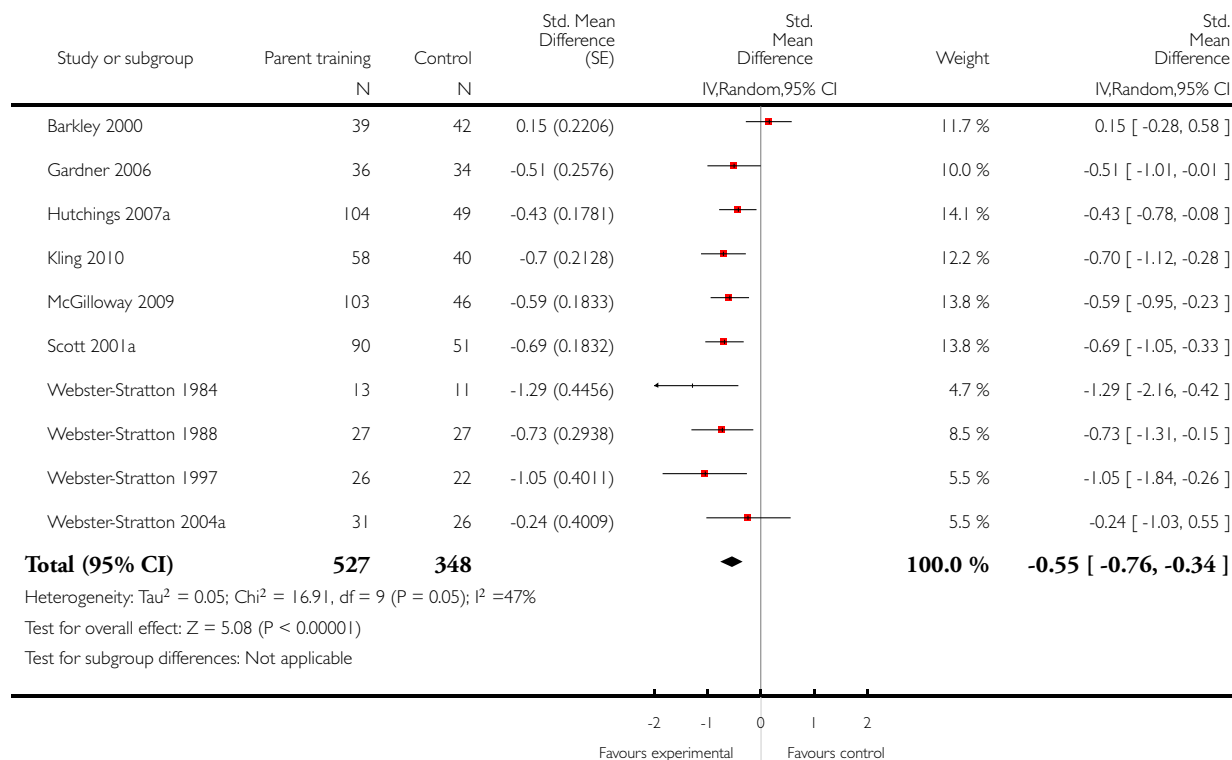


### Analysis 7.3. Comparison 7 Parent training versus control meta-analysis of child conduct problems: parent-report, Outcome 3 Sensitivity analysis remove studies with inadequate blinding (Child conduct problems: parent report).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 7 Parent training versus control meta-analysis of child conduct problems: parent-report

Outcome: 3 Sensitivity analysis remove studies with inadequate blinding (Child conduct problems: parent report)

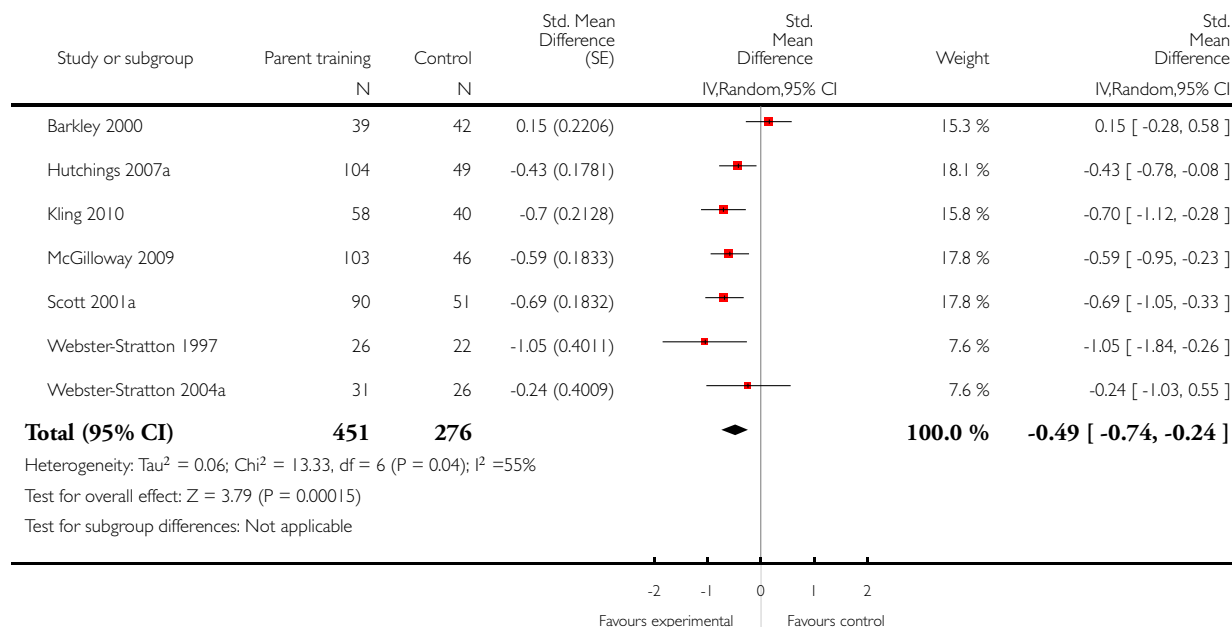


**Analysis 7.4. Comparison 7 Parent training versus control meta-analysis of child conduct problems: parent-report, Outcome 4 Sensitivity analysis remove studies without an intention to treat analysis (Child conduct problems: parent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 7 Parent training versus control meta-analysis of child conduct problems: parent-report

Outcome: 4 Sensitivity analysis remove studies without an intention to treat analysis (Child conduct problems: parent report)

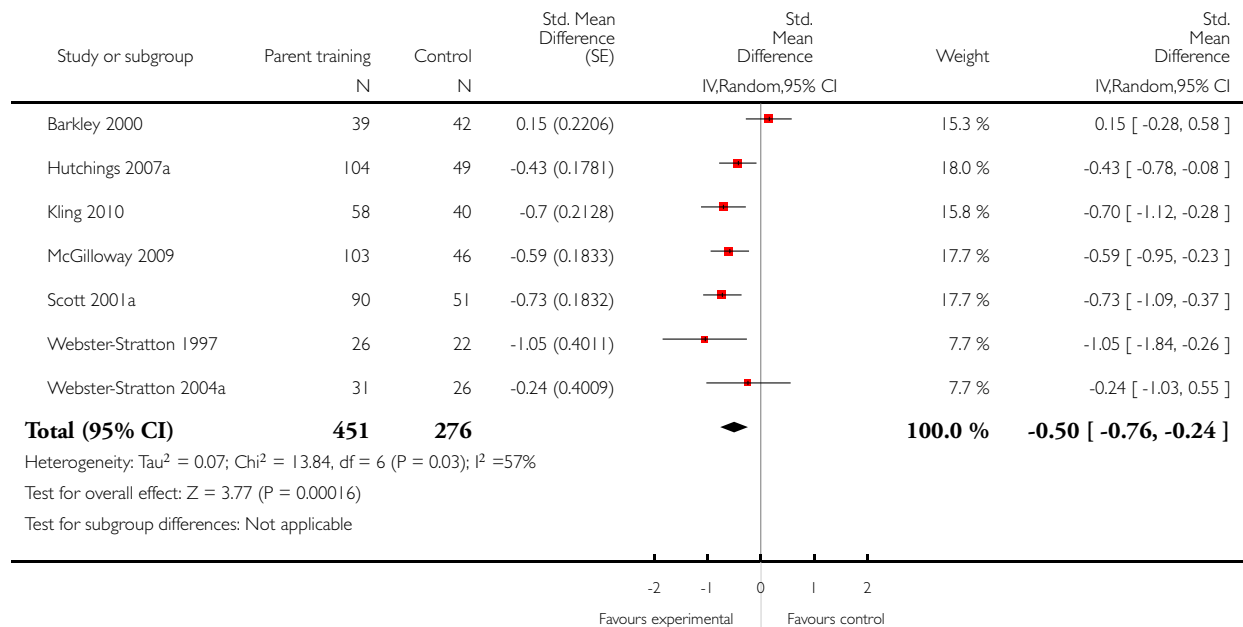


**Analysis 7.5. Comparison 7 Parent training versus control meta-analysis of child conduct problems: parent-report, Outcome 5 Sensitivity analysis replace ITT of LOCF in Scott 2001 with ITT of mean values.**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 7 Parent training versus control meta-analysis of child conduct problems: parent-report

Outcome: 5 Sensitivity analysis replace ITT of LOCF in Scott 2001 with ITT of mean values

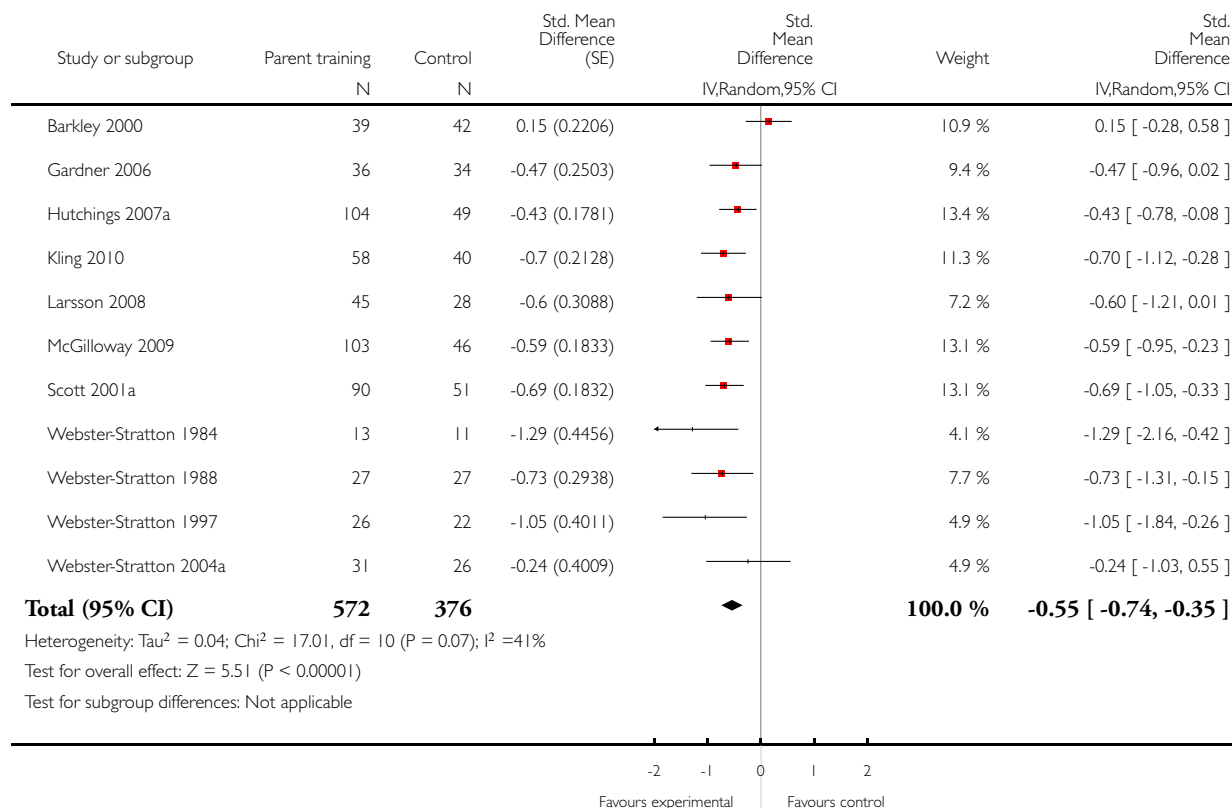


**Analysis 7.6. Comparison 7 Parent training versus control meta-analysis of child conduct problems: parent-report, Outcome 6 Sensitivity analysis remove studies/measures within studies with no ITT and more than 20% attrition (Child conduct problems: parent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 7 Parent training versus control meta-analysis of child conduct problems: parent-report

Outcome: 6 Sensitivity analysis remove studies/measures within studies with no ITT and more than 20% attrition (Child conduct problems: parent report)

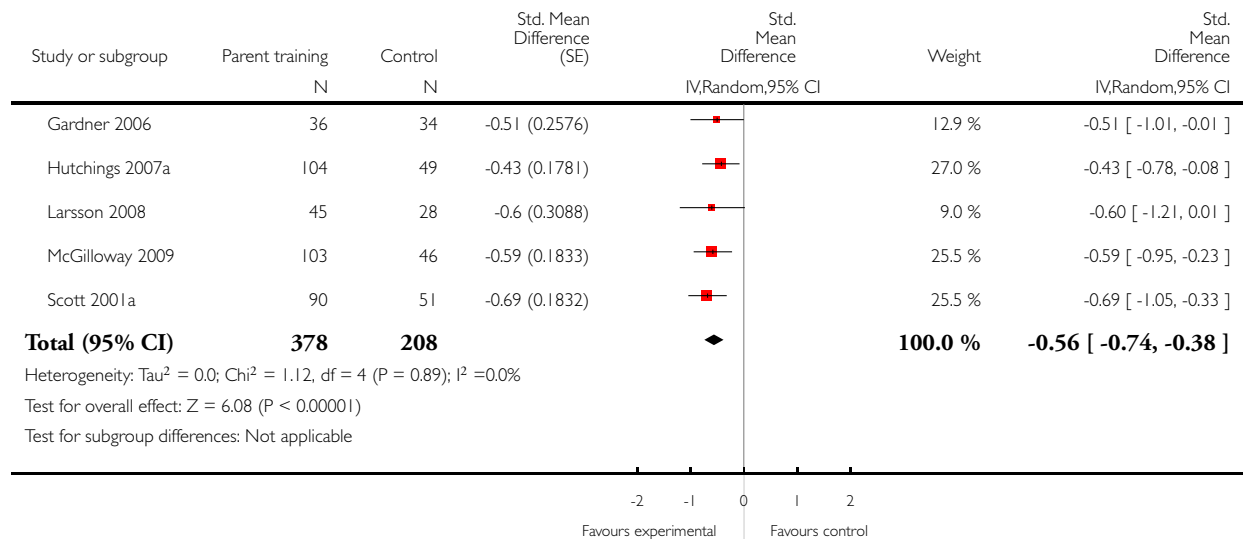


**Analysis 7.7. Comparison 7 Parent training versus control meta-analysis of child conduct problems: parent-report, Outcome 7 Sensitivity analysis remove studies without independent replication (Child conduct problems: parent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 7 Parent training versus control meta-analysis of child conduct problems: parent-report

Outcome: 7 Sensitivity analysis remove studies without independent replication (Child conduct problems: parent report)

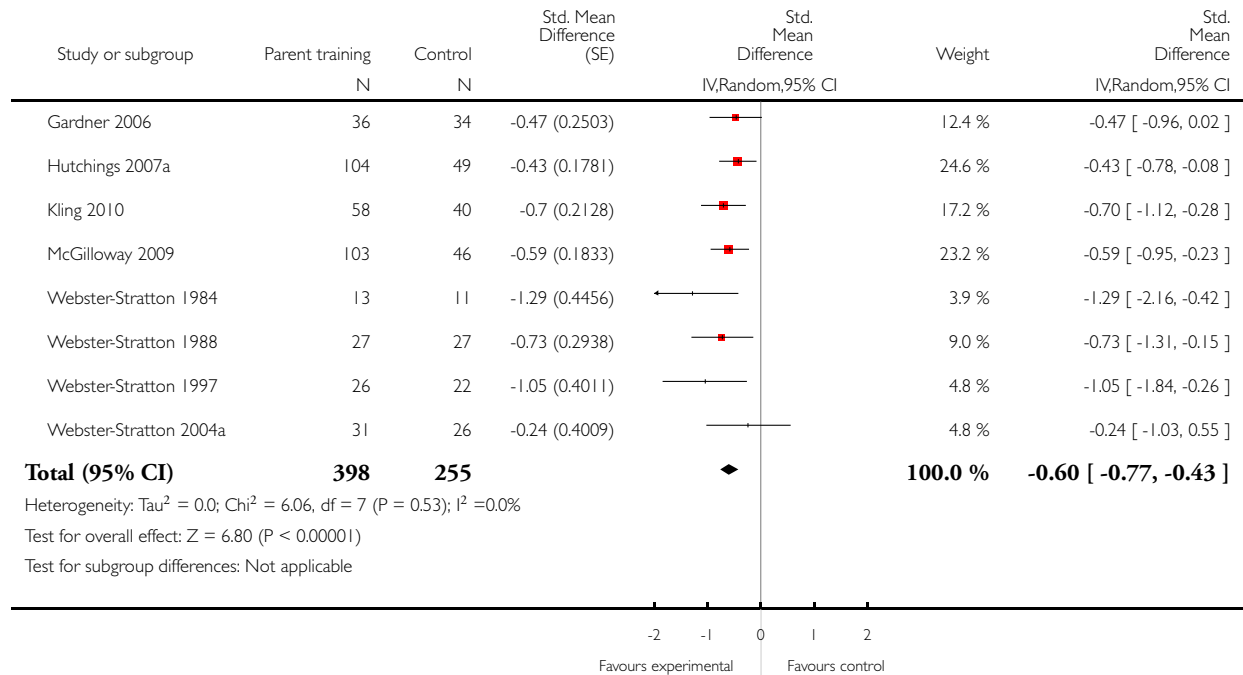


**Analysis 7.8. Comparison 7 Parent training versus control meta-analysis of child conduct problems: parent-report, Outcome 8 Sensitivity analysis remove studies/measures within studies with high risk of bias (Child conduct problems: parent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 7 Parent training versus control meta-analysis of child conduct problems: parent-report

Outcome: 8 Sensitivity analysis remove studies/measures within studies with high risk of bias (Child conduct problems: parent report)

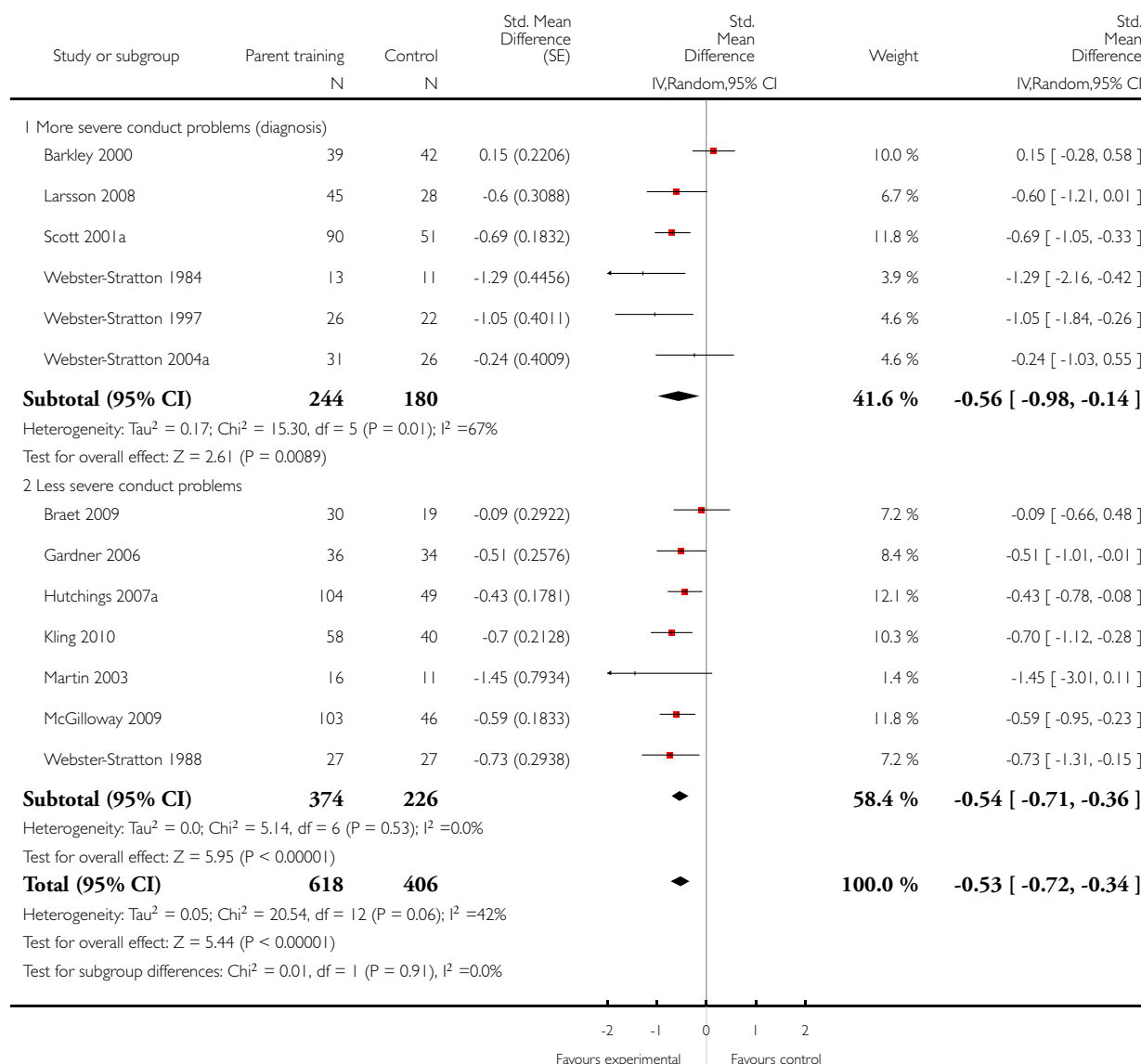


# **Analysis 7.9. Comparison 7 Parent training versus control meta-analysis of child conduct problems: parent-report, Outcome 9 Subgroup severity of child conduct problems of child conduct problems: parent report.**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 7 Parent training versus control meta-analysis of child conduct problems: parent-report

Outcome: 9 Subgroup severity of child conduct problems of child conduct problems: parent report



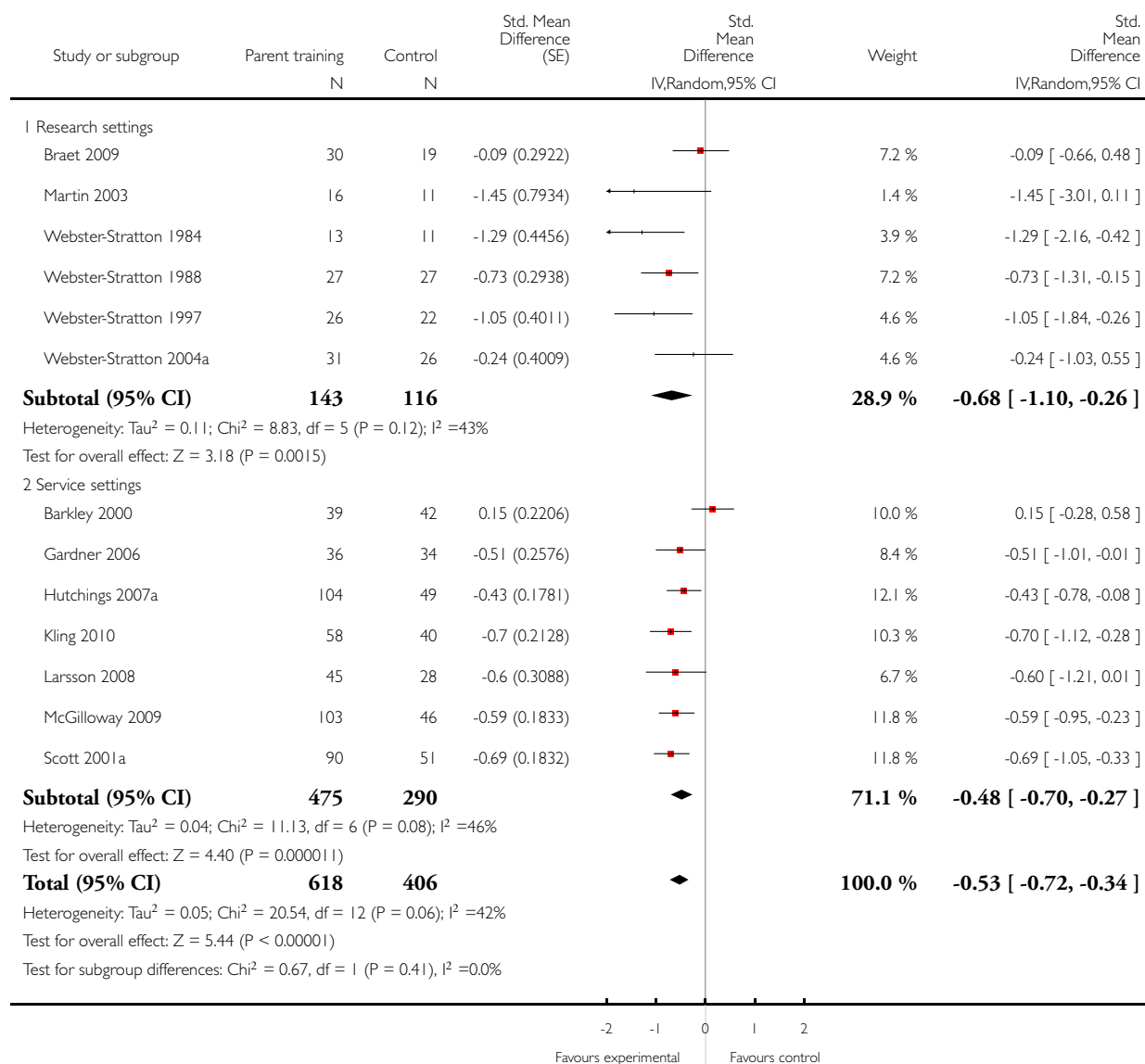


# **Analysis 7.10. Comparison 7 Parent training versus control meta-analysis of child conduct problems: parent-report, Outcome 10 Subgroup trial setting of child conduct problems: parent report.**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 7 Parent training versus control meta-analysis of child conduct problems: parent-report

Outcome: 10 Subgroup trial setting of child conduct problems: parent report

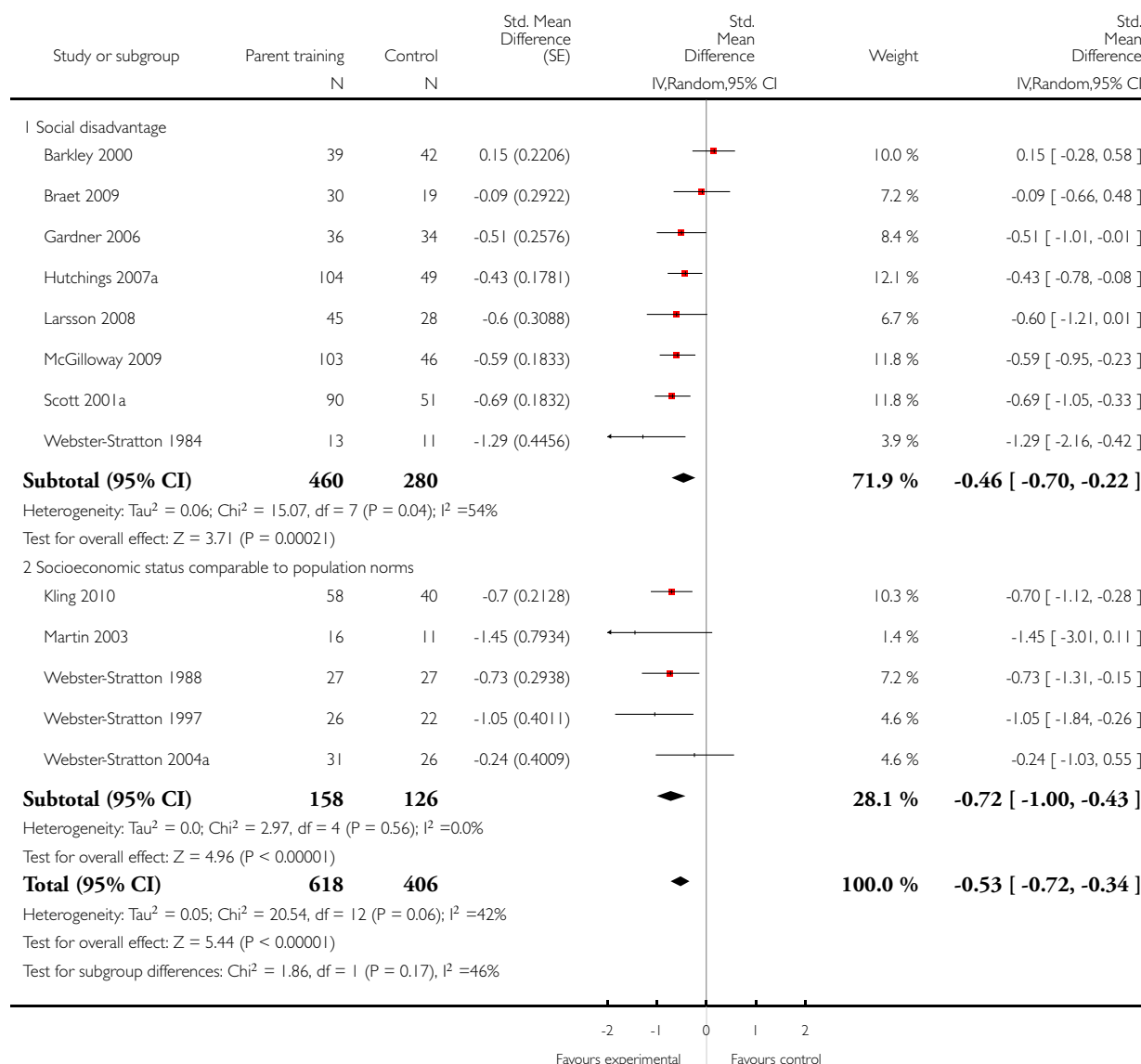


# **Analysis 7.11. Comparison 7 Parent training versus control meta-analysis of child conduct problems: parent-report, Outcome 11 Subgroup socioeconomic status of child conduct problems: parent report.**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 7 Parent training versus control meta-analysis of child conduct problems: parent-report

Outcome: 11 Subgroup socioeconomic status of child conduct problems: parent report

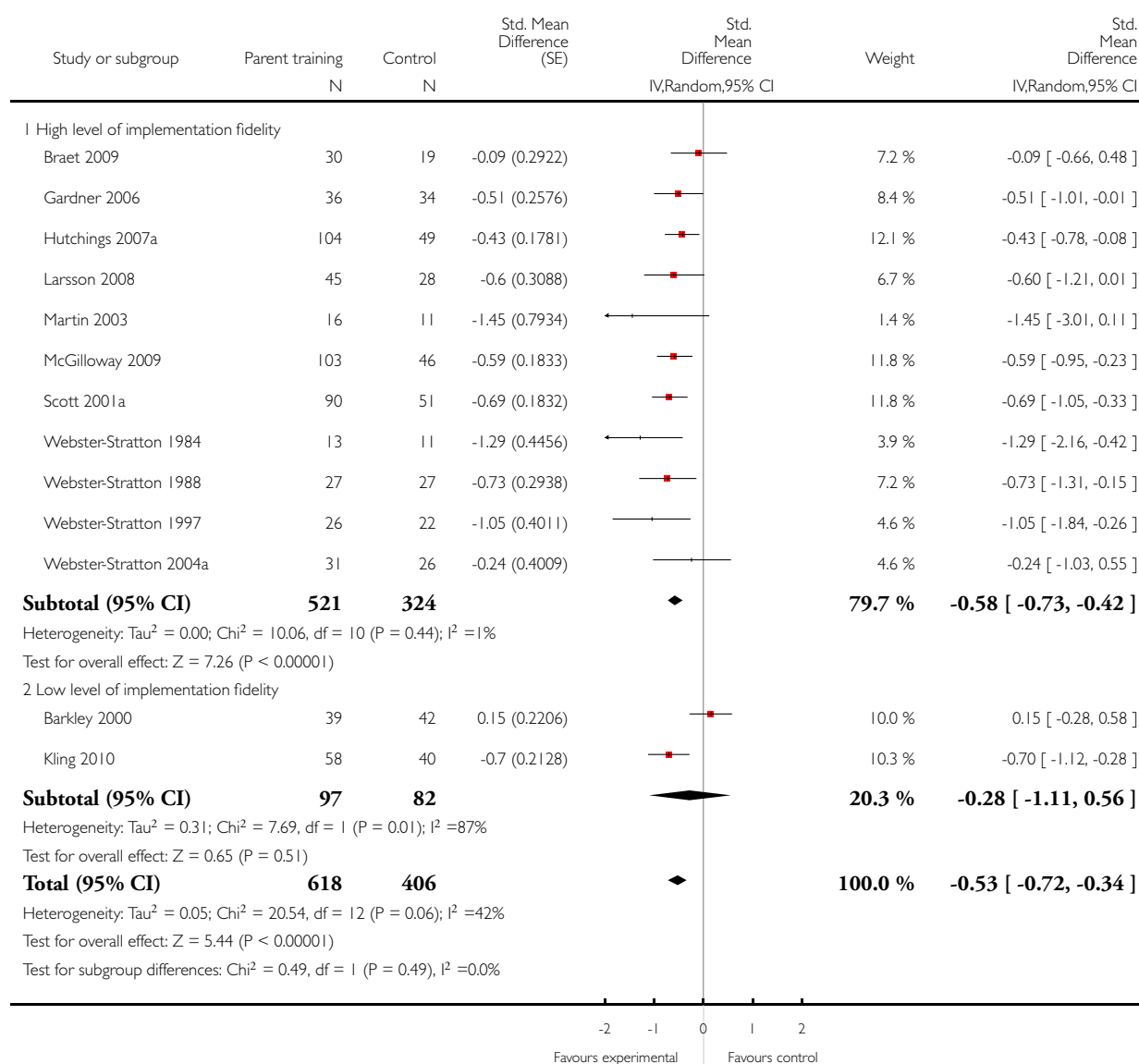


## Analysis 7.12. Comparison 7 Parent training versus control meta-analysis of child conduct problems: parent-report, Outcome 12 Subgroup level of implementation fidelity of child conduct problems: parent report.

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 7 Parent training versus control meta-analysis of child conduct problems: parent-report

Outcome: 12 Subgroup level of implementation fidelity of child conduct problems: parent report

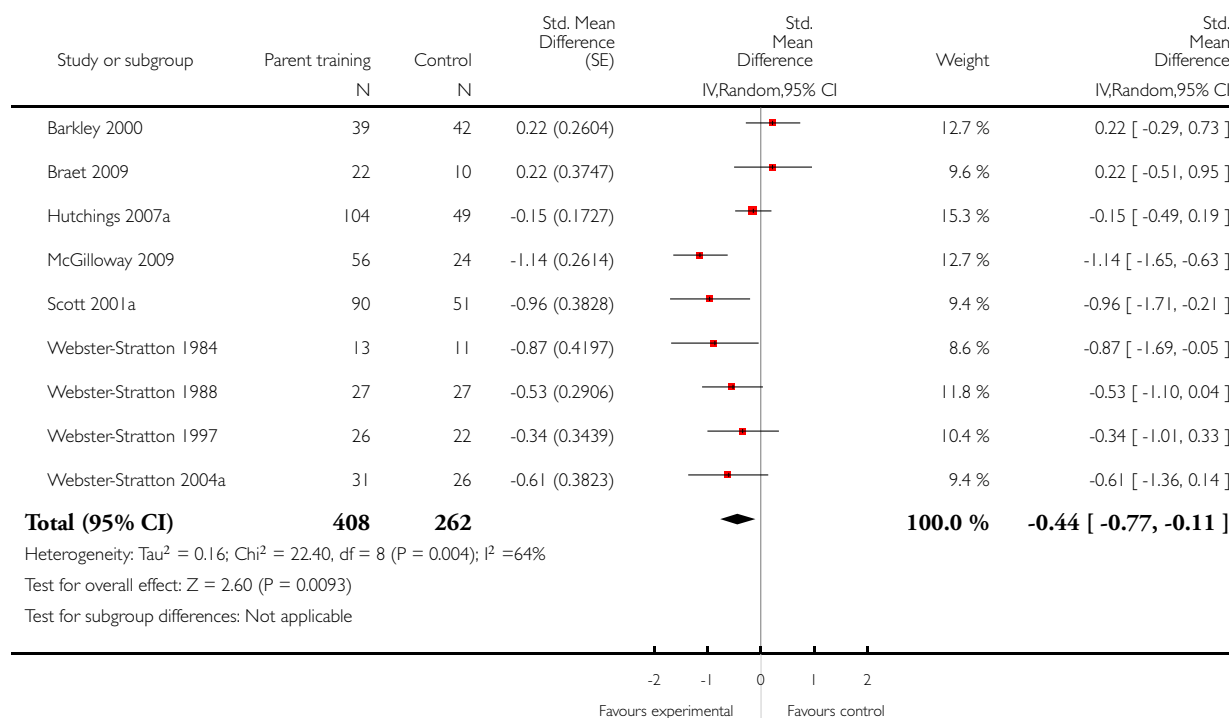


# **Analysis 8.1. Comparison 8 Parent training versus control meta-analysis of child conduct problems: independent report, Outcome 1 Meta-analysis of child conduct problems: independent report.**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 8 Parent training versus control meta-analysis of child conduct problems: independent report

Outcome: 1 Meta-analysis of child conduct problems: independent report

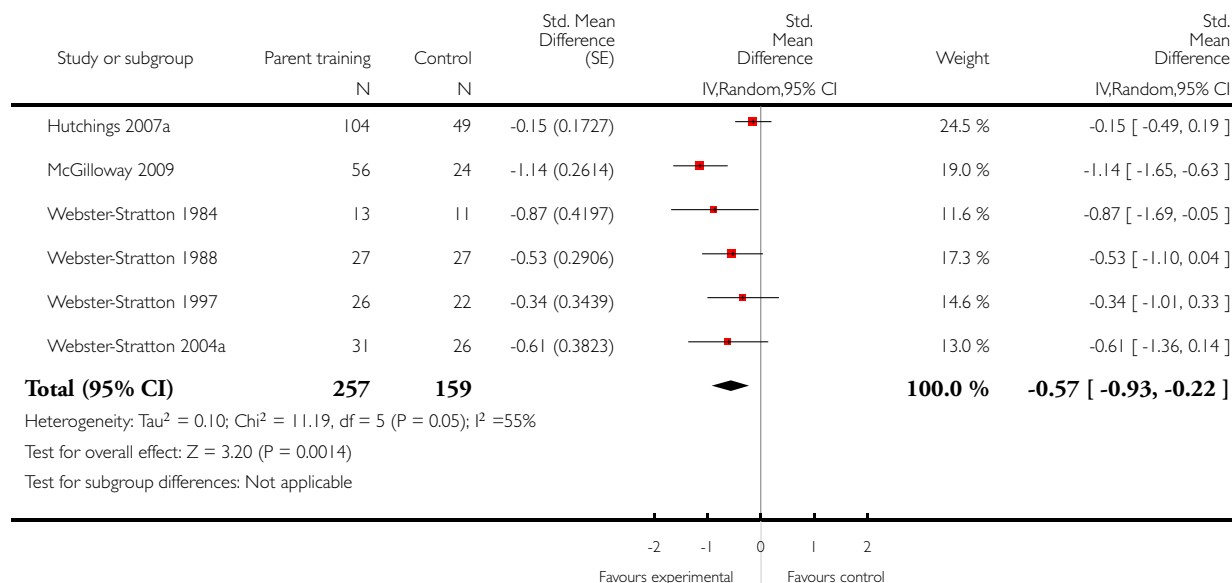


**Analysis 8.2. Comparison 8 Parent training versus control meta-analysis of child conduct problems: independent report, Outcome 2 Sensitivity analysis remove quasi-randomised studies (Child conduct problems: independent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 8 Parent training versus control meta-analysis of child conduct problems: independent report

Outcome: 2 Sensitivity analysis remove quasi-randomised studies (Child conduct problems: independent report)

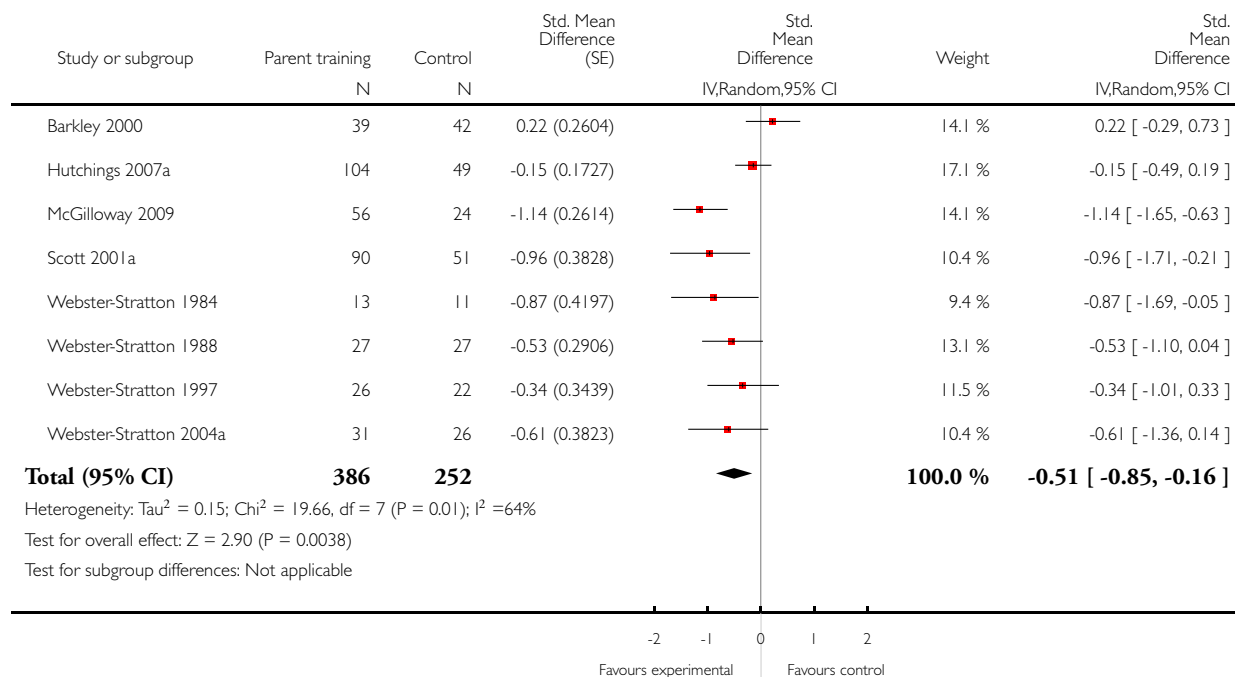


**Analysis 8.3. Comparison 8 Parent training versus control meta-analysis of child conduct problems: independent report, Outcome 3 Sensitivity analysis remove studies with inadequate blinding (Child conduct problems: independent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 8 Parent training versus control meta-analysis of child conduct problems: independent report

Outcome: 3 Sensitivity analysis remove studies with inadequate blinding (Child conduct problems: independent report)

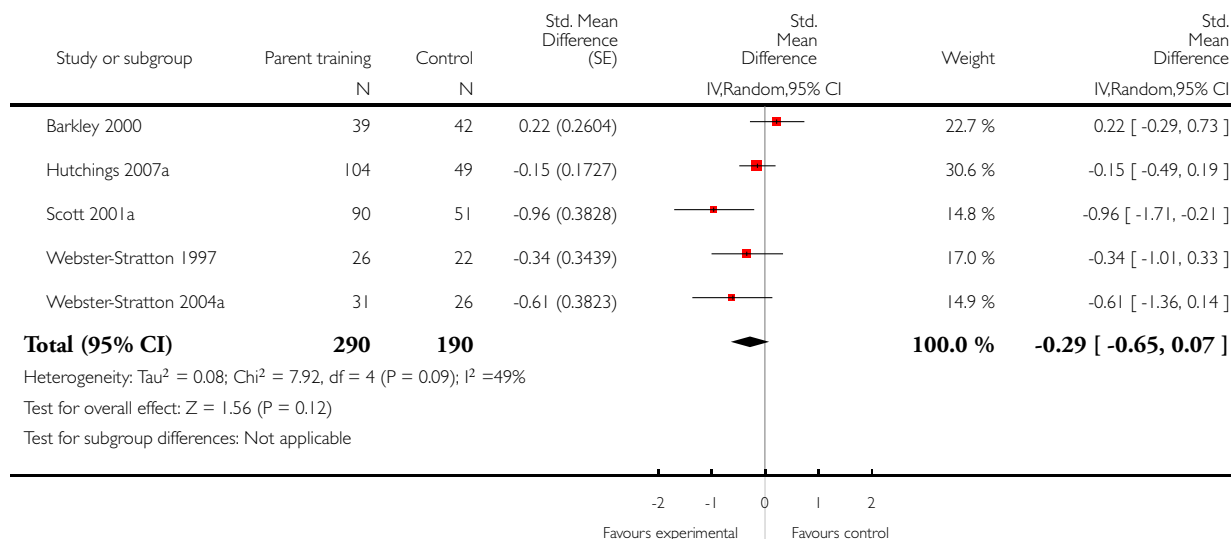


**Analysis 8.4. Comparison 8 Parent training versus control meta-analysis of child conduct problems: independent report, Outcome 4 Sensitivity analysis remove studies without an intention to treat analysis (Child conduct problems: independent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 8 Parent training versus control meta-analysis of child conduct problems: independent report

Outcome: 4 Sensitivity analysis remove studies without an intention to treat analysis (Child conduct problems: independent report)

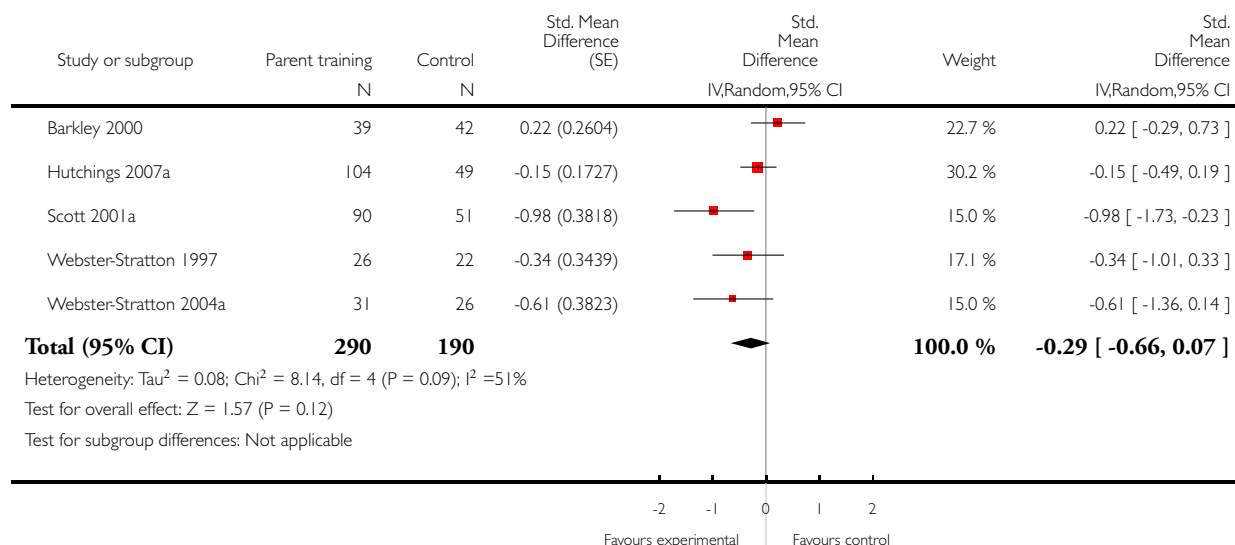


**Analysis 8.5. Comparison 8 Parent training versus control meta-analysis of child conduct problems: independent report, Outcome 5 Sensitivity analysis replace ITT of LOCF in Scott 2001 with ITT of mean values.**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 8 Parent training versus control meta-analysis of child conduct problems: independent report

Outcome: 5 Sensitivity analysis replace ITT of LOCF in Scott 2001 with ITT of mean values



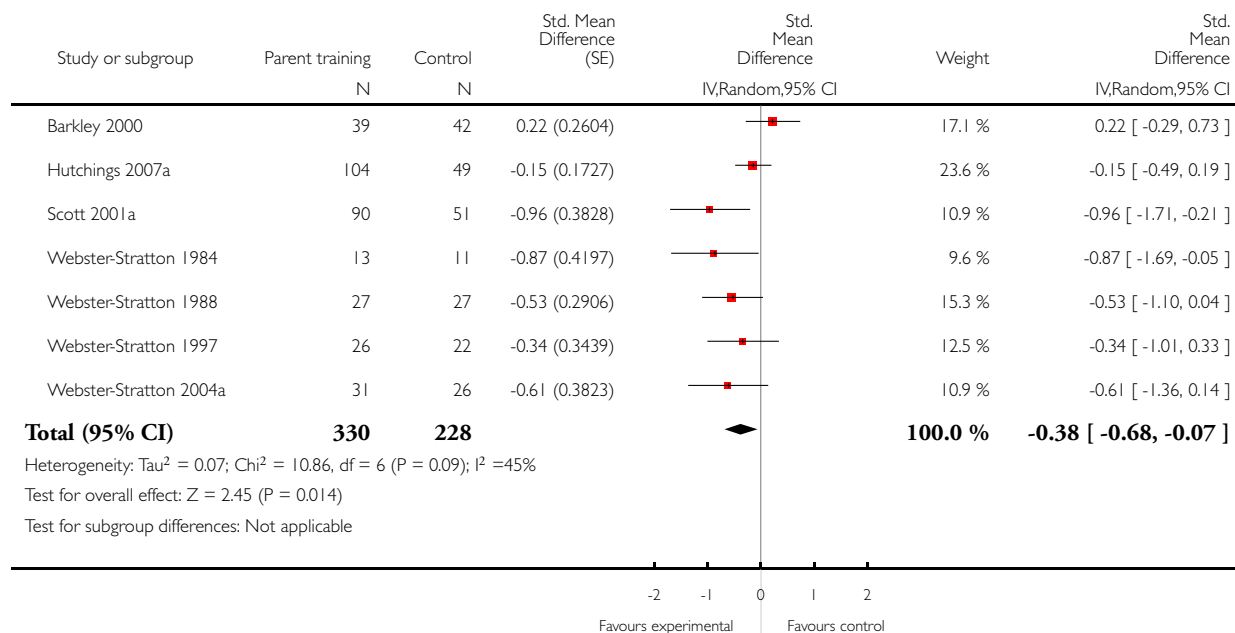


**Analysis 8.6. Comparison 8 Parent training versus control meta-analysis of child conduct problems: independent report, Outcome 6 Sensitivity analysis remove studies with no ITT and more than 20% attrition (Child conduct problems: independent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 8 Parent training versus control meta-analysis of child conduct problems: independent report

Outcome: 6 Sensitivity analysis remove studies with no ITT and more than 20% attrition (Child conduct problems: independent report)

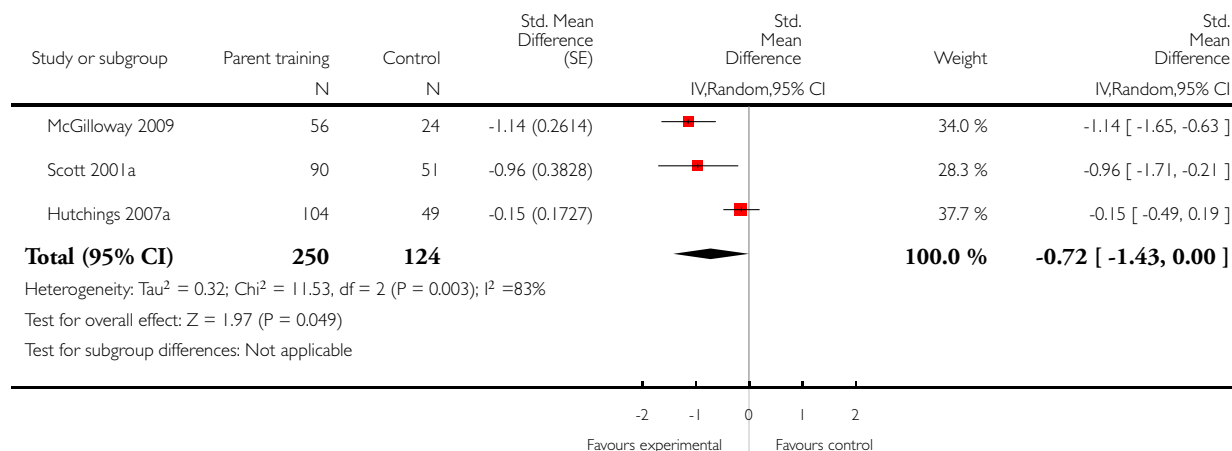


**Analysis 8.7. Comparison 8 Parent training versus control meta-analysis of child conduct problems: independent report, Outcome 7 Sensitivity analysis remove studies without independent replication (Child conduct problems: independent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 8 Parent training versus control meta-analysis of child conduct problems: independent report

Outcome: 7 Sensitivity analysis remove studies without independent replication (Child conduct problems: independent report)

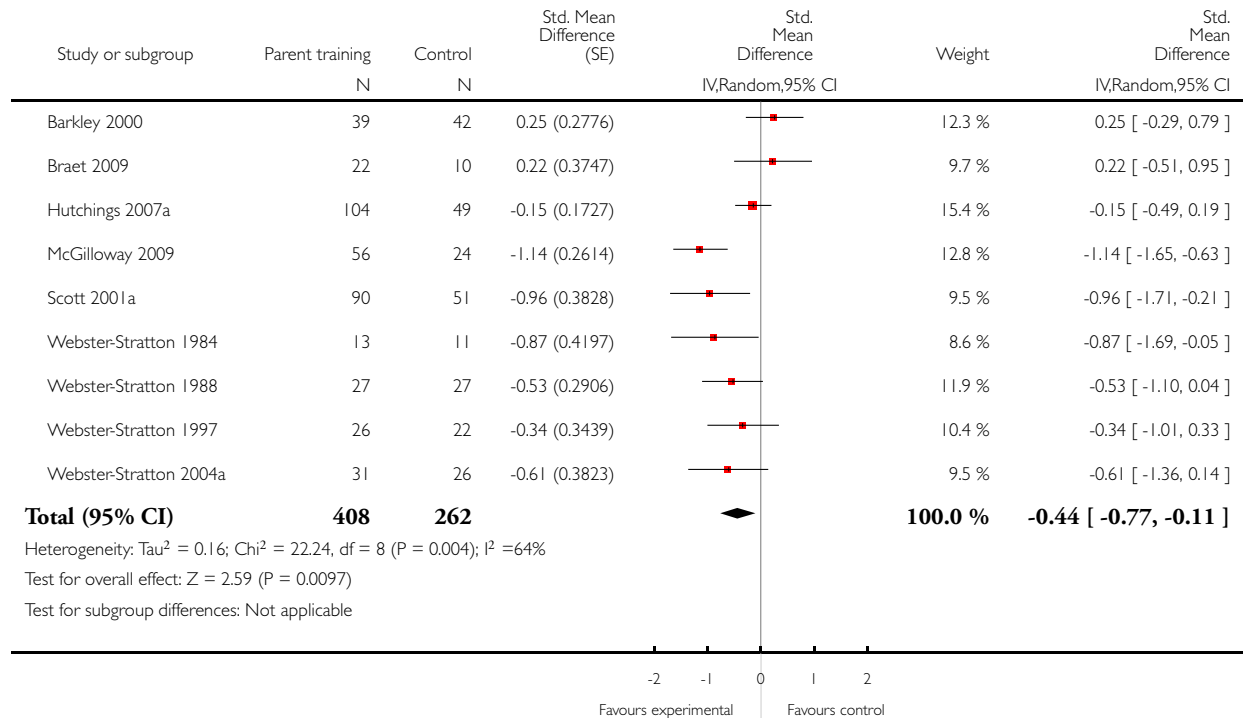


**Analysis 8.8. Comparison 8 Parent training versus control meta-analysis of child conduct problems: independent report, Outcome 8 Sensitivity analysis remove non-validated measures from Barkley 2000 (Negative parenting practices: independent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 8 Parent training versus control meta-analysis of child conduct problems: independent report

Outcome: 8 Sensitivity analysis remove non-validated measures from Barkley 2000 (Negative parenting practices: independent report)

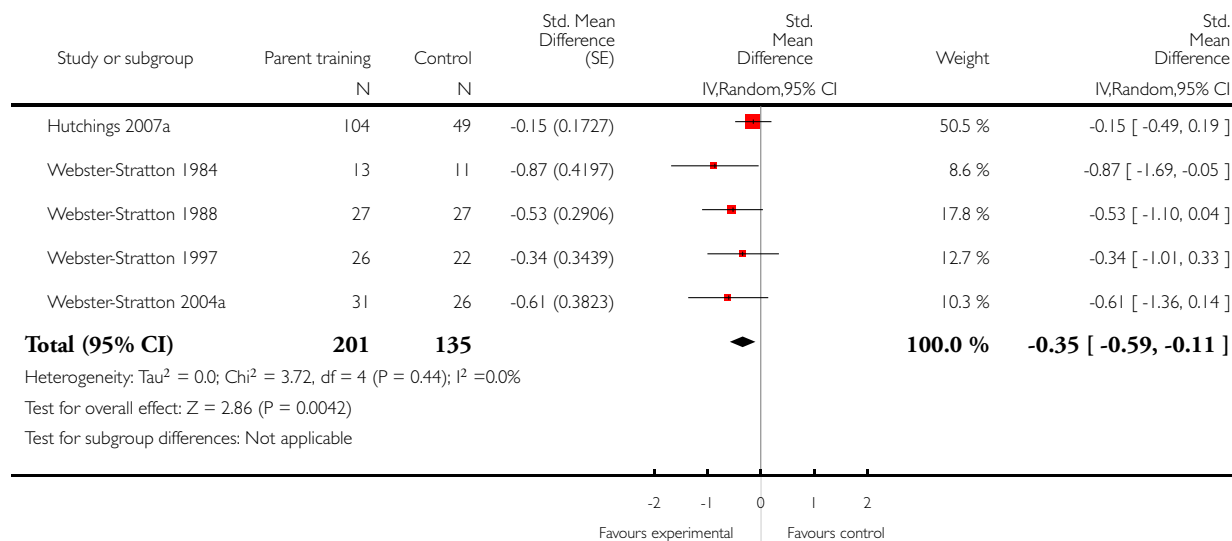


**Analysis 8.9. Comparison 8 Parent training versus control meta-analysis of child conduct problems: independent report, Outcome 9 Sensitivity analysis remove high risk studies (Child conduct problems: independent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 8 Parent training versus control meta-analysis of child conduct problems: independent report

Outcome: 9 Sensitivity analysis remove high risk studies (Child conduct problems: independent report)

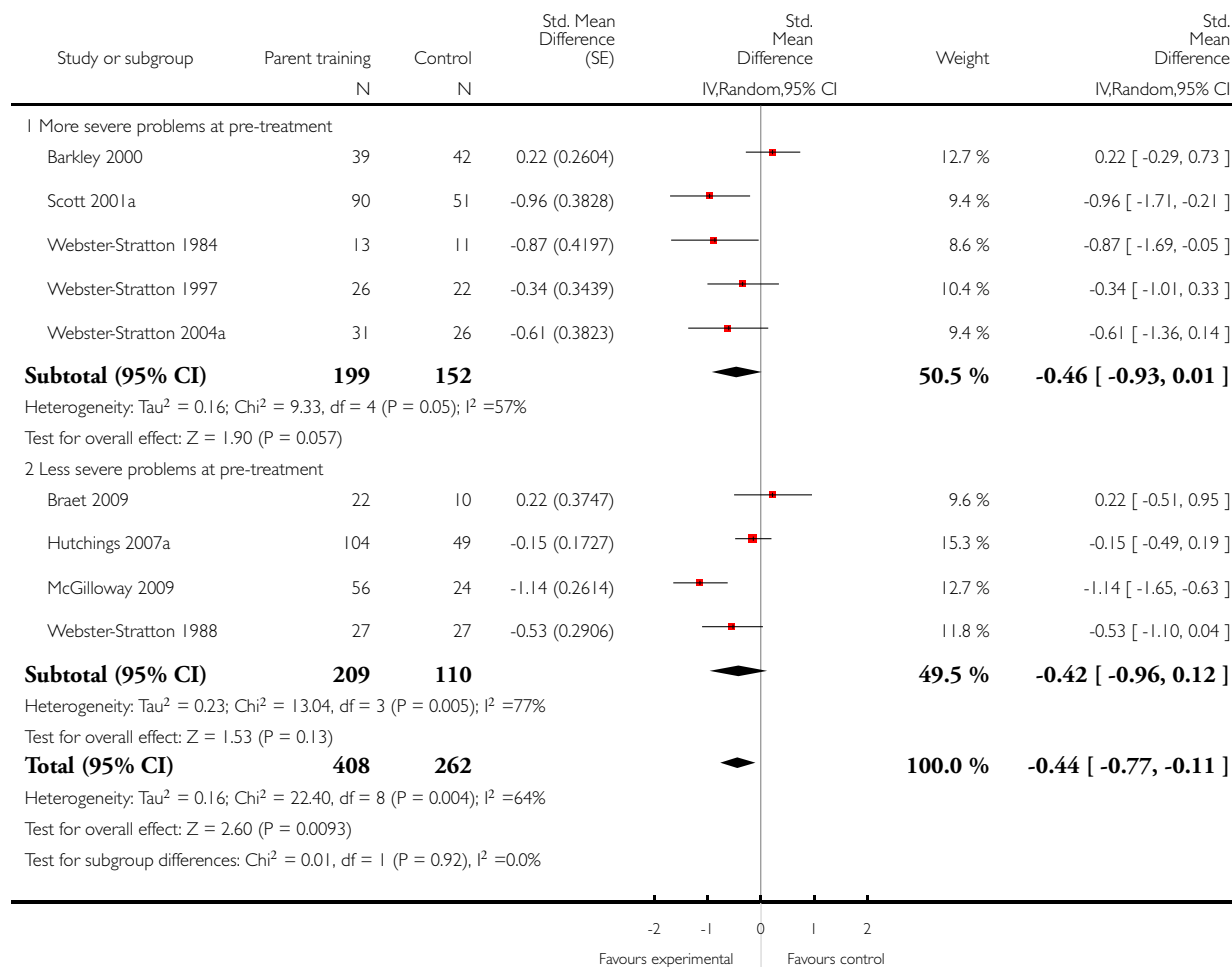


**Analysis 8.10. Comparison 8 Parent training versus control meta-analysis of child conduct problems: independent report, Outcome 10 Subgroup severity of conduct problems of child conduct problems: independent report.**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 8 Parent training versus control meta-analysis of child conduct problems: independent report

Outcome: 10 Subgroup severity of conduct problems of child conduct problems: independent report

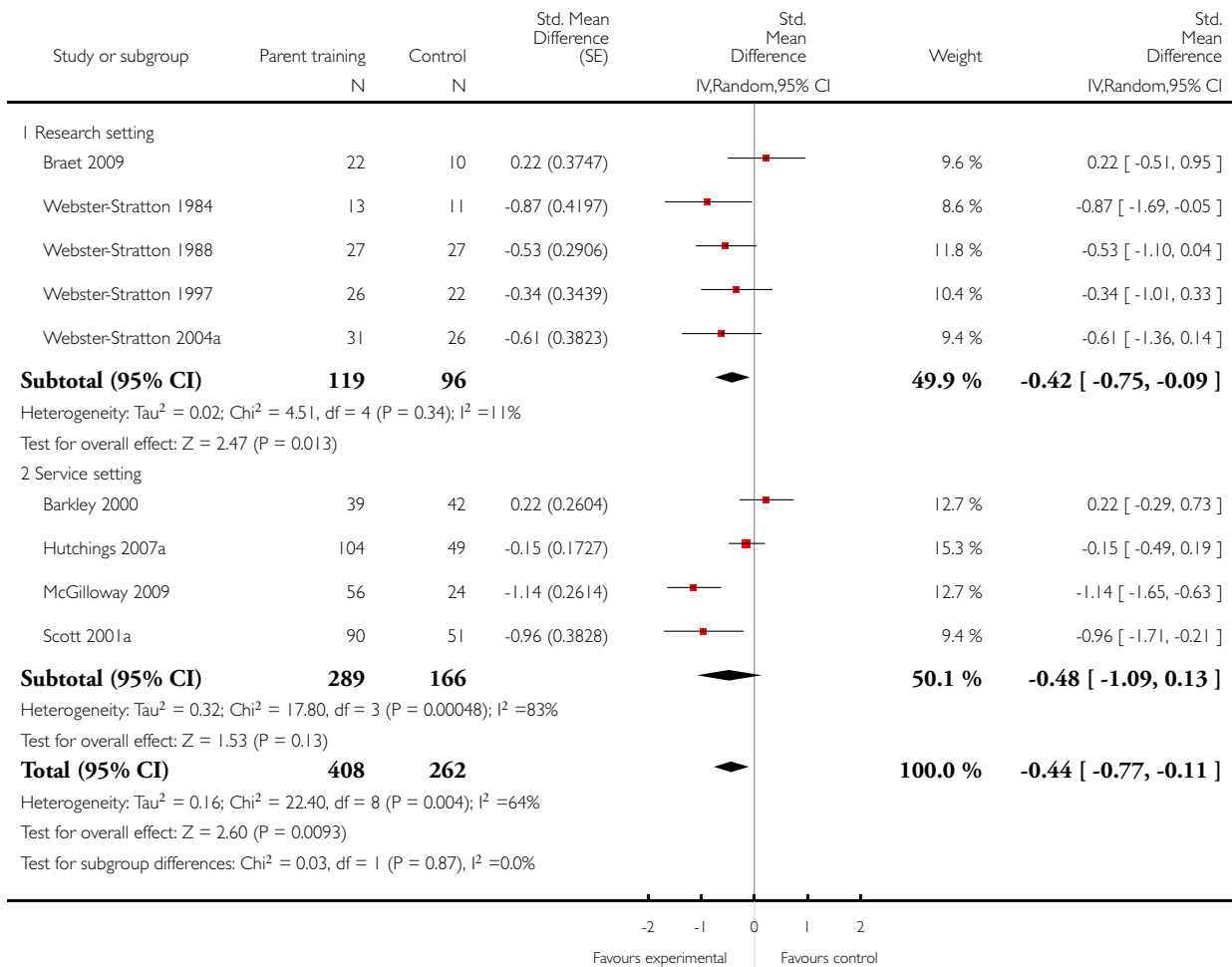


**Analysis 8.11. Comparison 8 Parent training versus control meta-analysis of child conduct problems: independent report, Outcome 11 Subgroup trial setting of child conduct problems: independent report.**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 8 Parent training versus control meta-analysis of child conduct problems: independent report

Outcome: 11 Subgroup trial setting of child conduct problems: independent report

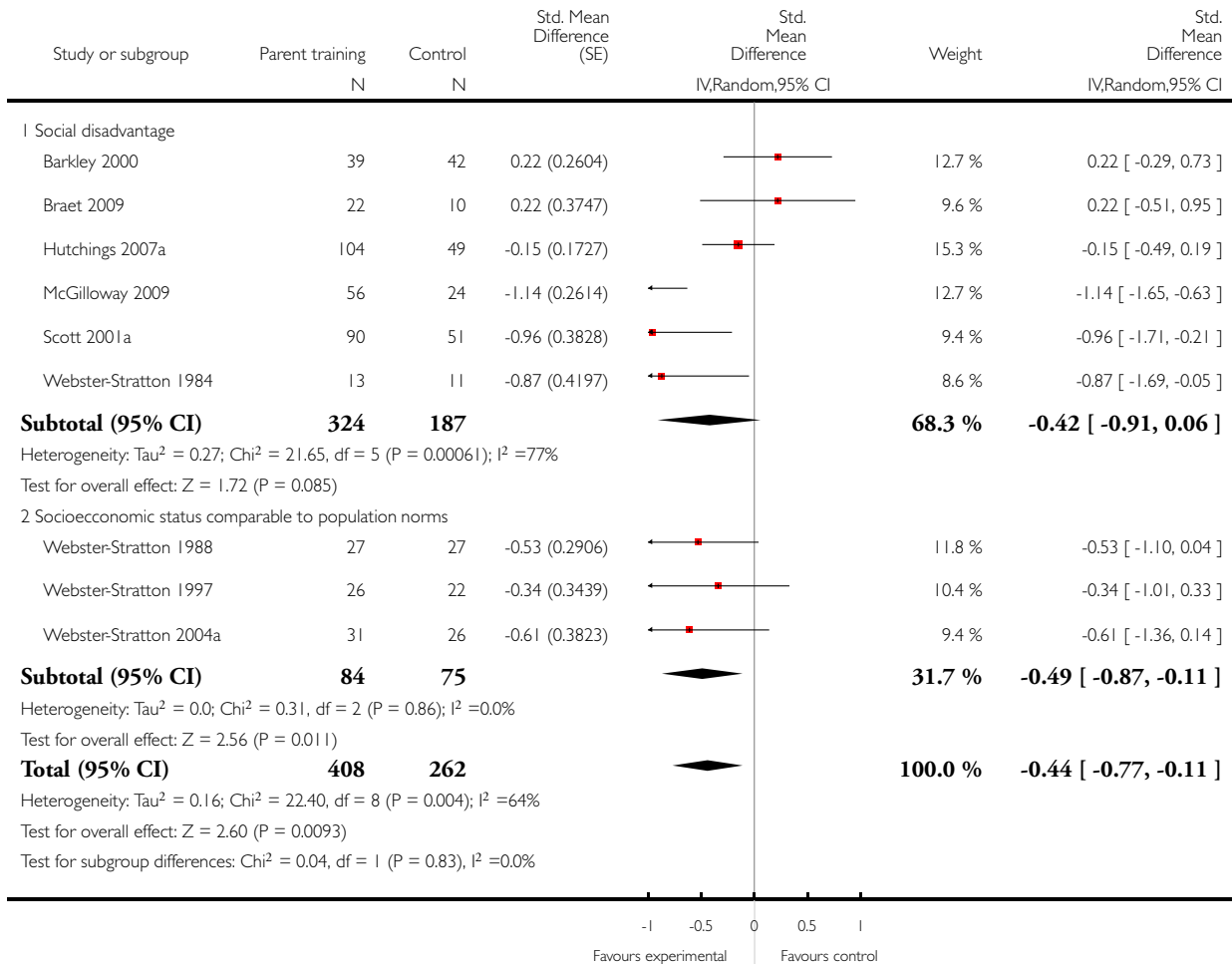


**Analysis 8.12. Comparison 8 Parent training versus control meta-analysis of child conduct problems: independent report, Outcome 12 Subgroup socioeconomic status of child conduct problems: independent report.**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 8 Parent training versus control meta-analysis of child conduct problems: independent report

Outcome: 12 Subgroup socioeconomic status of child conduct problems: independent report

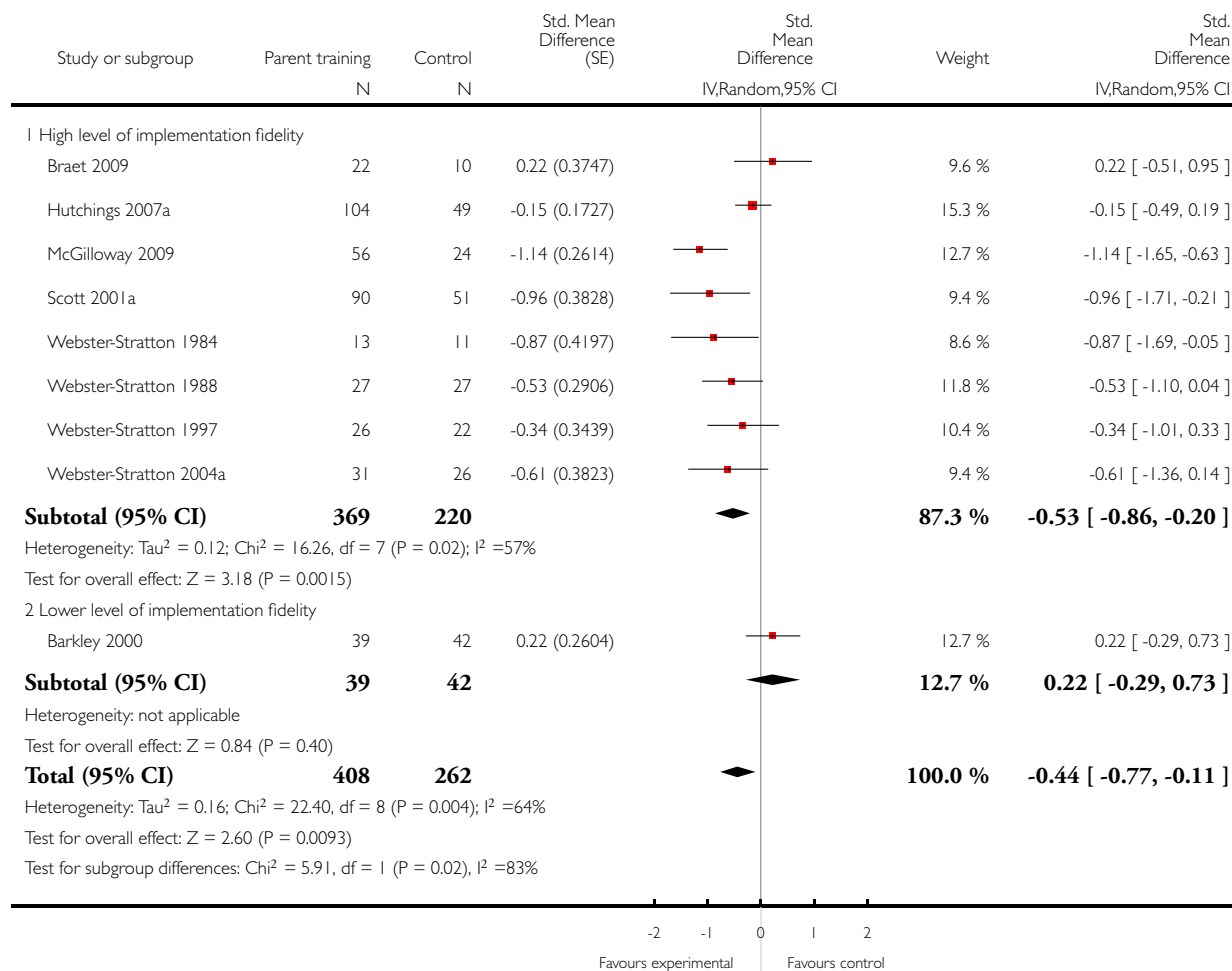


**Analysis 8.13. Comparison 8 Parent training versus control meta-analysis of child conduct problems: independent report, Outcome 13 Subgroup level of implementation fidelity of child conduct problems: independent report.**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 8 Parent training versus control meta-analysis of child conduct problems: independent report

Outcome: 13 Subgroup level of implementation fidelity of child conduct problems: independent report



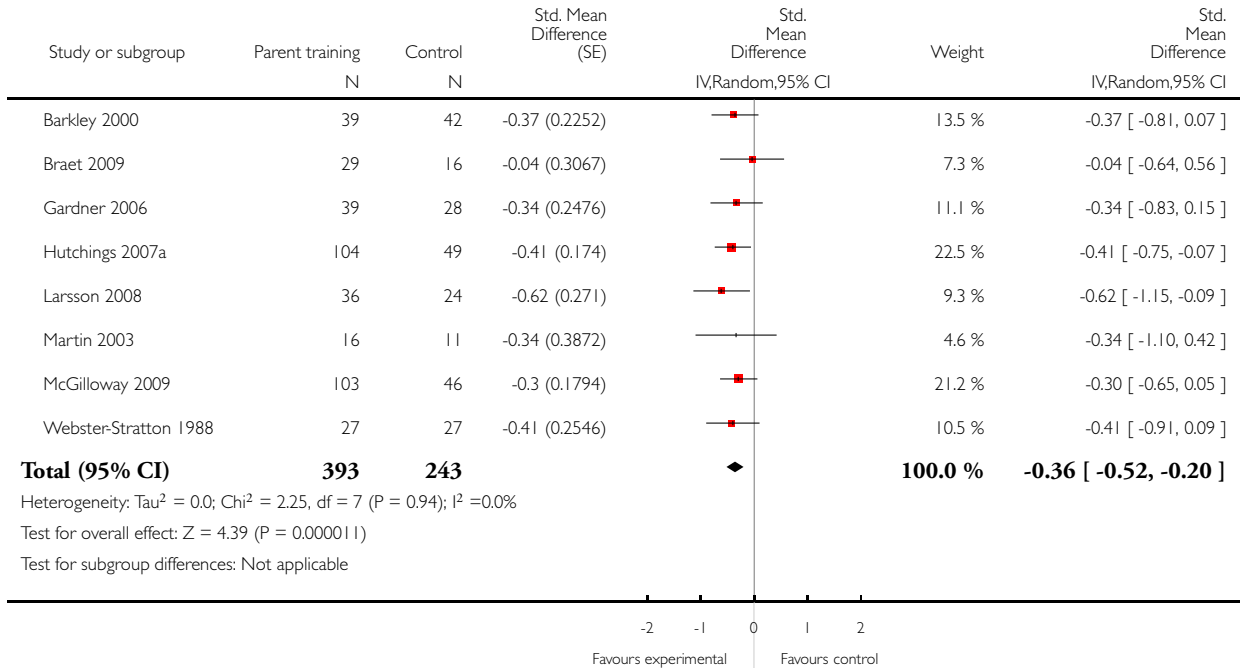


# **Analysis 9.1. Comparison 9 Parent training versus control meta-analysis of parental mental health: parent-report, Outcome 1 Meta-analysis of Parental mental health: parent report.**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 9 Parent training versus control meta-analysis of parental mental health: parent-report

Outcome: 1 Meta-analysis of Parental mental health: parent report

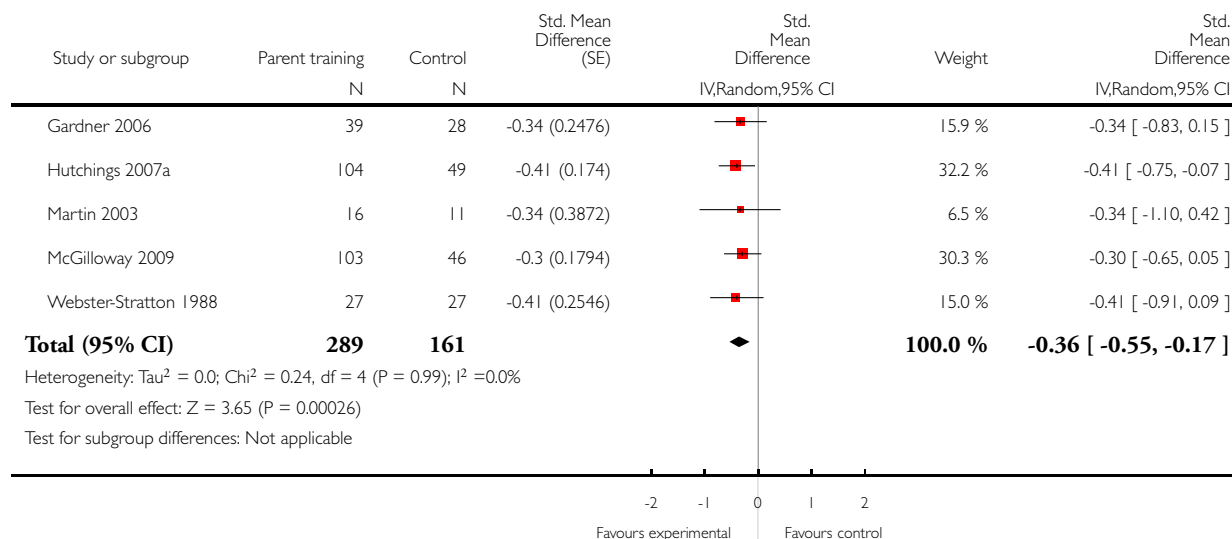


## Analysis 9.2. Comparison 9 Parent training versus control meta-analysis of parental mental health: parent-report, Outcome 2 Sensitivity analysis remove quasi-randomised studies (Parental mental health: parent report).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 9 Parent training versus control meta-analysis of parental mental health: parent-report

Outcome: 2 Sensitivity analysis remove quasi-randomised studies (Parental mental health: parent report)

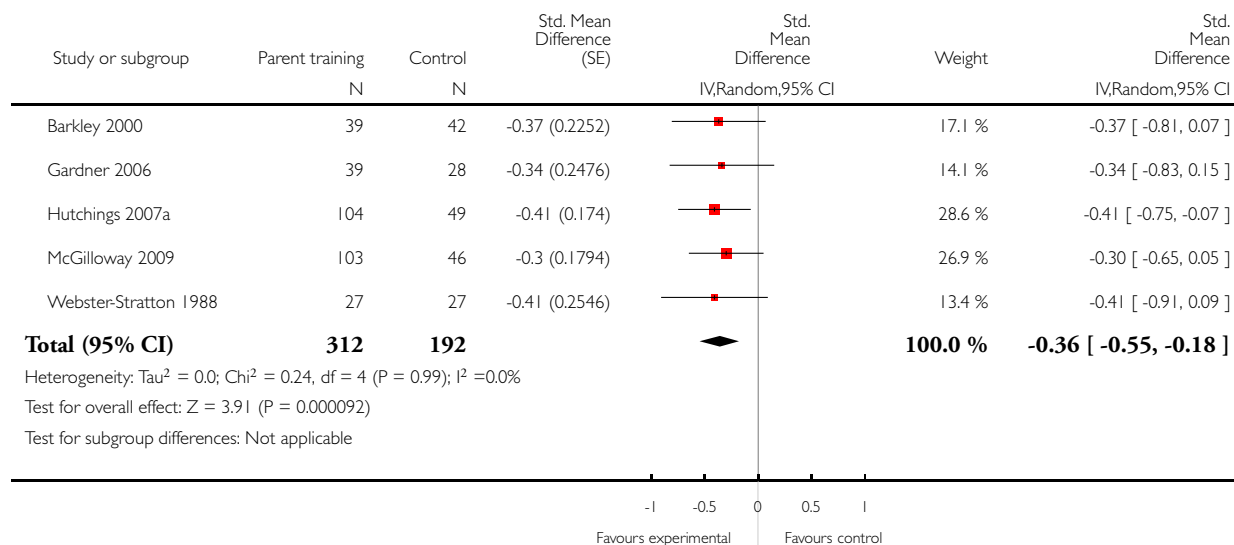


### Analysis 9.3. Comparison 9 Parent training versus control meta-analysis of parental mental health: parent-report, Outcome 3 Sensitivity analysis remove studies with inadequate blinding (Parental mental health: parent report).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 9 Parent training versus control meta-analysis of parental mental health: parent-report

Outcome: 3 Sensitivity analysis remove studies with inadequate blinding (Parental mental health: parent report)

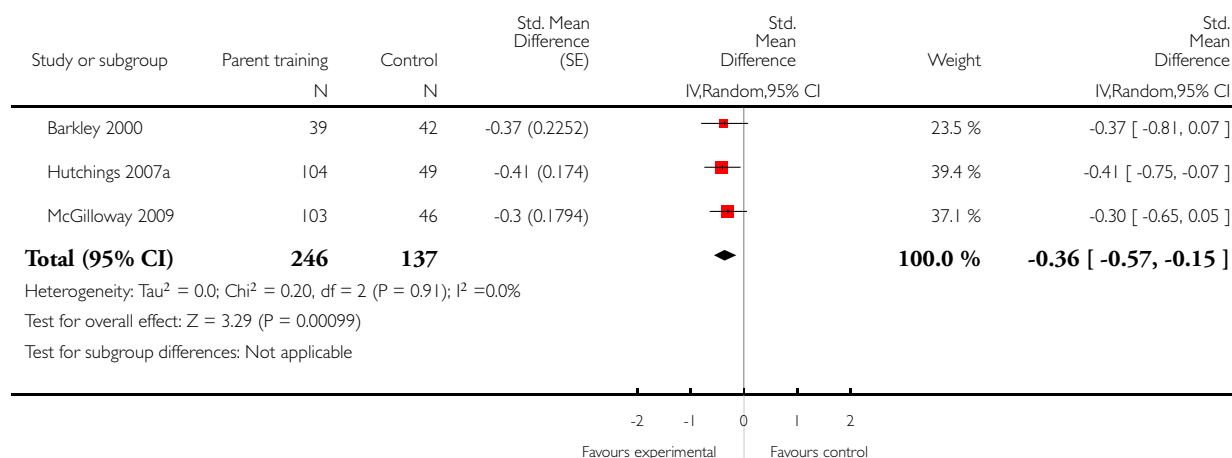


**Analysis 9.4. Comparison 9 Parent training versus control meta-analysis of parental mental health: parent-report, Outcome 4 Sensitivity analysis remove studies without an Intention to treat analysis (Parental mental health: parent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 9 Parent training versus control meta-analysis of parental mental health: parent-report

Outcome: 4 Sensitivity analysis remove studies without an Intention to treat analysis (Parental mental health: parent report)

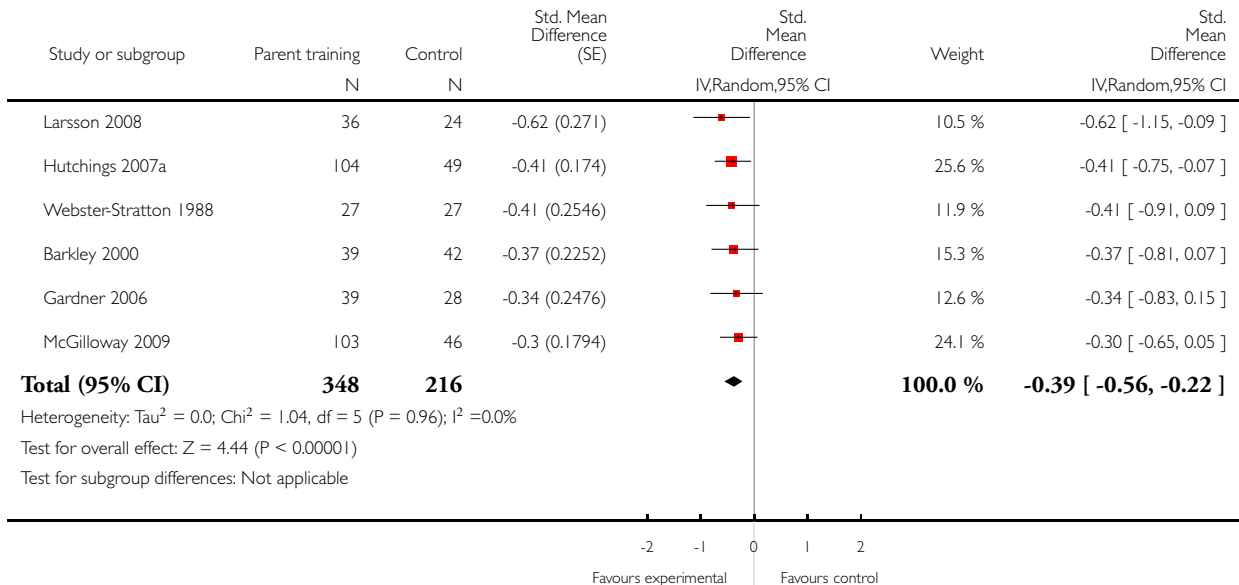


**Analysis 9.5. Comparison 9 Parent training versus control meta-analysis of parental mental health: parent-report, Outcome 5 Sensitivity analysis remove studies with over 20% attrition and no ITT (Parental mental health: parent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 9 Parent training versus control meta-analysis of parental mental health: parent-report

Outcome: 5 Sensitivity analysis remove studies with over 20% attrition and no ITT (Parental mental health: parent report)

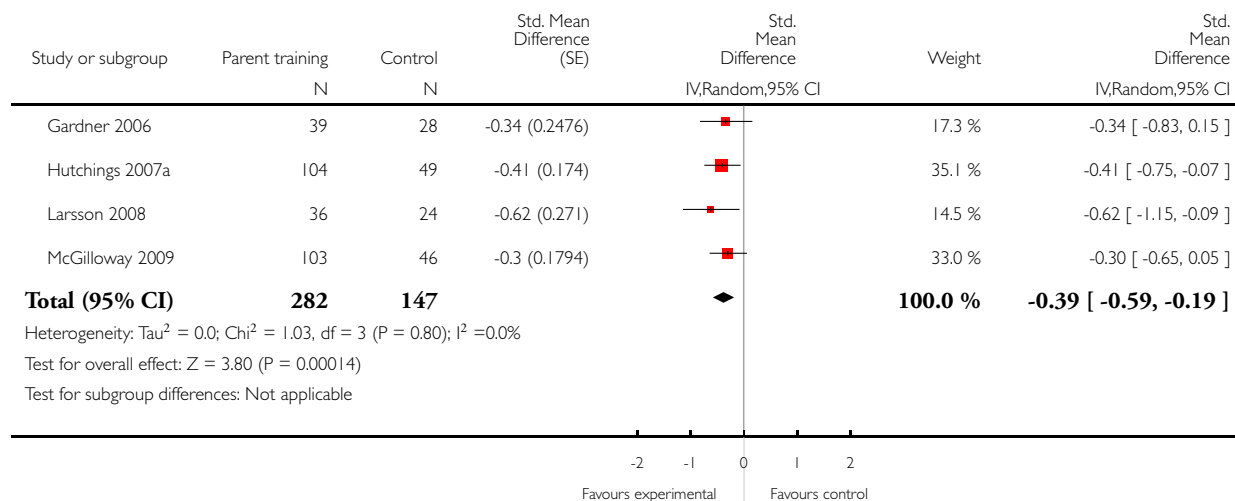


**Analysis 9.6. Comparison 9 Parent training versus control meta-analysis of parental mental health: parent-report, Outcome 6 Sensitivity analysis remove studies without independent replication (Parental mental health: parent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 9 Parent training versus control meta-analysis of parental mental health: parent-report

Outcome: 6 Sensitivity analysis remove studies without independent replication (Parental mental health: parent report)

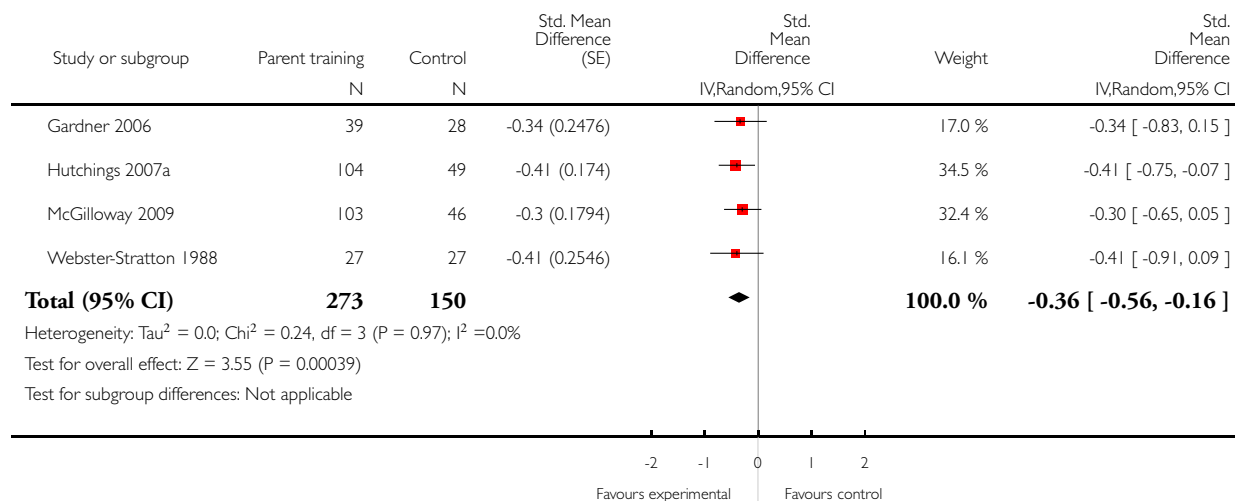


**Analysis 9.7. Comparison 9 Parent training versus control meta-analysis of parental mental health: parent-report, Outcome 7 Sensitivity analysis remove studies at high risk of bias (Parental mental health: parent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 9 Parent training versus control meta-analysis of parental mental health: parent-report

Outcome: 7 Sensitivity analysis remove studies at high risk of bias (Parental mental health: parent report)

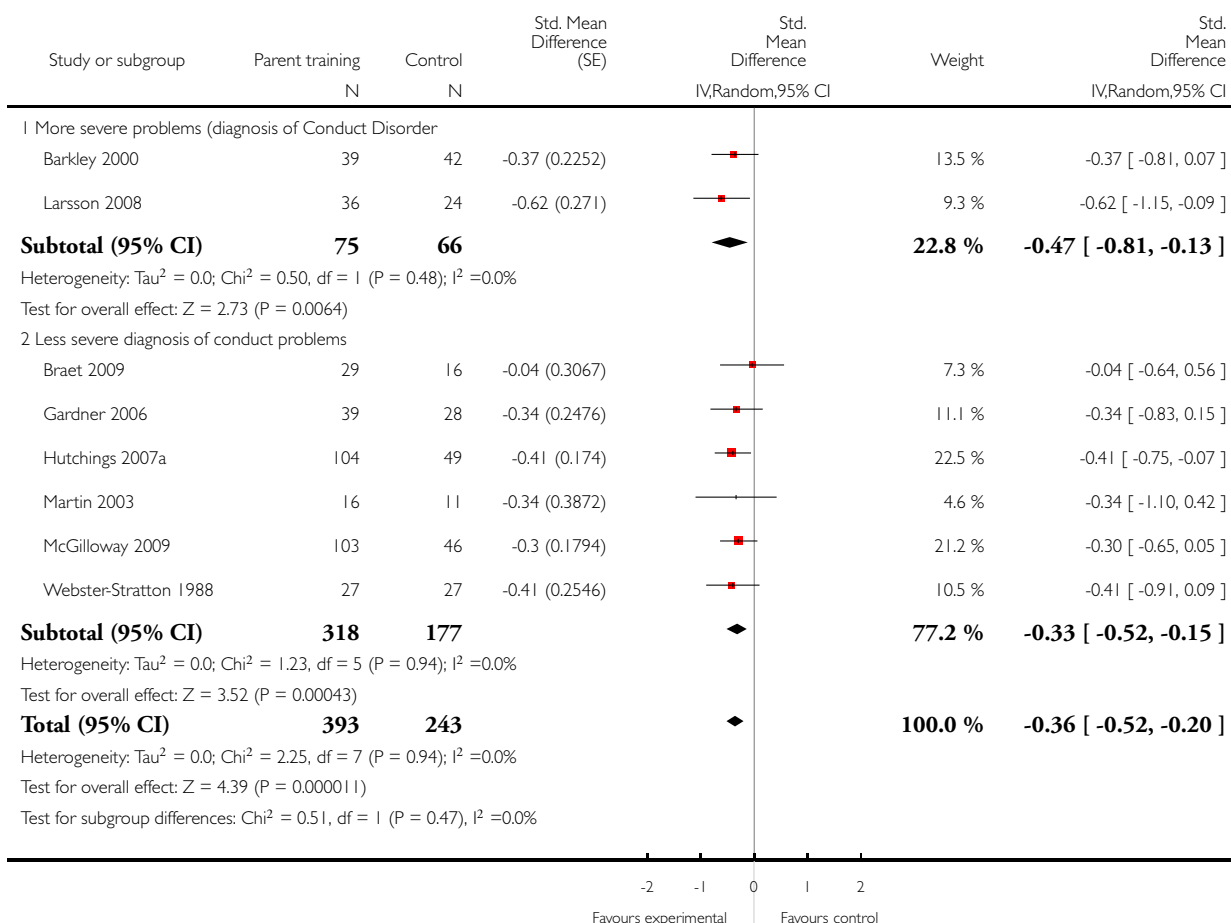


# **Analysis 9.8. Comparison 9 Parent training versus control meta-analysis of parental mental health: parent-report, Outcome 8 Subgroup severity of conduct problems of parental mental health: parent report.**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 9 Parent training versus control meta-analysis of parental mental health: parent-report

Outcome: 8 Subgroup severity of conduct problems of parental mental health: parent report



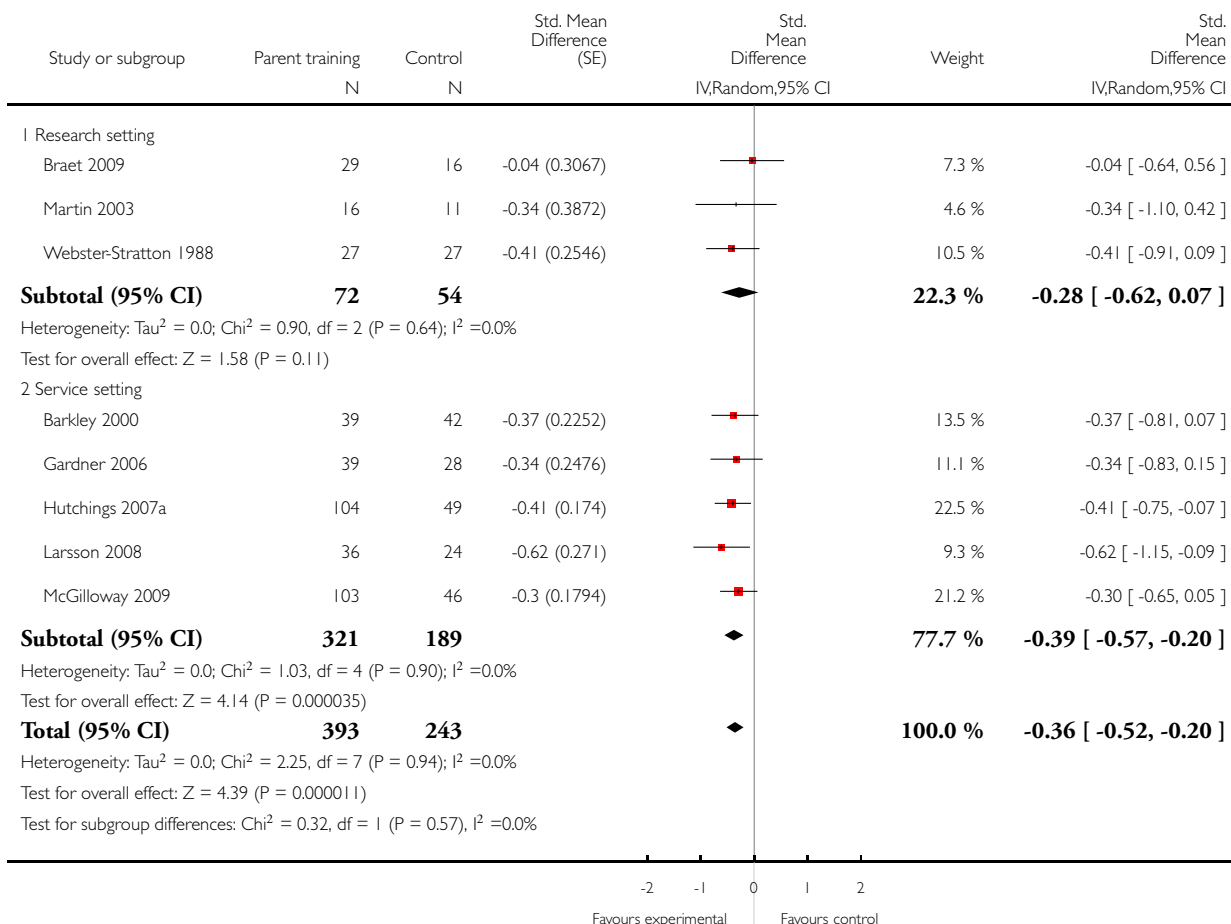


### Analysis 9.9. Comparison 9 Parent training versus control meta-analysis of parental mental health: parent-report, Outcome 9 Subgroup trial setting of parental mental health: parent report.

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 9 Parent training versus control meta-analysis of parental mental health: parent-report

Outcome: 9 Subgroup trial setting of parental mental health: parent report

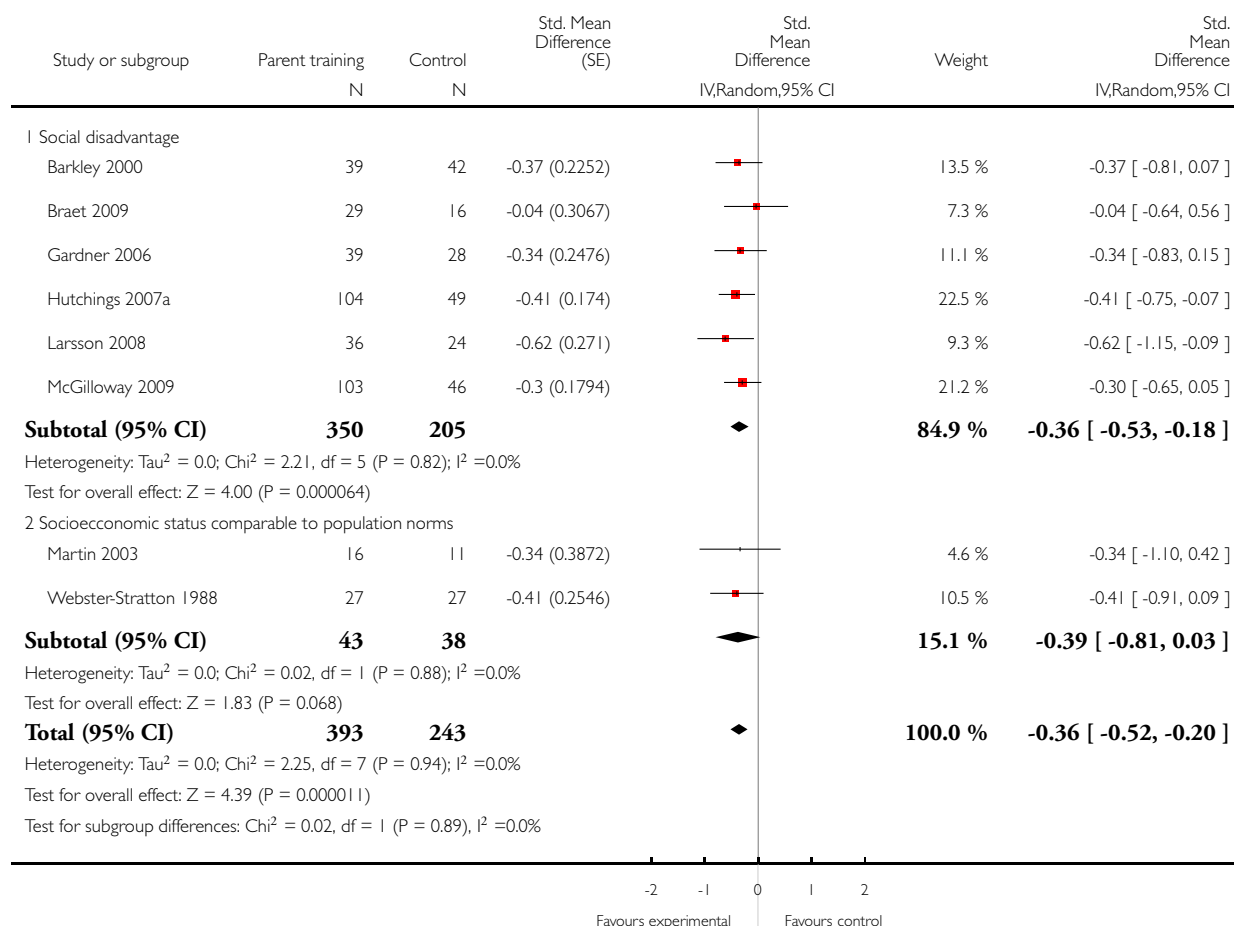


# **Analysis 9.10. Comparison 9 Parent training versus control meta-analysis of parental mental health: parent-report, Outcome 10 Subgroup socioeconomic status of parental mental health: parent report.**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 9 Parent training versus control meta-analysis of parental mental health: parent-report

Outcome: 10 Subgroup socioeconomic status of parental mental health: parent report

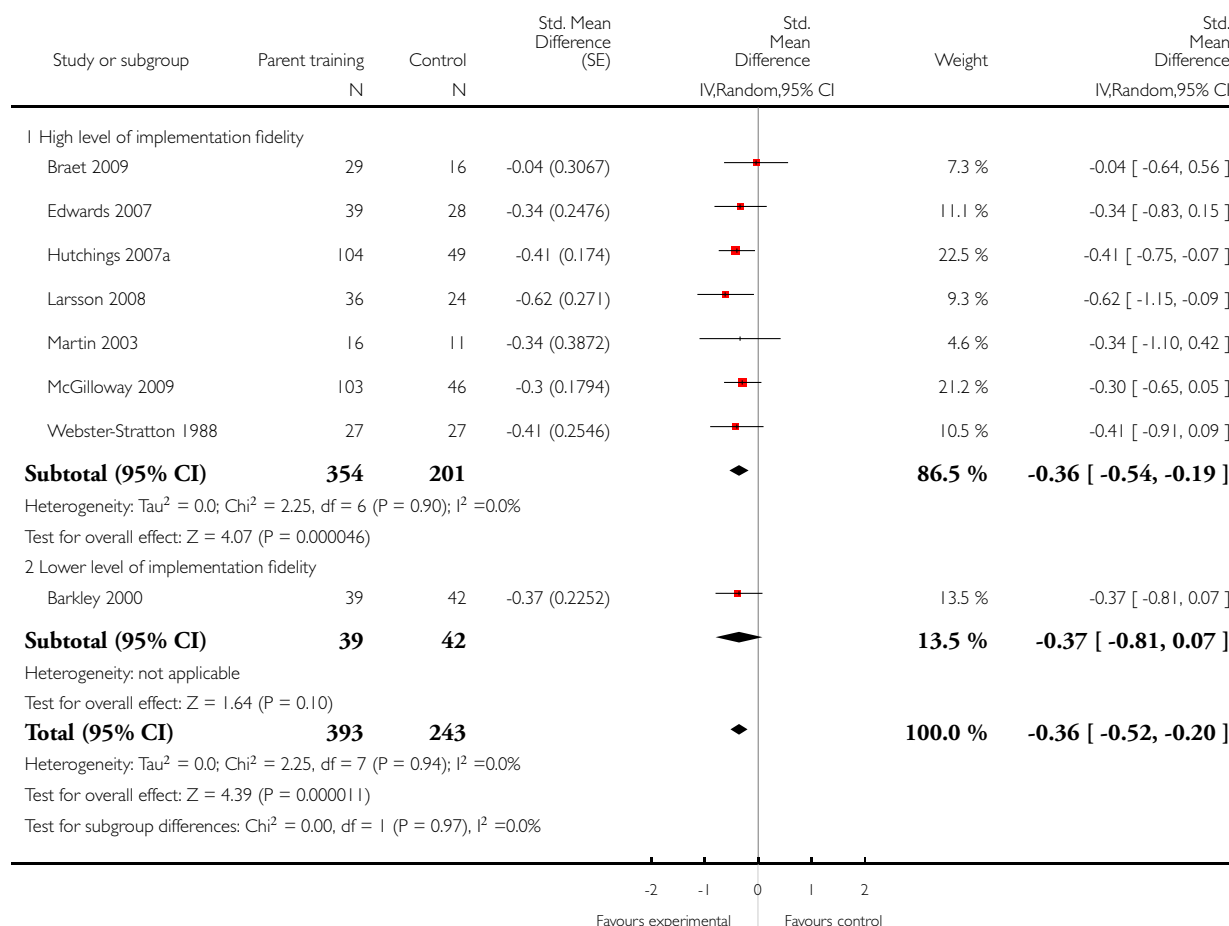


# **Analysis 9.11. Comparison 9 Parent training versus control meta-analysis of parental mental health: parent-report, Outcome 11 Subgroup level of implementation fidelity of parental mental health: parent report.**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 9 Parent training versus control meta-analysis of parental mental health: parent-report

Outcome: 11 Subgroup level of implementation fidelity of parental mental health: parent report

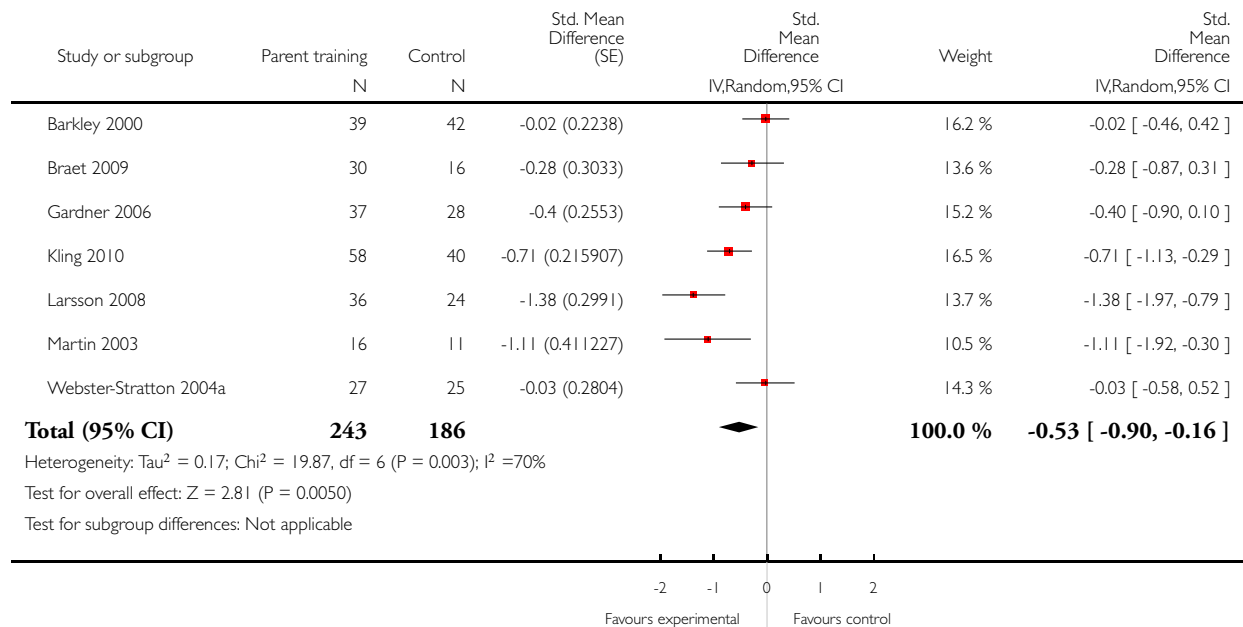


# **Analysis 10.1. Comparison 10 Parent training versus control meta-analysis of positive parenting practices: parent-report, Outcome 1 Meta-analysis of positive parenting practices: parent report.**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 10 Parent training versus control meta-analysis of positive parenting practices: parent-report

Outcome: 1 Meta-analysis of positive parenting practices: parent report

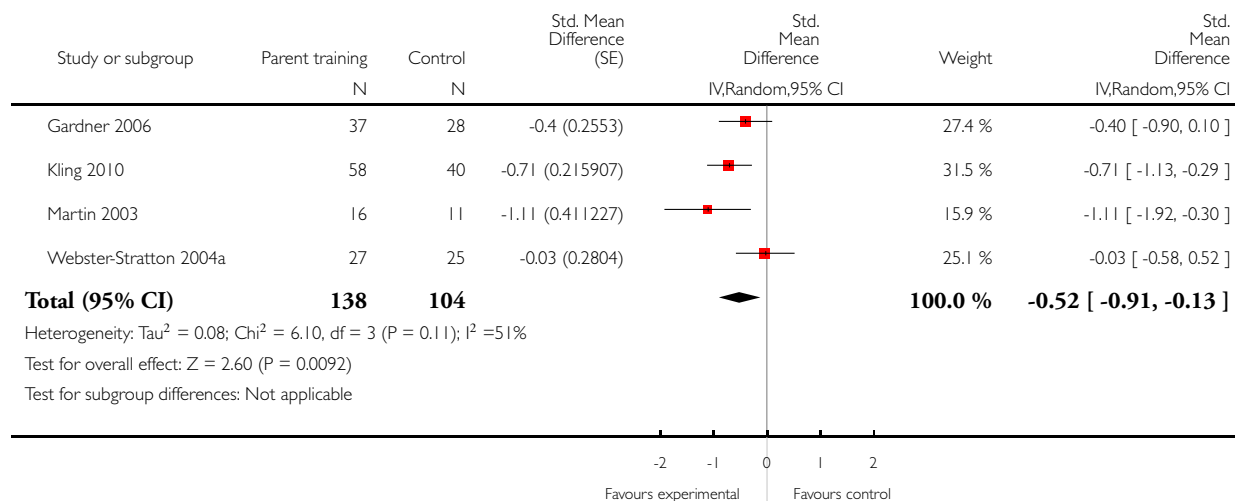


**Analysis 10.2. Comparison 10 Parent training versus control meta-analysis of positive parenting practices: parent-report, Outcome 2 Sensitivity analysis remove quasi-randomised studies (Positive parenting practices: parent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 10 Parent training versus control meta-analysis of positive parenting practices: parent-report

Outcome: 2 Sensitivity analysis remove quasi-randomised studies (Positive parenting practices: parent report)

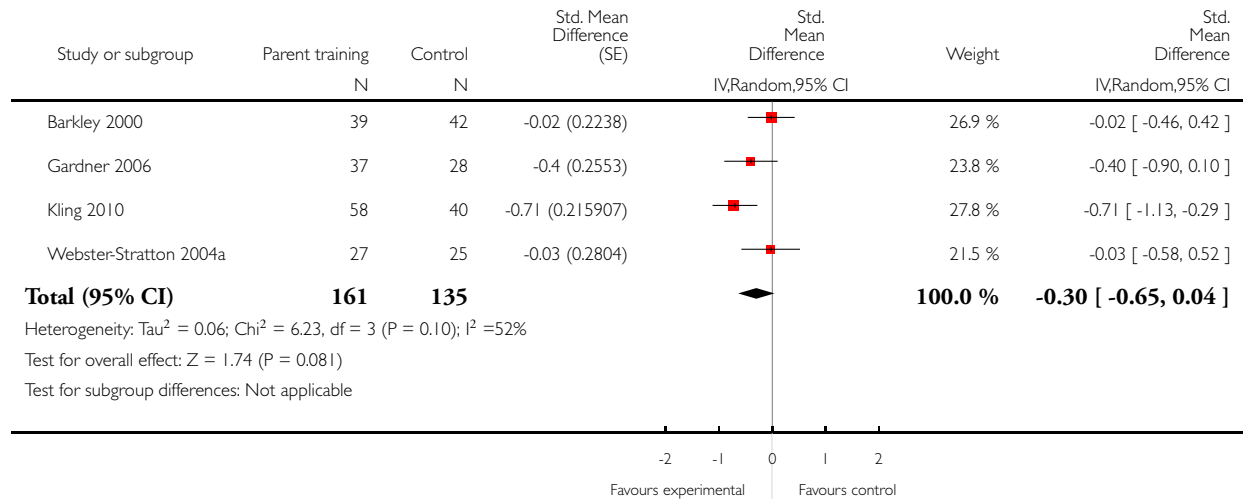


**Analysis 10.3. Comparison 10 Parent training versus control meta-analysis of positive parenting practices: parent-report, Outcome 3 Sensitivity analysis remove studies with inadequate blinding (Positive parenting practices: parent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 10 Parent training versus control meta-analysis of positive parenting practices: parent-report

Outcome: 3 Sensitivity analysis remove studies with inadequate blinding (Positive parenting practices: parent report)

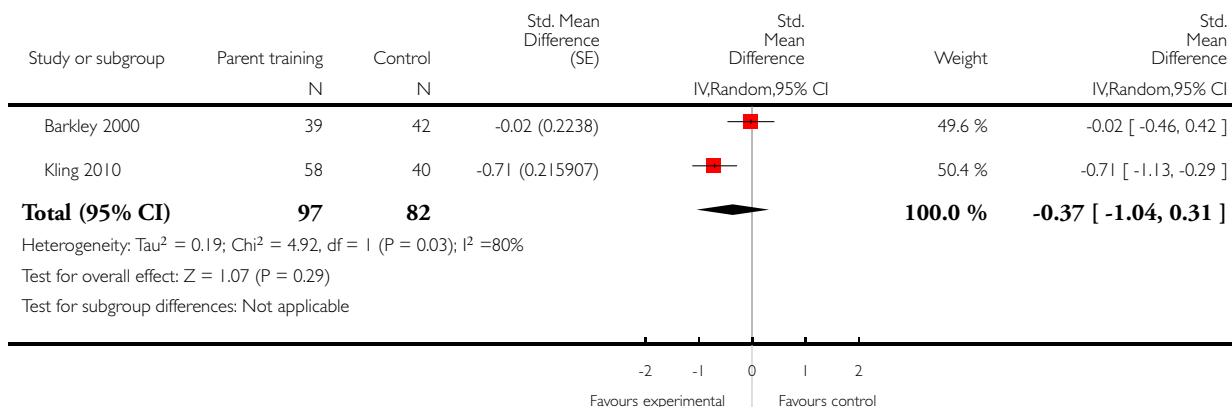


**Analysis 10.4. Comparison 10 Parent training versus control meta-analysis of positive parenting practices: parent-report, Outcome 4 Sensitivity analysis remove studies without an intention to treat analysis (Positive parenting practices: parent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 10 Parent training versus control meta-analysis of positive parenting practices: parent-report

Outcome: 4 Sensitivity analysis remove studies without an intention to treat analysis (Positive parenting practices: parent report)

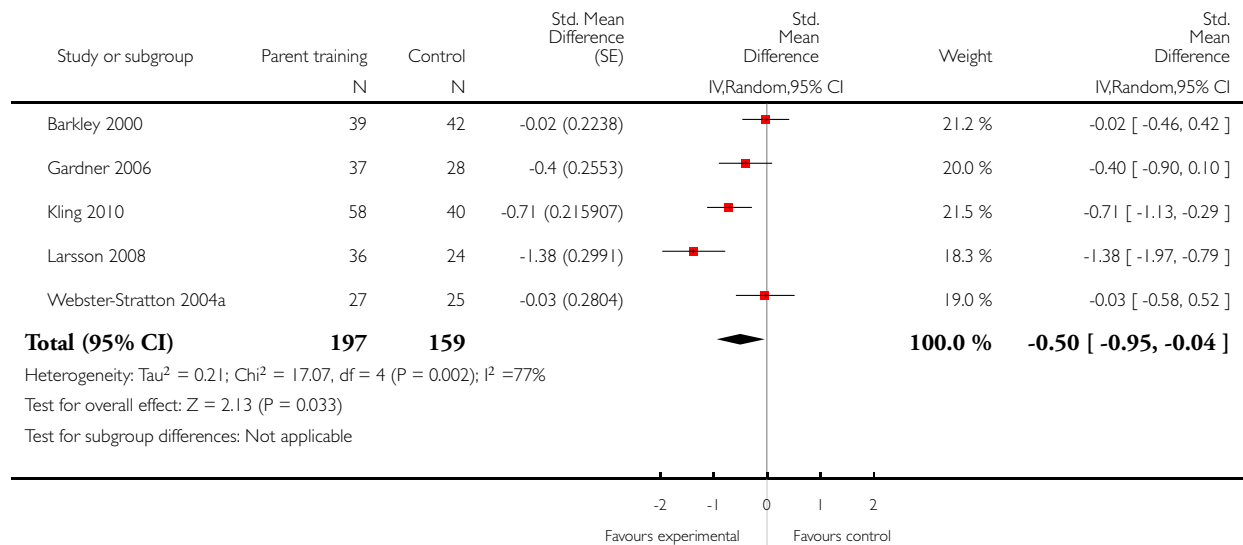


**Analysis 10.5. Comparison 10 Parent training versus control meta-analysis of positive parenting practices: parent-report, Outcome 5 Sensitivity analysis remove studies with over 20% loss and no ITT (Positive parenting practices: parent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 10 Parent training versus control meta-analysis of positive parenting practices: parent-report

Outcome: 5 Sensitivity analysis remove studies with over 20% loss and no ITT (Positive parenting practices: parent report)



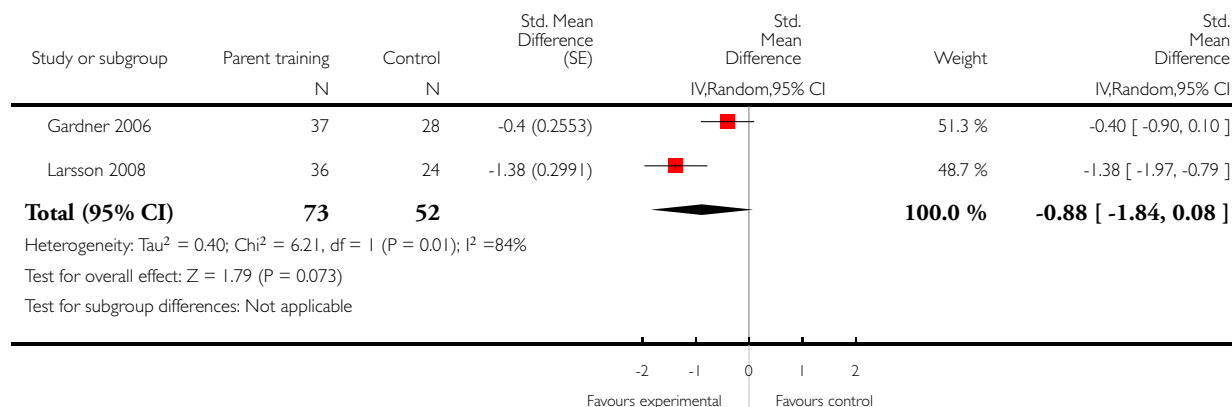


**Analysis 10.6. Comparison 10 Parent training versus control meta-analysis of positive parenting practices: parent-report, Outcome 6 Sensitivity analysis remove studies without independent replication (Positive parenting practices: parent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 10 Parent training versus control meta-analysis of positive parenting practices: parent-report

Outcome: 6 Sensitivity analysis remove studies without independent replication (Positive parenting practices: parent report)

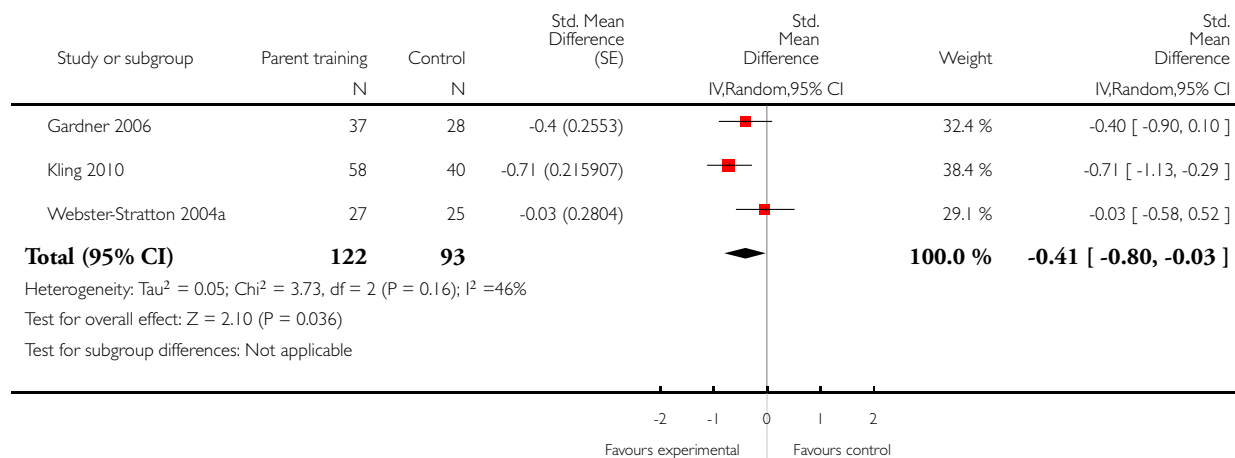


**Analysis 10.7. Comparison 10 Parent training versus control meta-analysis of positive parenting practices: parent-report, Outcome 7 Sensitivity analysis remove studies at high risk of bias (Positive parenting practices: parent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 10 Parent training versus control meta-analysis of positive parenting practices: parent-report

Outcome: 7 Sensitivity analysis remove studies at high risk of bias (Positive parenting practices: parent report)

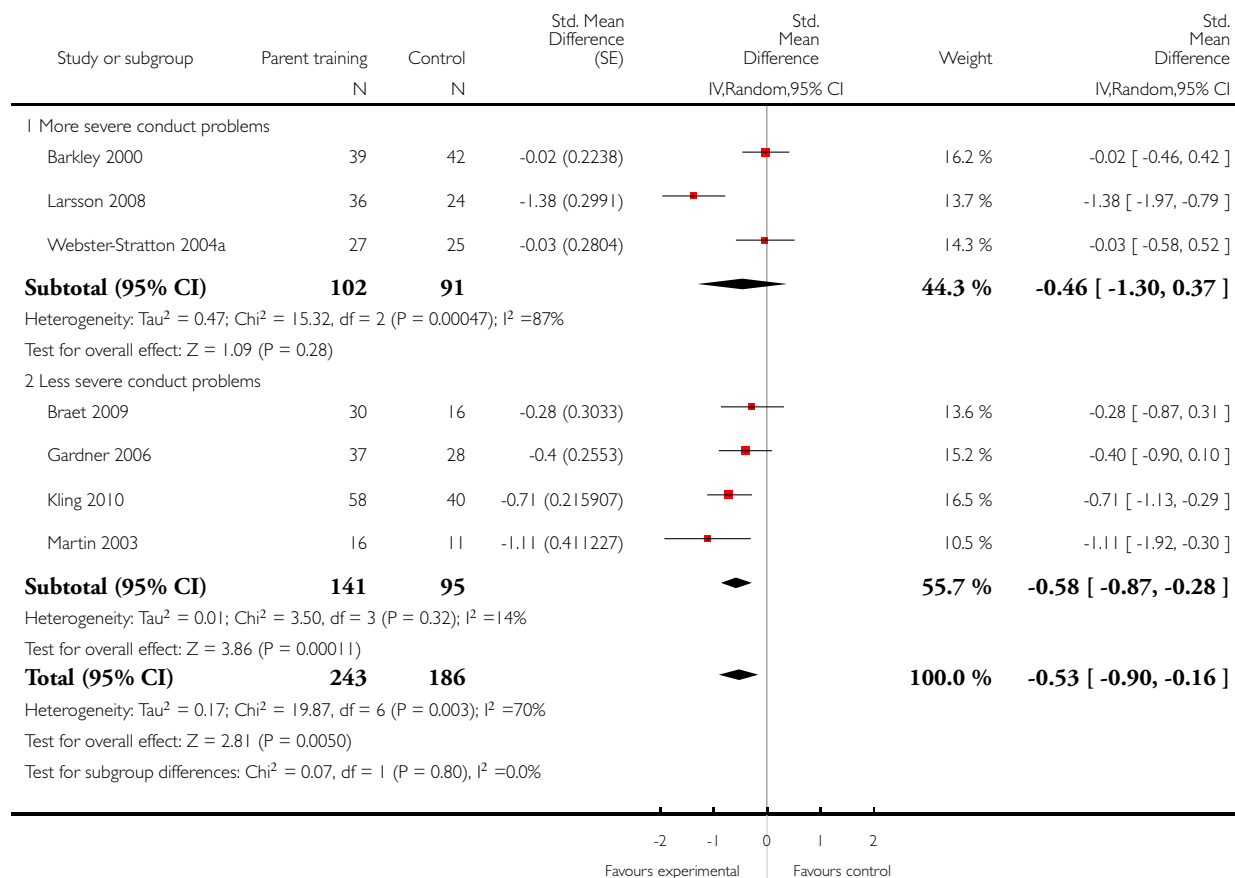


**Analysis 10.8. Comparison 10 Parent training versus control meta-analysis of positive parenting practices: parent-report, Outcome 8 Subgroup severity of conduct problems of positive parenting practices: parent report.**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 10 Parent training versus control meta-analysis of positive parenting practices: parent-report

Outcome: 8 Subgroup severity of conduct problems of positive parenting practices: parent report

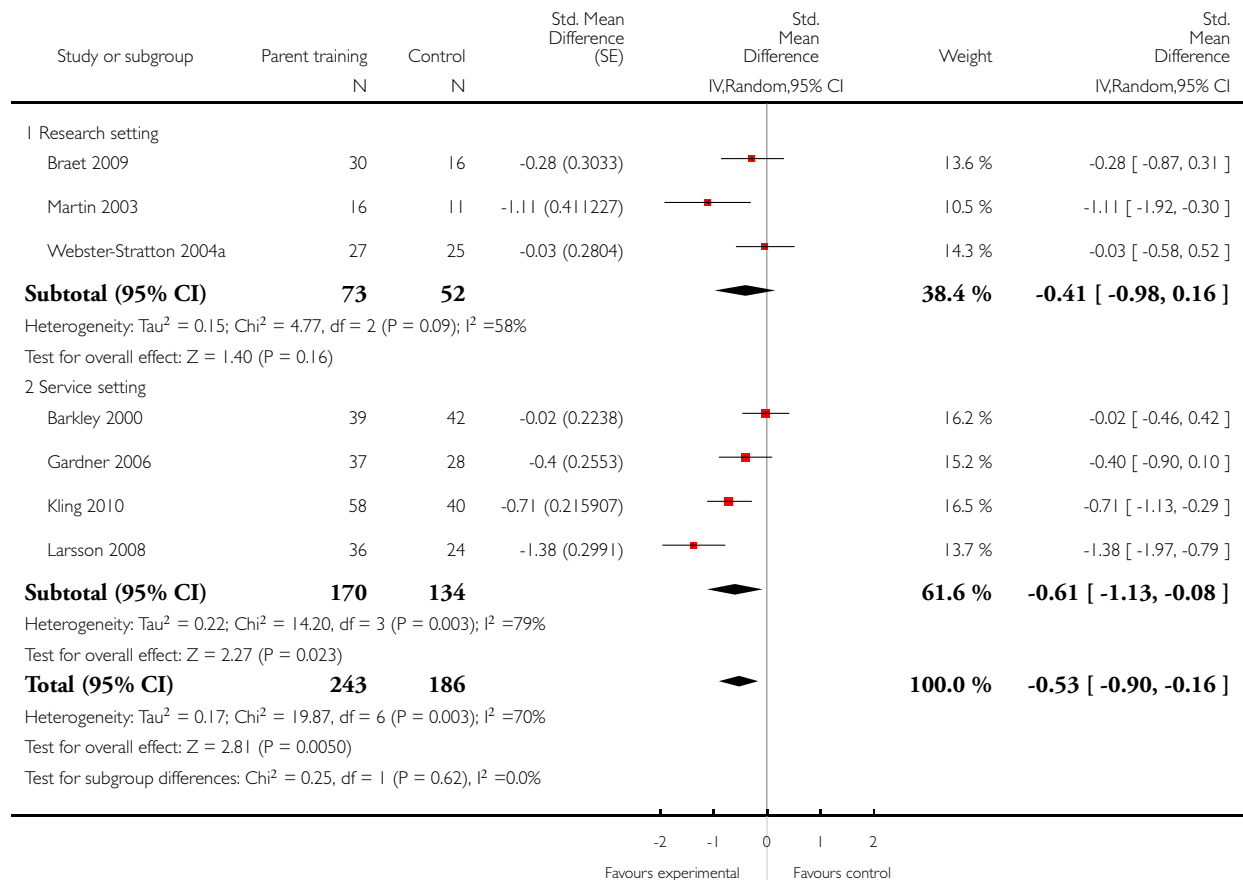


**Analysis 10.9. Comparison 10 Parent training versus control meta-analysis of positive parenting practices: parent-report, Outcome 9 Subgroup trial setting of positive parenting practices: parent report.**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 10 Parent training versus control meta-analysis of positive parenting practices: parent-report

Outcome: 9 Subgroup trial setting of positive parenting practices: parent report

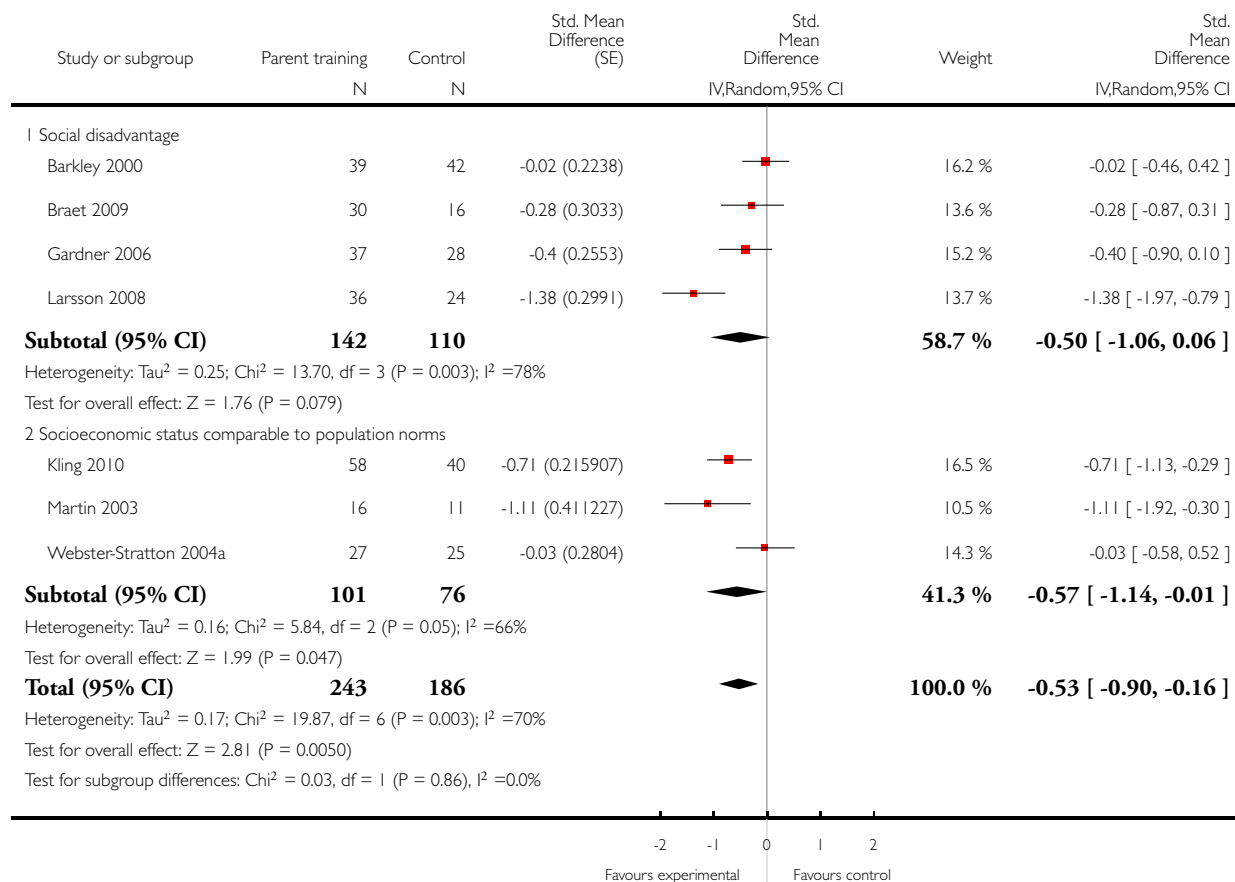


**Analysis 10.10. Comparison 10 Parent training versus control meta-analysis of positive parenting practices: parent-report, Outcome 10 Subgroup level of socioeconomic status of positive parenting practices: parent report.**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 10 Parent training versus control meta-analysis of positive parenting practices: parent-report

Outcome: 10 Subgroup level of socioeconomic status of positive parenting practices: parent report

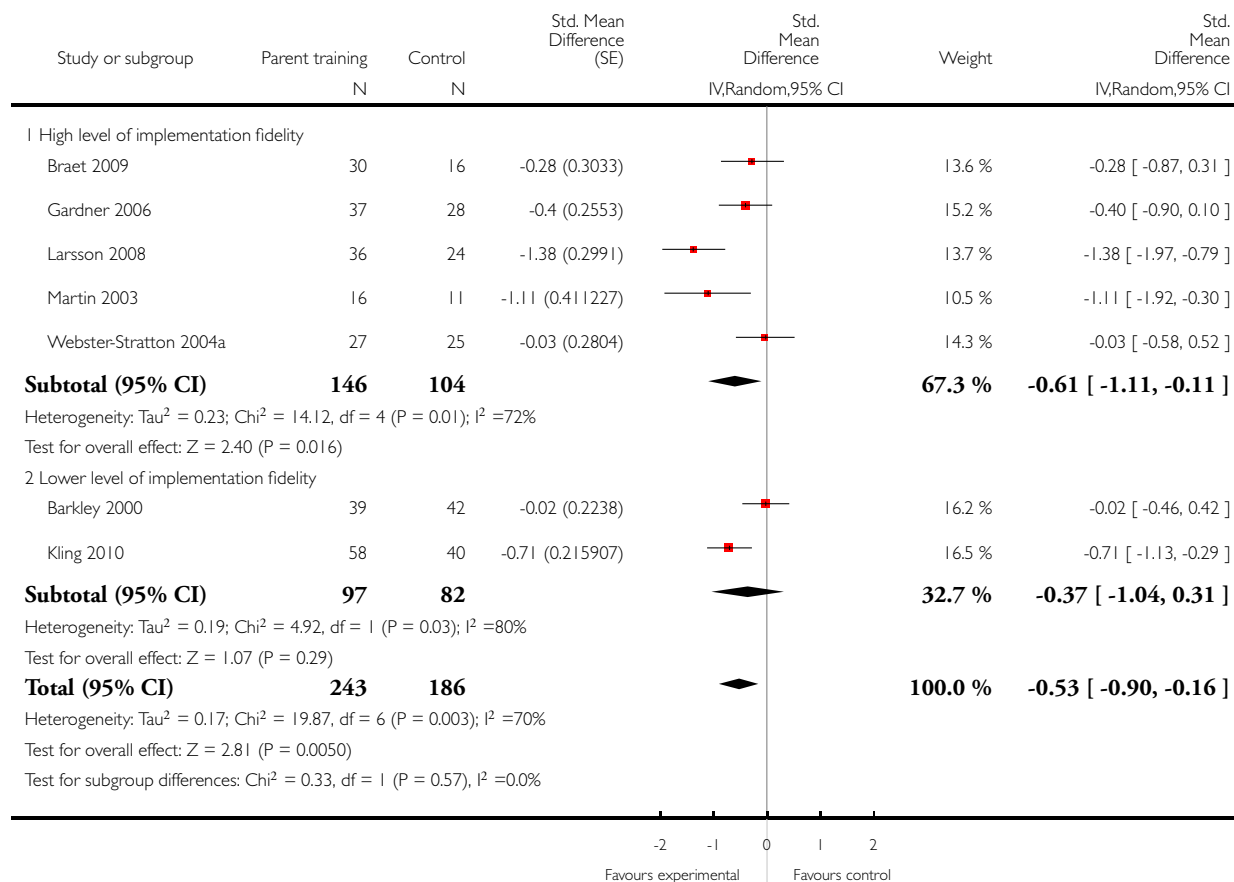


**Analysis 10.11. Comparison 10 Parent training versus control meta-analysis of positive parenting practices: parent-report, Outcome 11 Subgroup level of implementation fidelity of positive parenting practices: parent report.**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 10 Parent training versus control meta-analysis of positive parenting practices: parent-report

Outcome: 11 Subgroup level of implementation fidelity of positive parenting practices: parent report

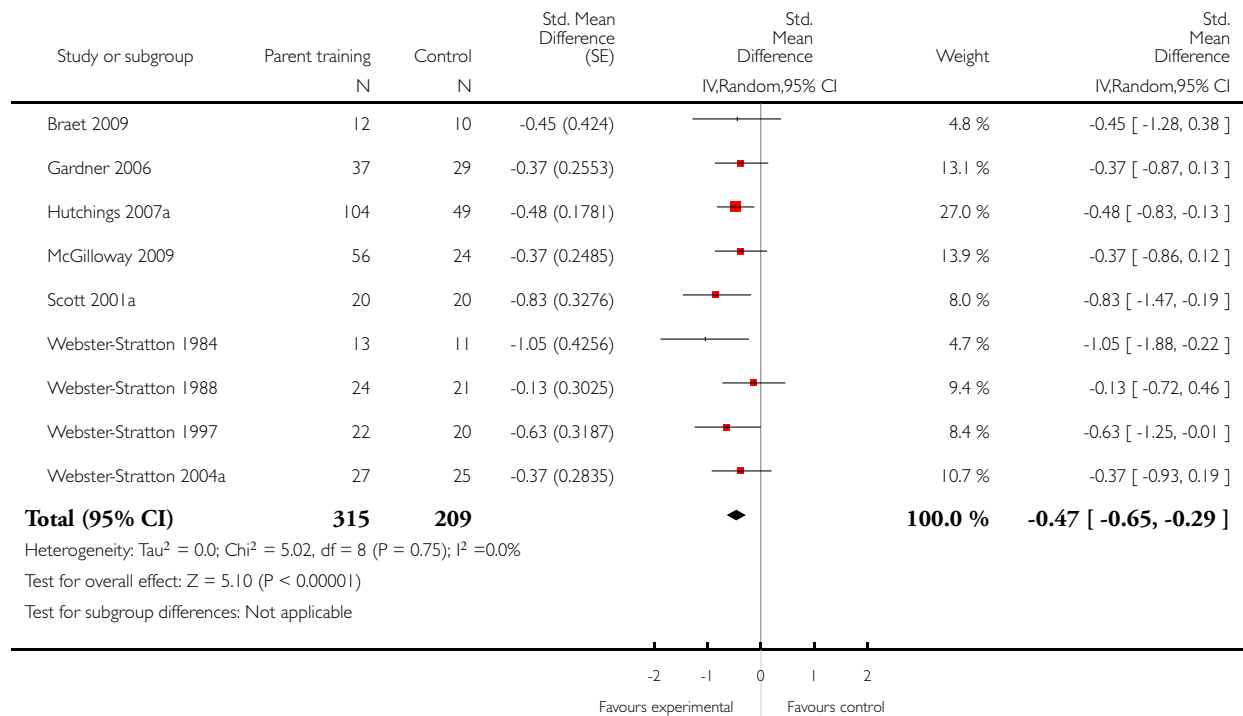


# **Analysis 11.1. Comparison 11 Parent training versus control meta-analysis of positive parenting practices: independent report, Outcome 1 Meta-analysis of positive parenting practices: independent report.**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 11 Parent training versus control meta-analysis of positive parenting practices: independent report

Outcome: 1 Meta-analysis of positive parenting practices: independent report

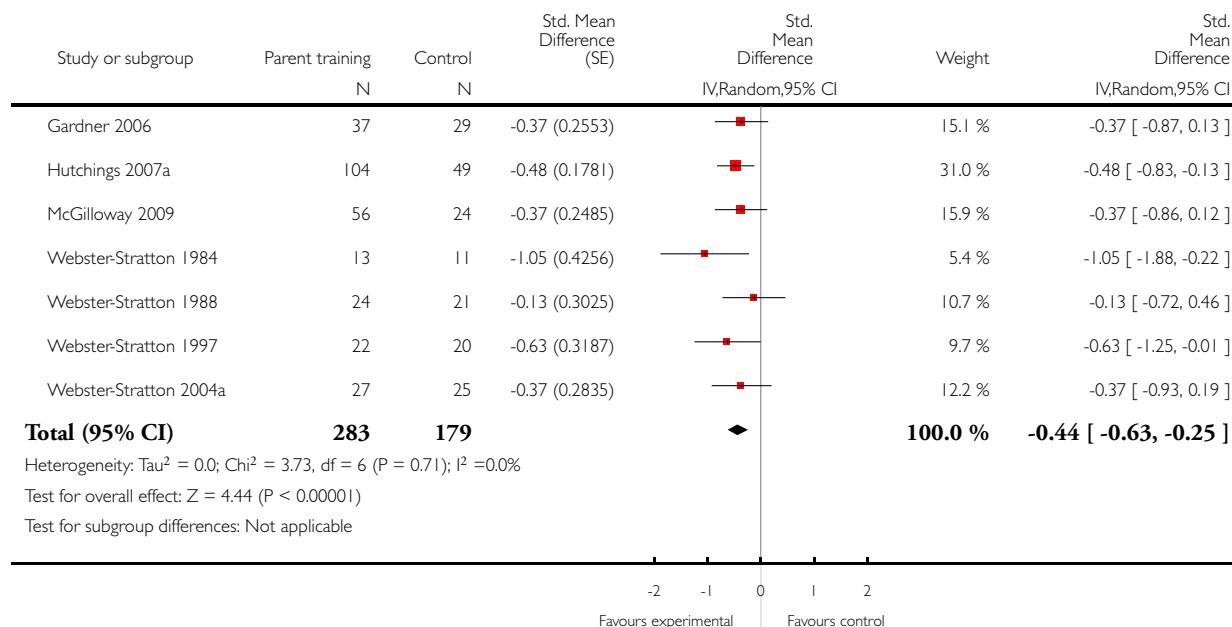


**Analysis 11.2. Comparison 11 Parent training versus control meta-analysis of positive parenting practices: independent report, Outcome 2 Sensitivity analysis remove quasi-randomised studies (Positive parenting practices: independent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 11 Parent training versus control meta-analysis of positive parenting practices: independent report

Outcome: 2 Sensitivity analysis remove quasi-randomised studies (Positive parenting practices: independent report)



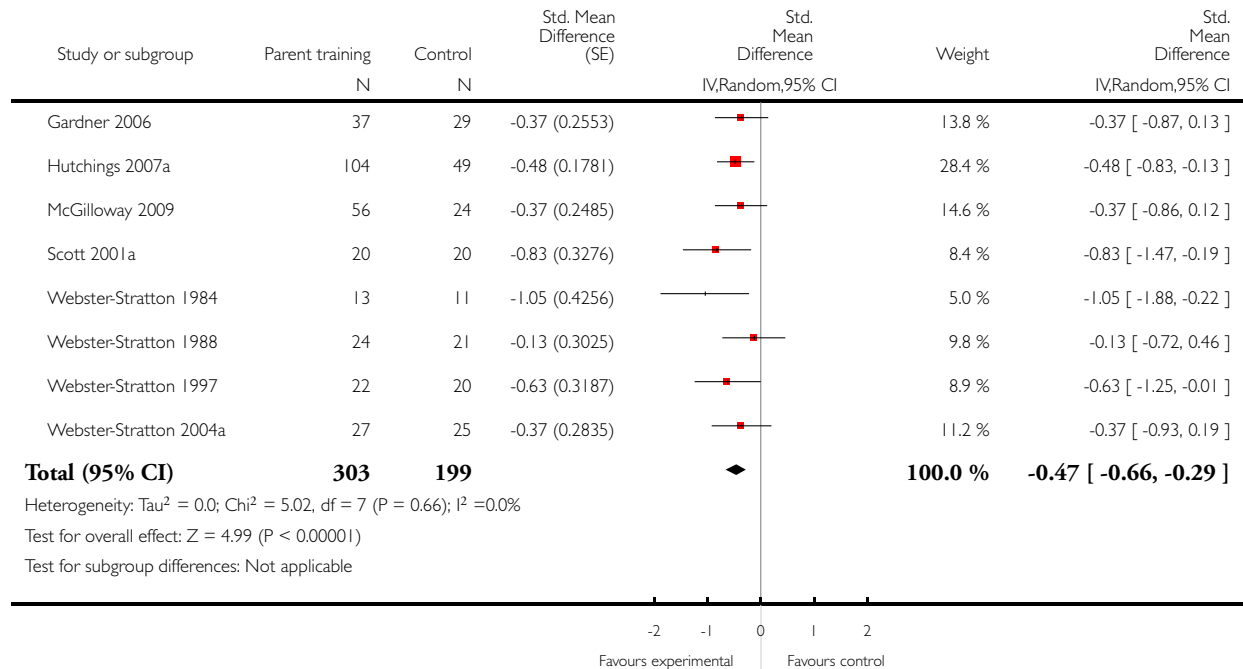


### Analysis 11.3. Comparison 11 Parent training versus control meta-analysis of positive parenting practices: independent report, Outcome 3 Sensitivity analysis remove studies with inadequate blinding (Positive parenting practices:independent report).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 11 Parent training versus control meta-analysis of positive parenting practices: independent report

Outcome: 3 Sensitivity analysis remove studies with inadequate blinding (Positive parenting practices:independent report)

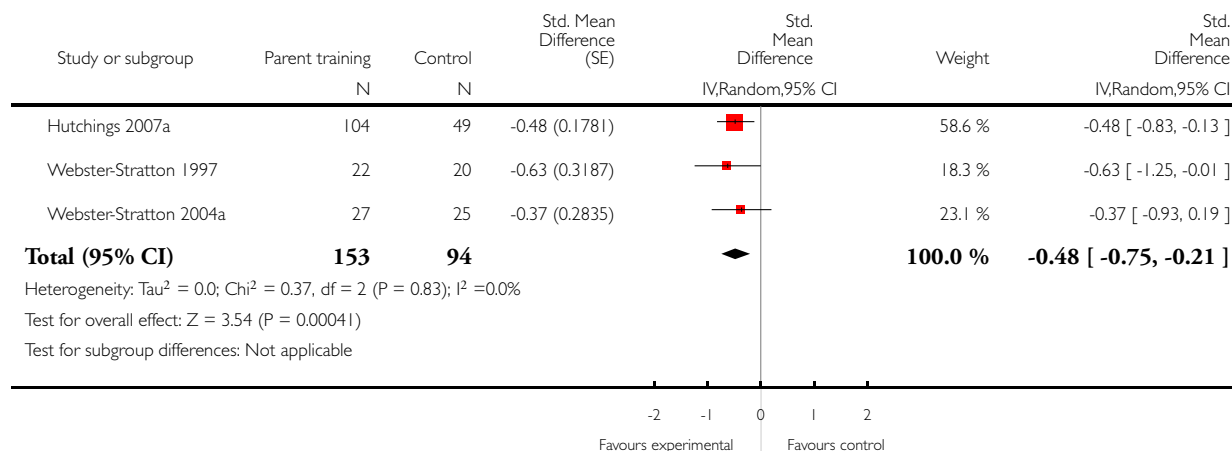


**Analysis 11.4. Comparison 11 Parent training versus control meta-analysis of positive parenting practices: independent report, Outcome 4 Sensitivity analysis remove studies without an intention to treat analysis (Positive parenting practices: independent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 11 Parent training versus control meta-analysis of positive parenting practices: independent report

Outcome: 4 Sensitivity analysis remove studies without an intention to treat analysis (Positive parenting practices: independent report)

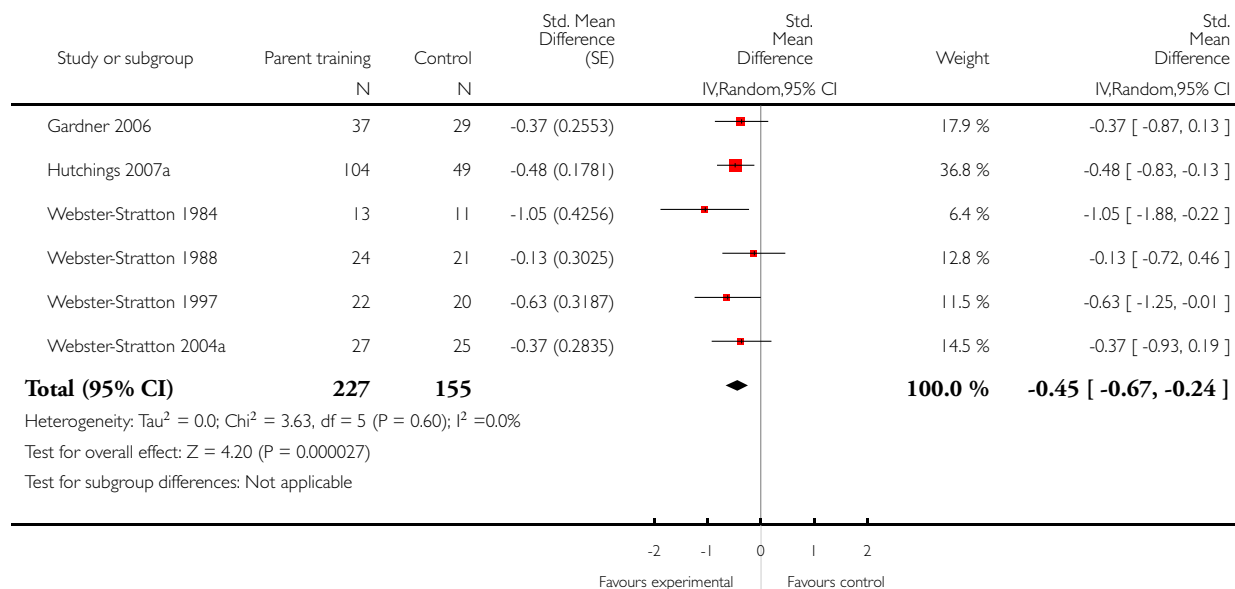


**Analysis 11.5. Comparison 11 Parent training versus control meta-analysis of positive parenting practices: independent report, Outcome 5 Sensitivity analysis remove studies with over 20% attrition and no ITT (Positive parenting practices: independent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 11 Parent training versus control meta-analysis of positive parenting practices: independent report

Outcome: 5 Sensitivity analysis remove studies with over 20% attrition and no ITT (Positive parenting practices: independent report)

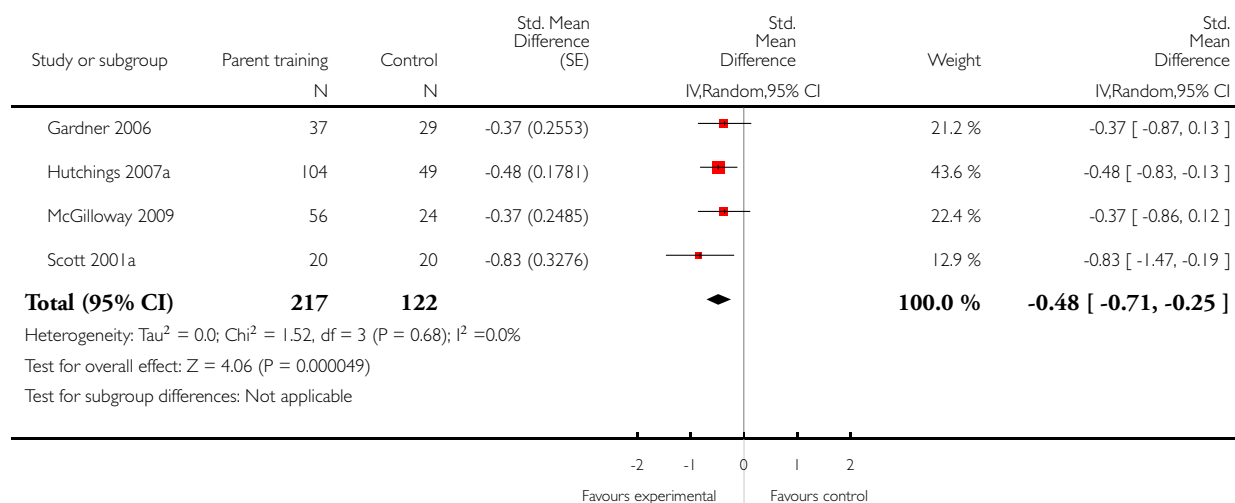


**Analysis 11.6. Comparison 11 Parent training versus control meta-analysis of positive parenting practices: independent report, Outcome 6 Sensitivity analysis remove studies without independent replication (Positive parenting practices: independent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 11 Parent training versus control meta-analysis of positive parenting practices: independent report

Outcome: 6 Sensitivity analysis remove studies without independent replication (Positive parenting practices: independent report)

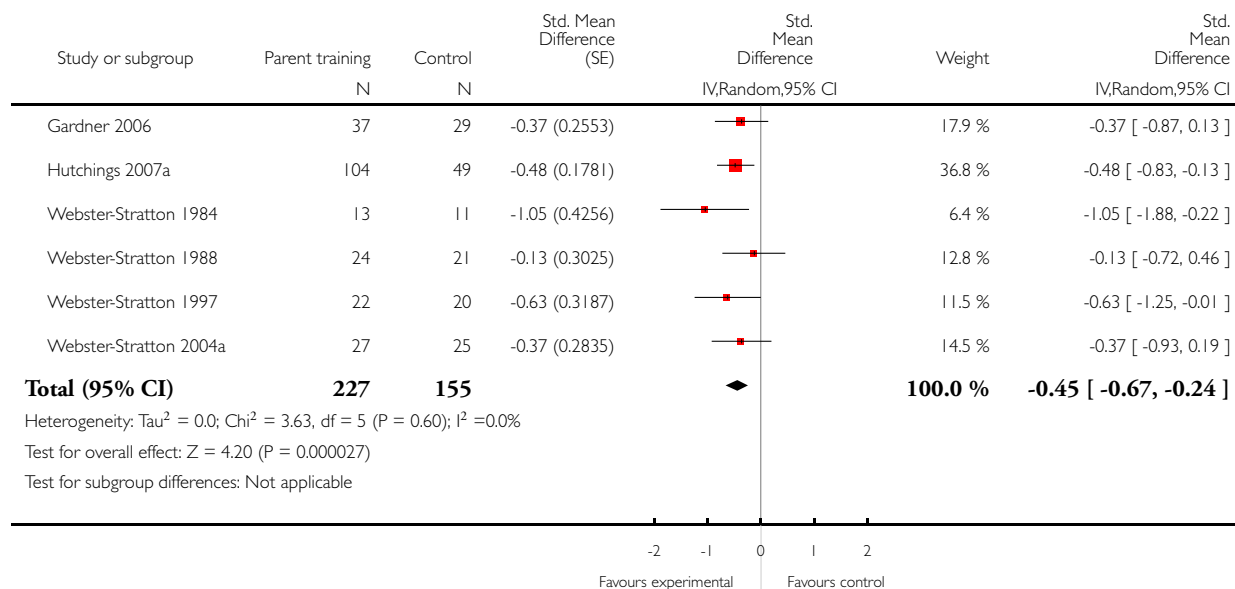


**Analysis 11.7. Comparison 11 Parent training versus control meta-analysis of positive parenting practices: independent report, Outcome 7 Sensitivity analysis remove studies with high risk of bias (Positive parenting practices: independent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 11 Parent training versus control meta-analysis of positive parenting practices: independent report

Outcome: 7 Sensitivity analysis remove studies with high risk of bias (Positive parenting practices: independent report)

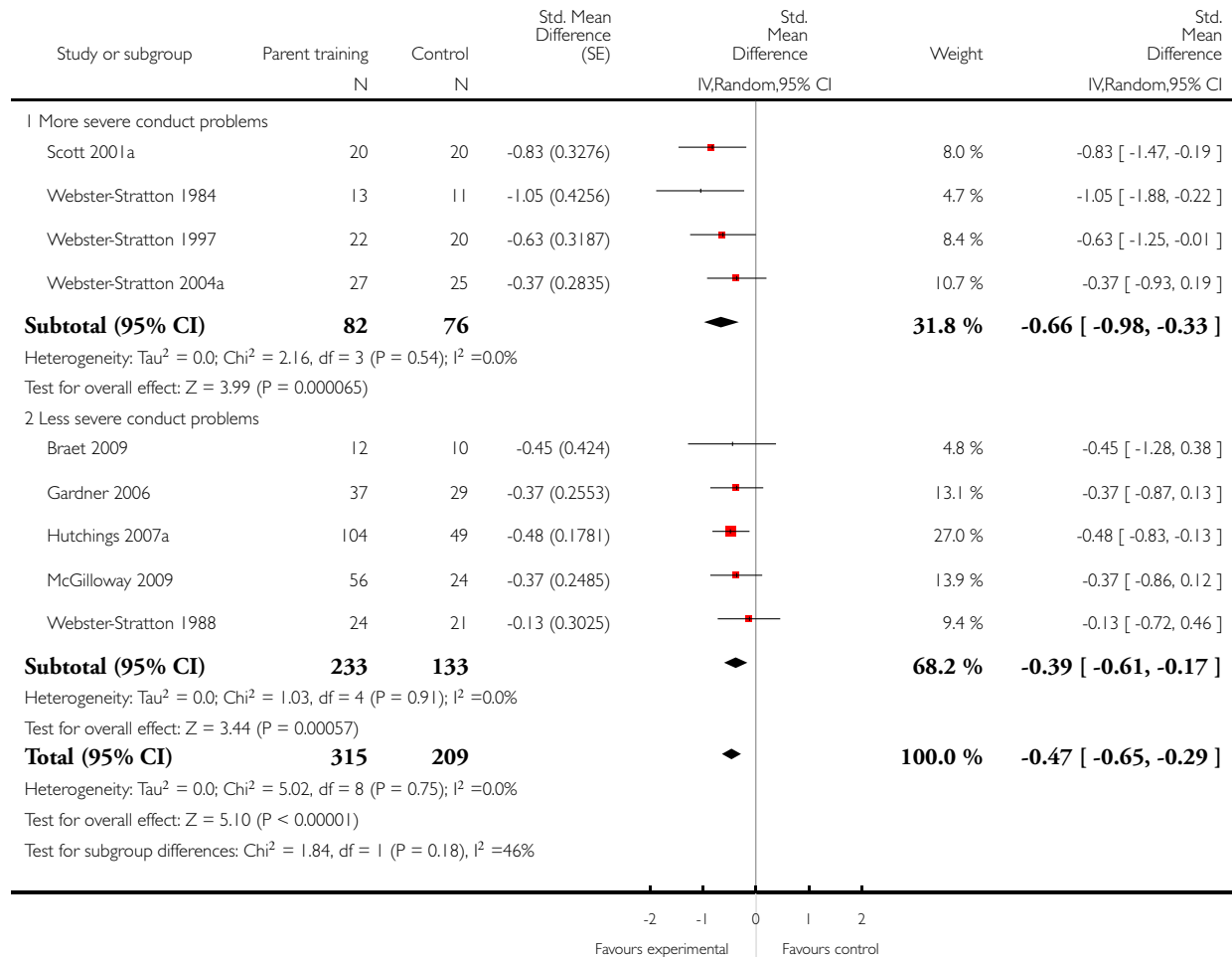


**Analysis 11.8. Comparison 11 Parent training versus control meta-analysis of positive parenting practices: independent report, Outcome 8 Subgroup severity of conduct problems of positive parenting practices: independent report.**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 11 Parent training versus control meta-analysis of positive parenting practices: independent report

Outcome: 8 Subgroup severity of conduct problems of positive parenting practices: independent report

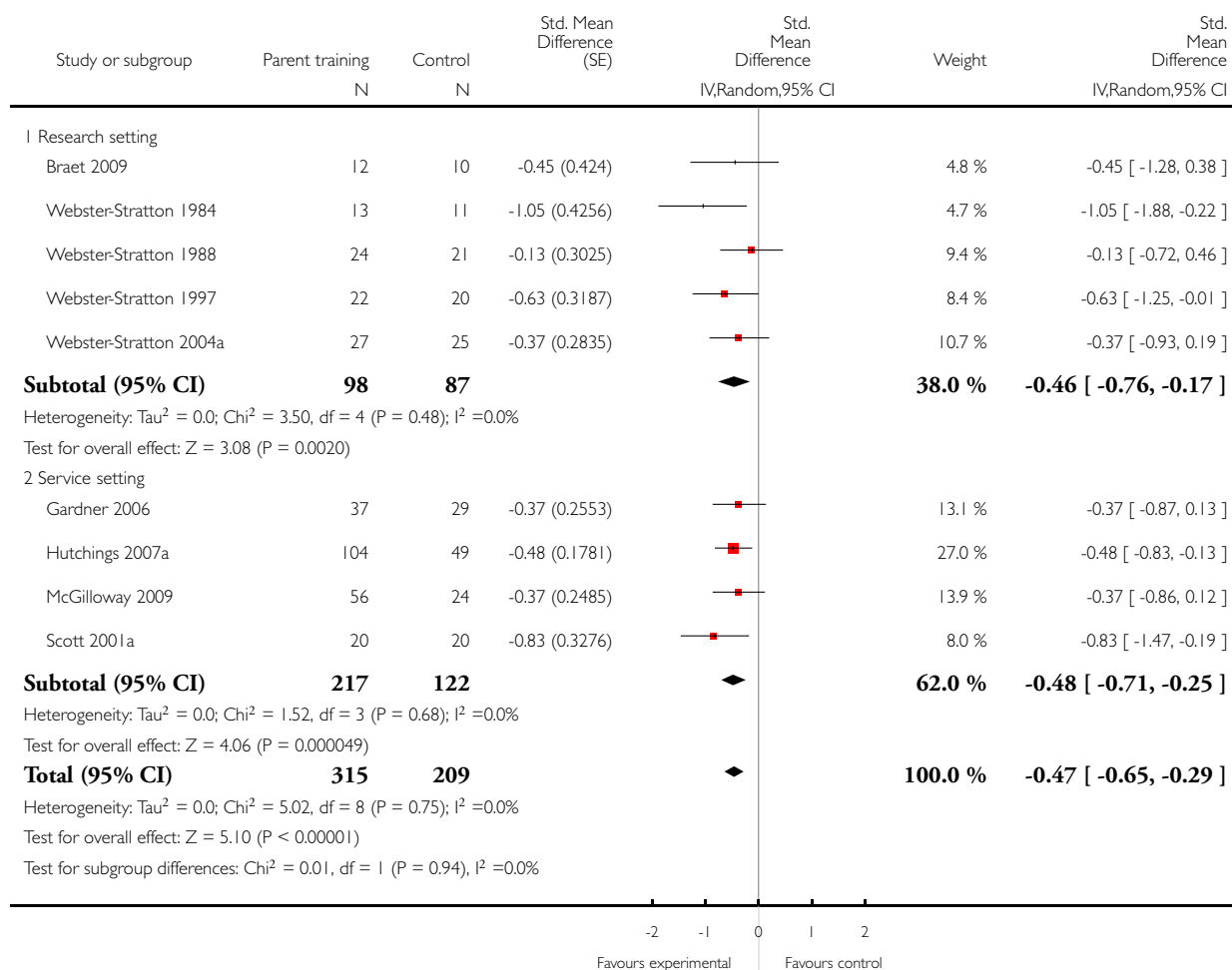


**Analysis 11.9. Comparison 11 Parent training versus control meta-analysis of positive parenting practices: independent report, Outcome 9 Subgroup trial setting of positive parenting practices: independent report.**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 11 Parent training versus control meta-analysis of positive parenting practices: independent report

Outcome: 9 Subgroup trial setting of positive parenting practices: independent report

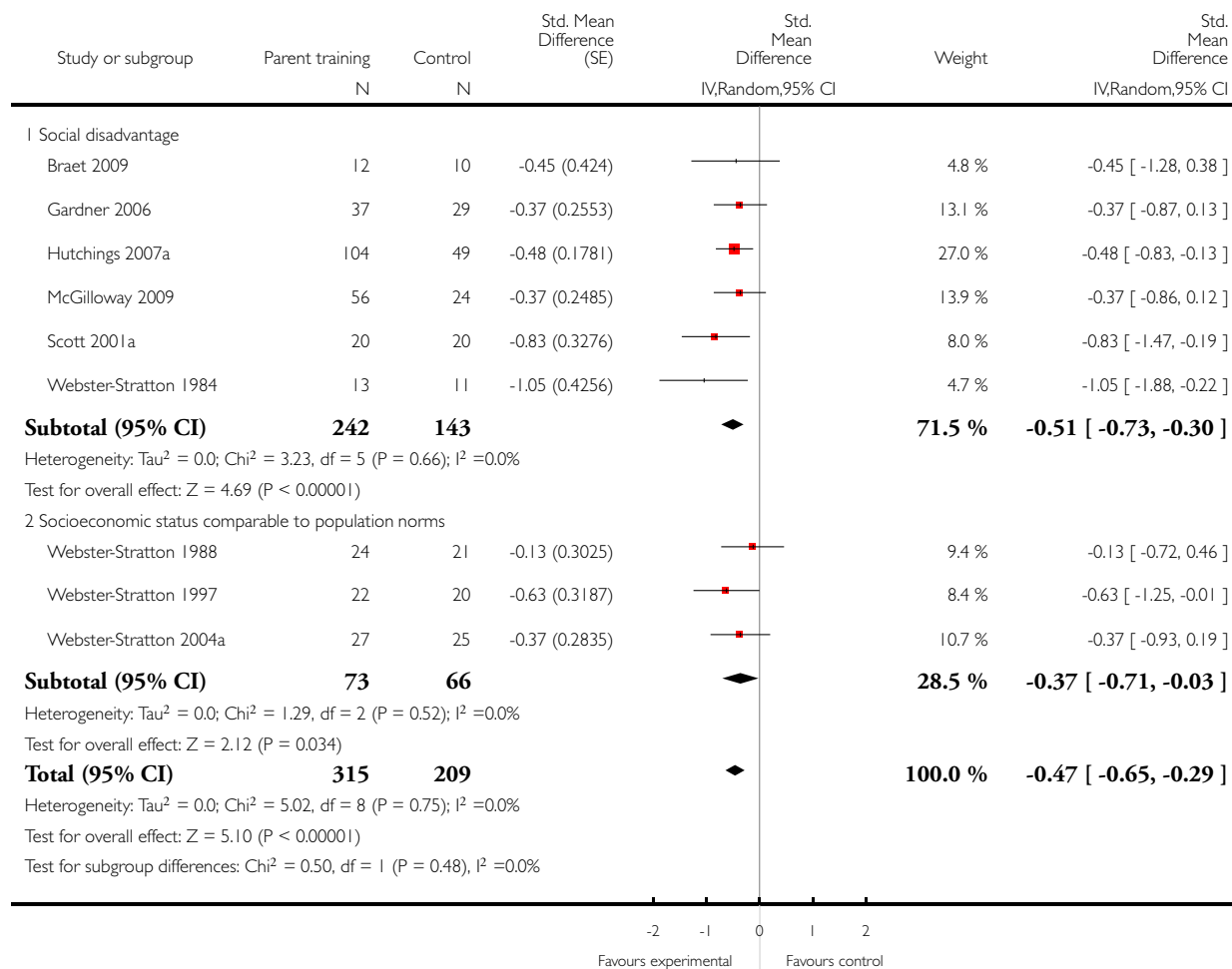


**Analysis 11.10. Comparison 11 Parent training versus control meta-analysis of positive parenting practices: independent report, Outcome 10 Subgroup socioeconomic status of positive parenting practices: independent report.**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 11 Parent training versus control meta-analysis of positive parenting practices: independent report

Outcome: 10 Subgroup socioeconomic status of positive parenting practices: independent report



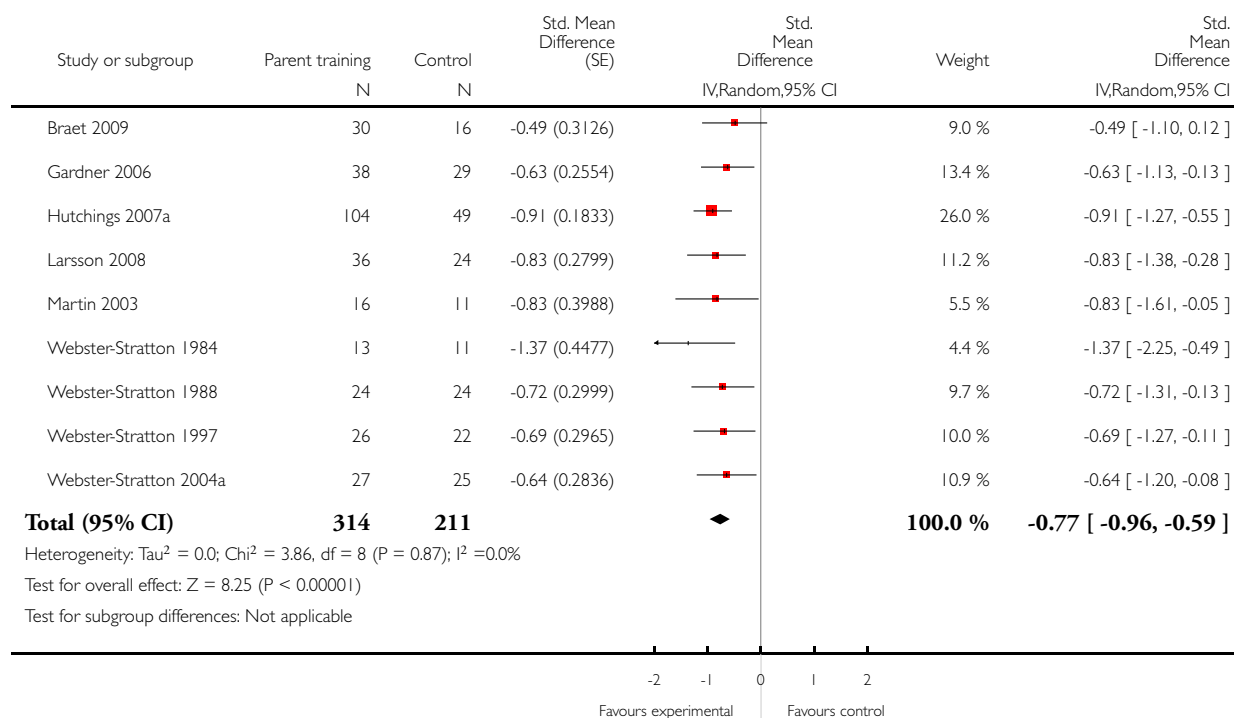


# **Analysis 12.1. Comparison 12 Parent training versus control meta-analysis of negative parenting practices: parent-report, Outcome 1 Meta-analysis of negative parenting practices: parent report.**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 12 Parent training versus control meta-analysis of negative parenting practices: parent-report

Outcome: 1 Meta-analysis of negative parenting practices: parent report

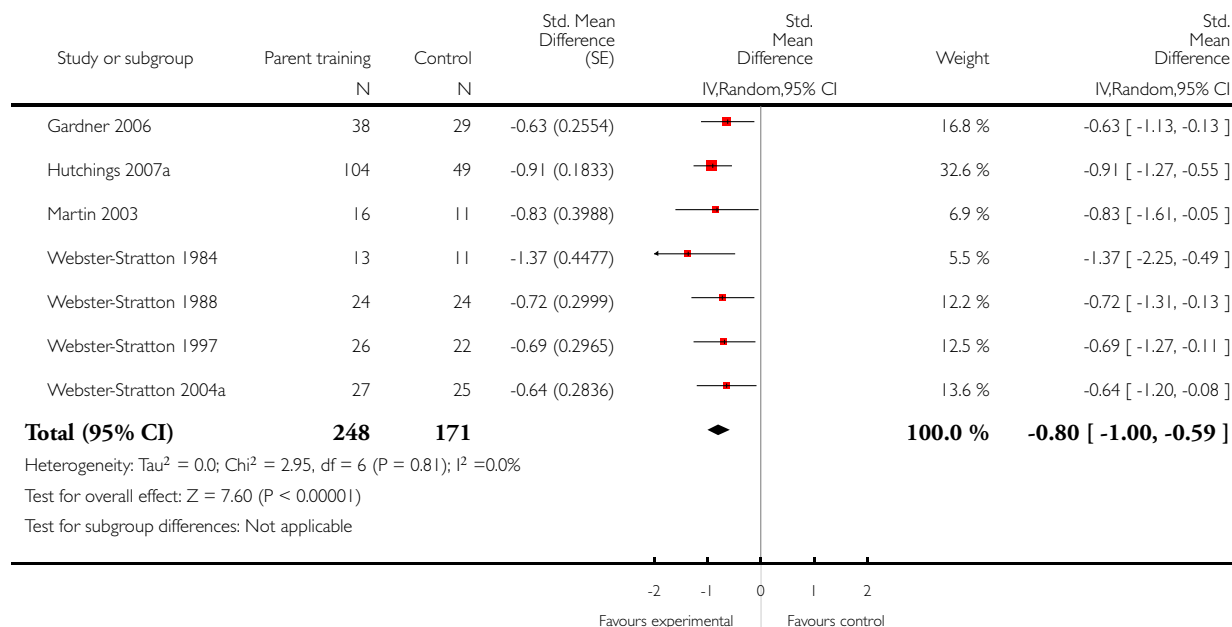


**Analysis 12.2. Comparison 12 Parent training versus control meta-analysis of negative parenting practices: parent-report, Outcome 2 Sensitivity analysis remove quasi-randomised studies (Negative parenting practices: parent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 12 Parent training versus control meta-analysis of negative parenting practices: parent-report

Outcome: 2 Sensitivity analysis remove quasi-randomised studies (Negative parenting practices: parent report)

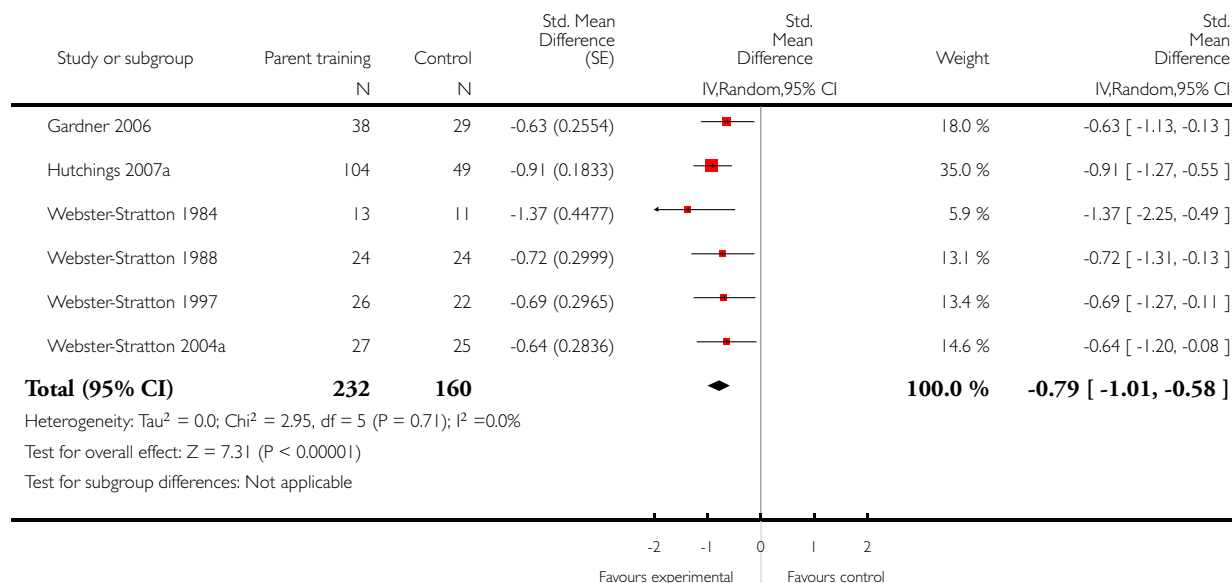


**Analysis 12.3. Comparison 12 Parent training versus control meta-analysis of negative parenting practices: parent-report, Outcome 3 Sensitivity analysis remove studies with inadequate blinding (Negative parenting practices: parent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 12 Parent training versus control meta-analysis of negative parenting practices: parent-report

Outcome: 3 Sensitivity analysis remove studies with inadequate blinding (Negative parenting practices: parent report)

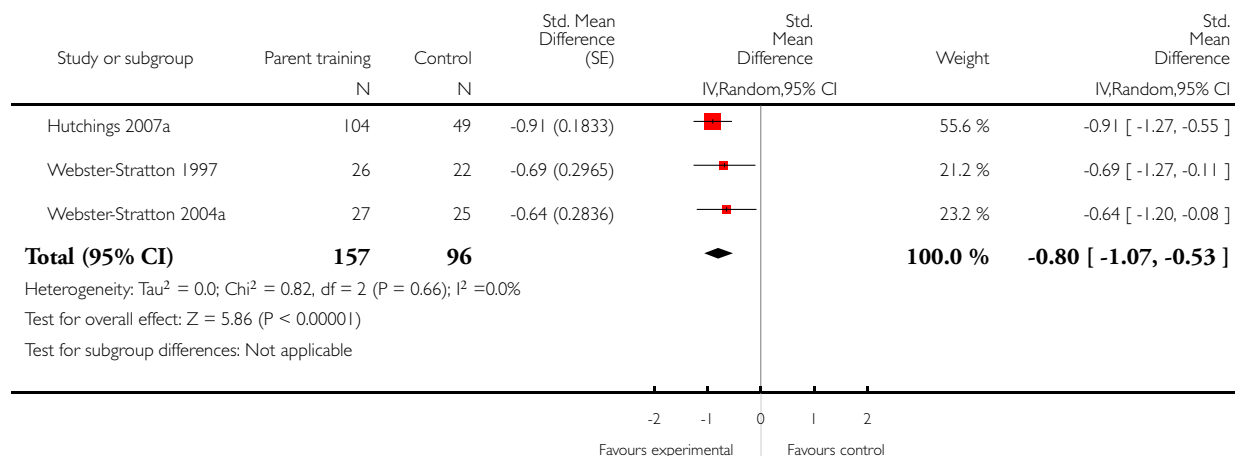


**Analysis 12.4. Comparison 12 Parent training versus control meta-analysis of negative parenting practices: parent-report, Outcome 4 Sensitivity analysis remove studies without an intention to treat analysis (Negative parenting practices: parent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 12 Parent training versus control meta-analysis of negative parenting practices: parent-report

Outcome: 4 Sensitivity analysis remove studies without an intention to treat analysis (Negative parenting practices: parent report)

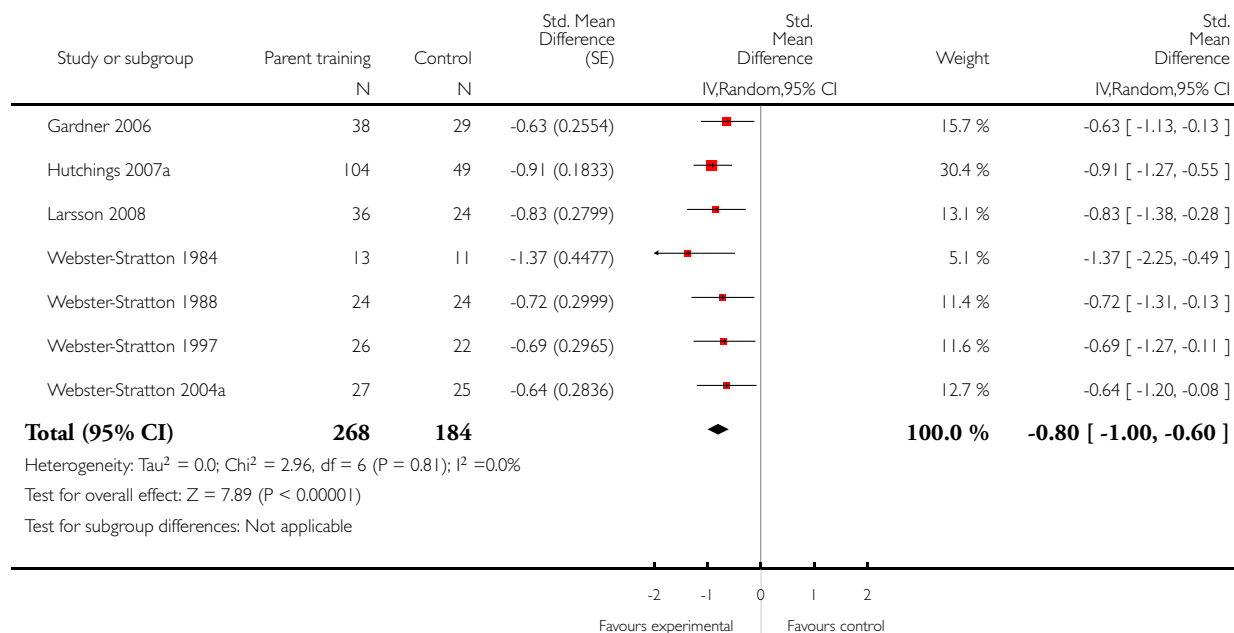


**Analysis 12.5. Comparison 12 Parent training versus control meta-analysis of negative parenting practices: parent-report, Outcome 5 Sensitivity analysis remove studies with over 20% attrition and no ITT (Negative parenting practices: parent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 12 Parent training versus control meta-analysis of negative parenting practices: parent-report

Outcome: 5 Sensitivity analysis remove studies with over 20% attrition and no ITT (Negative parenting practices: parent report)

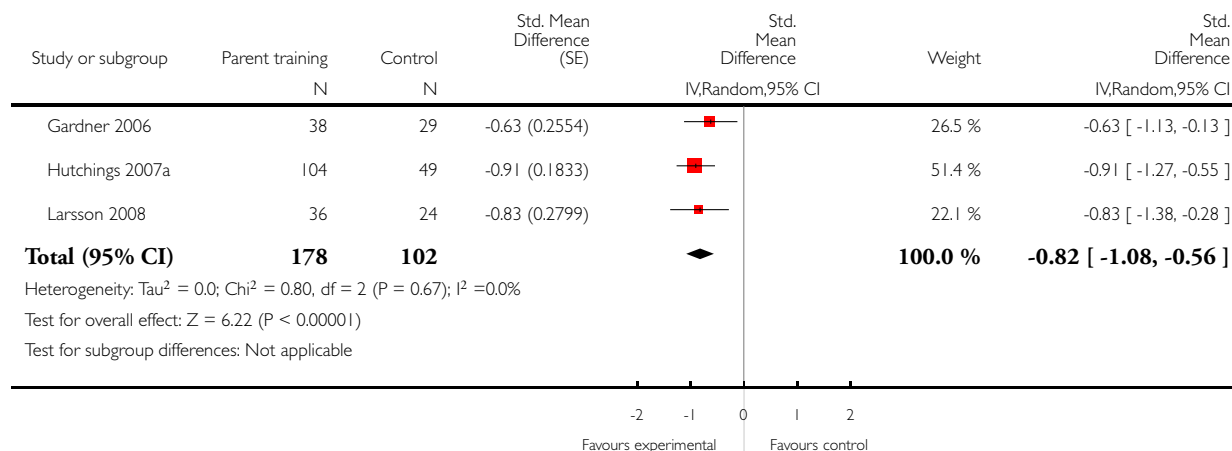


**Analysis 12.6. Comparison 12 Parent training versus control meta-analysis of negative parenting practices: parent-report, Outcome 6 Sensitivity analysis remove studies without independent replication (Negative parenting practices: parent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 12 Parent training versus control meta-analysis of negative parenting practices: parent-report

Outcome: 6 Sensitivity analysis remove studies without independent replication (Negative parenting practices: parent report)

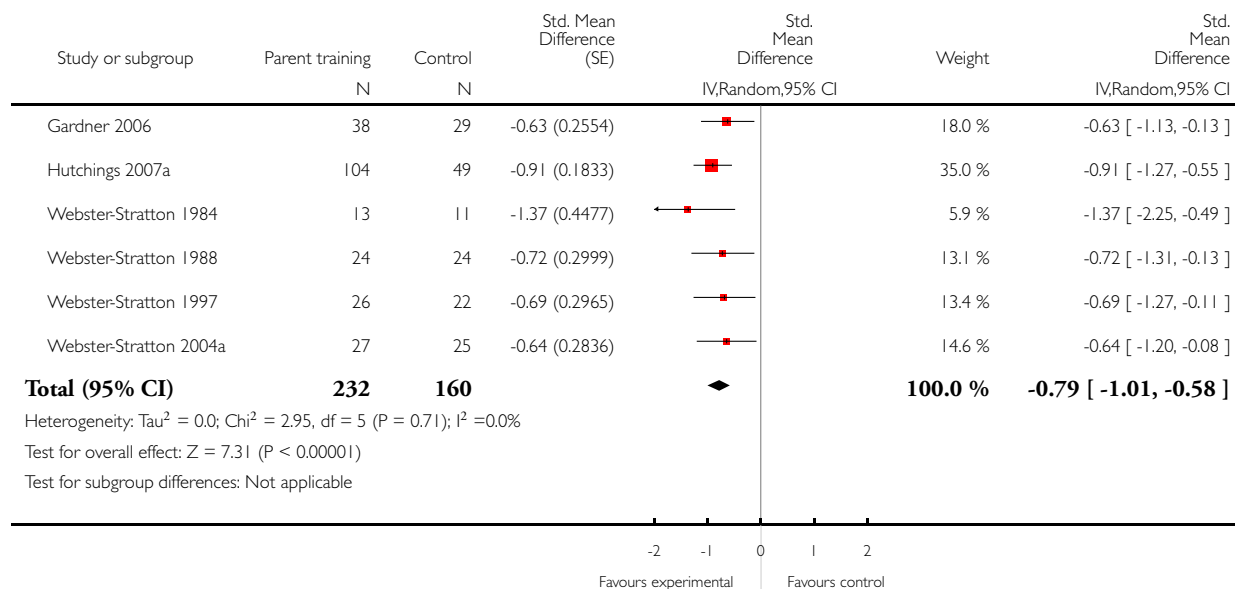


**Analysis 12.7. Comparison 12 Parent training versus control meta-analysis of negative parenting practices: parent-report, Outcome 7 Sensitivity analysis remove studies with high risk of bias (Negative parenting practices: parent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 12 Parent training versus control meta-analysis of negative parenting practices: parent-report

Outcome: 7 Sensitivity analysis remove studies with high risk of bias (Negative parenting practices: parent report)

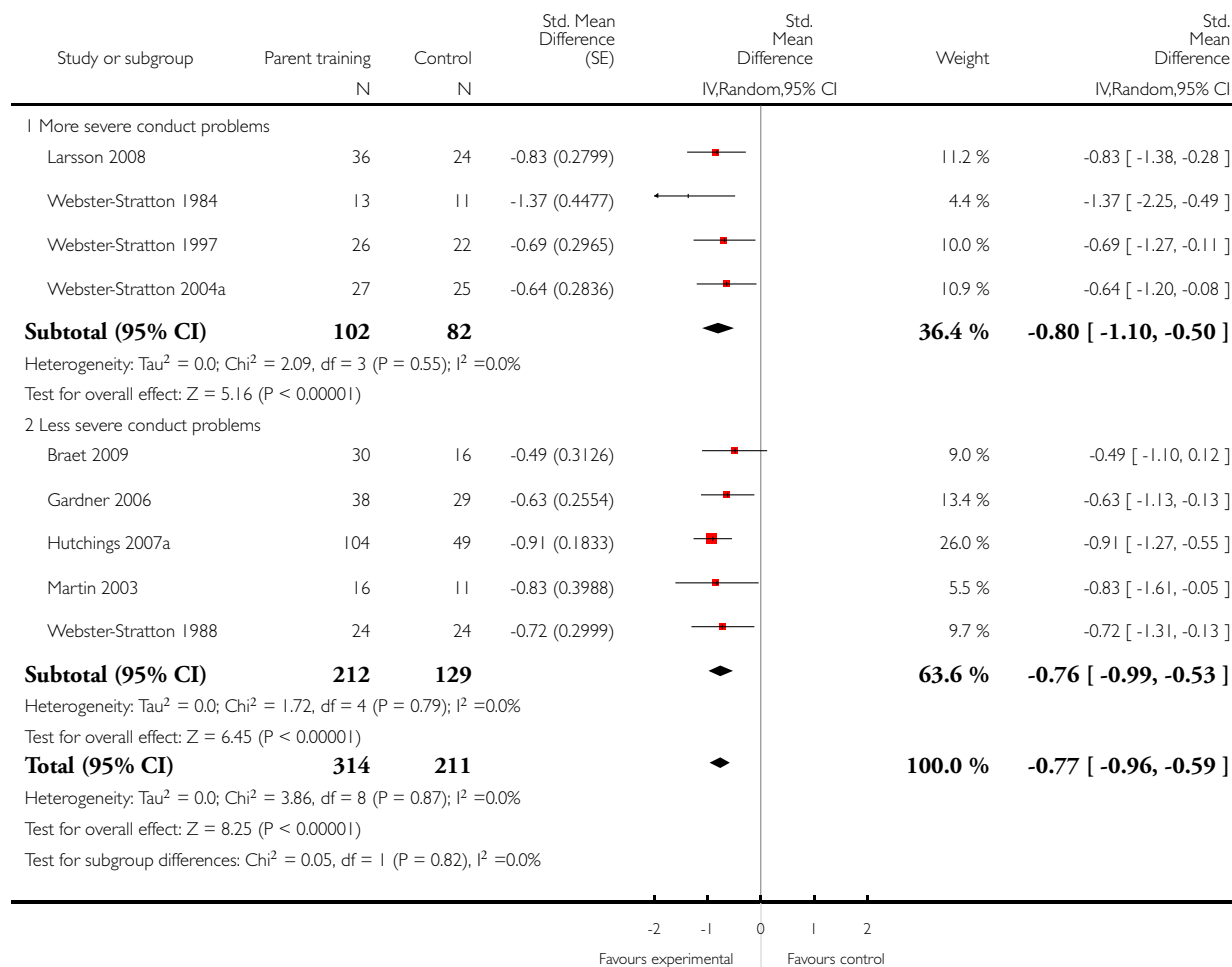


**Analysis 12.8. Comparison 12 Parent training versus control meta-analysis of negative parenting practices: parent-report, Outcome 8 Subgroup severity of conduct problems of negative parenting practices: parent report.**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 12 Parent training versus control meta-analysis of negative parenting practices: parent-report

Outcome: 8 Subgroup severity of conduct problems of negative parenting practices: parent report



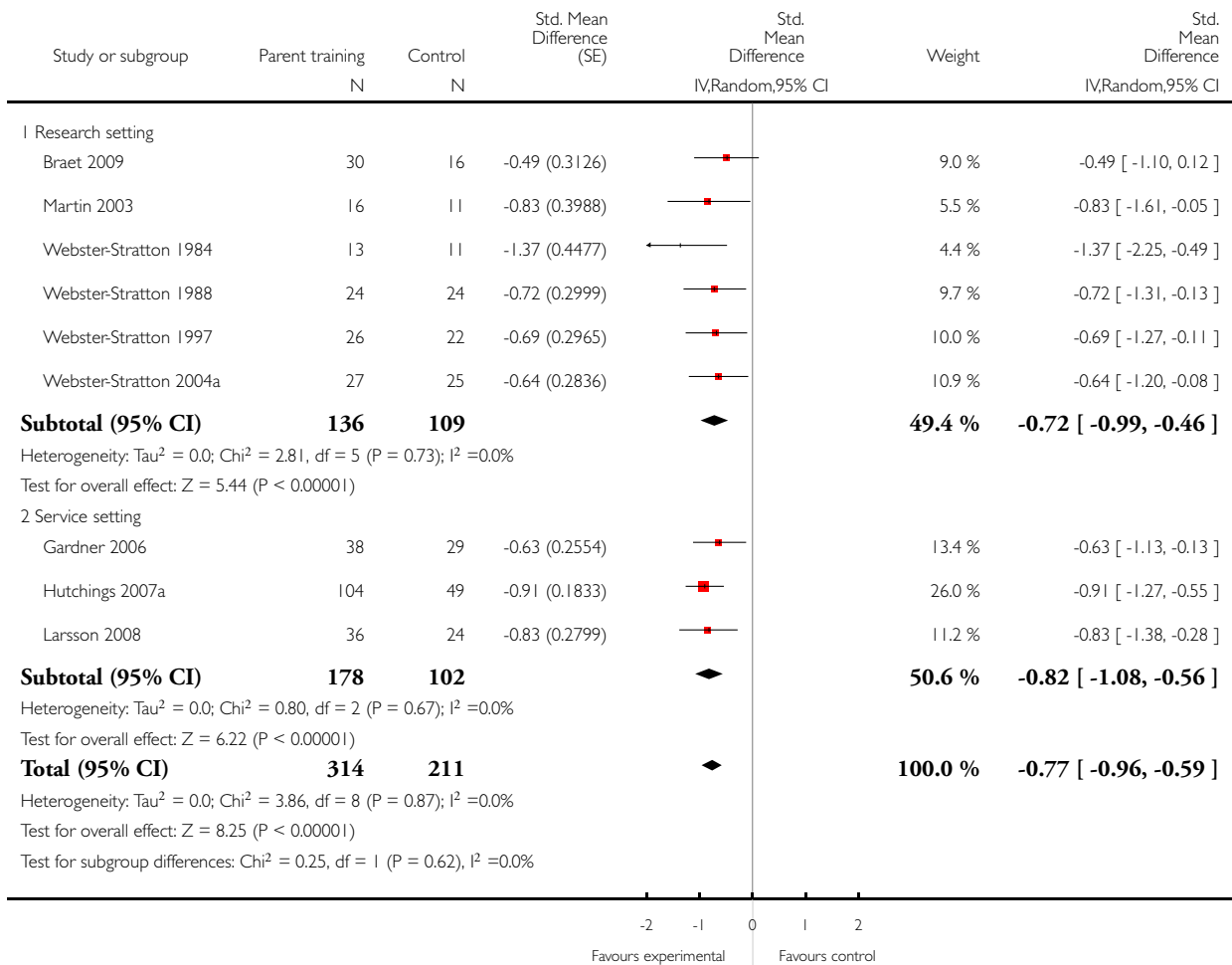


# **Analysis 12.9. Comparison 12 Parent training versus control meta-analysis of negative parenting practices: parent-report, Outcome 9 Subgroup trial setting of negative parenting practices: parent report.**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 12 Parent training versus control meta-analysis of negative parenting practices: parent-report

Outcome: 9 Subgroup trial setting of negative parenting practices: parent report

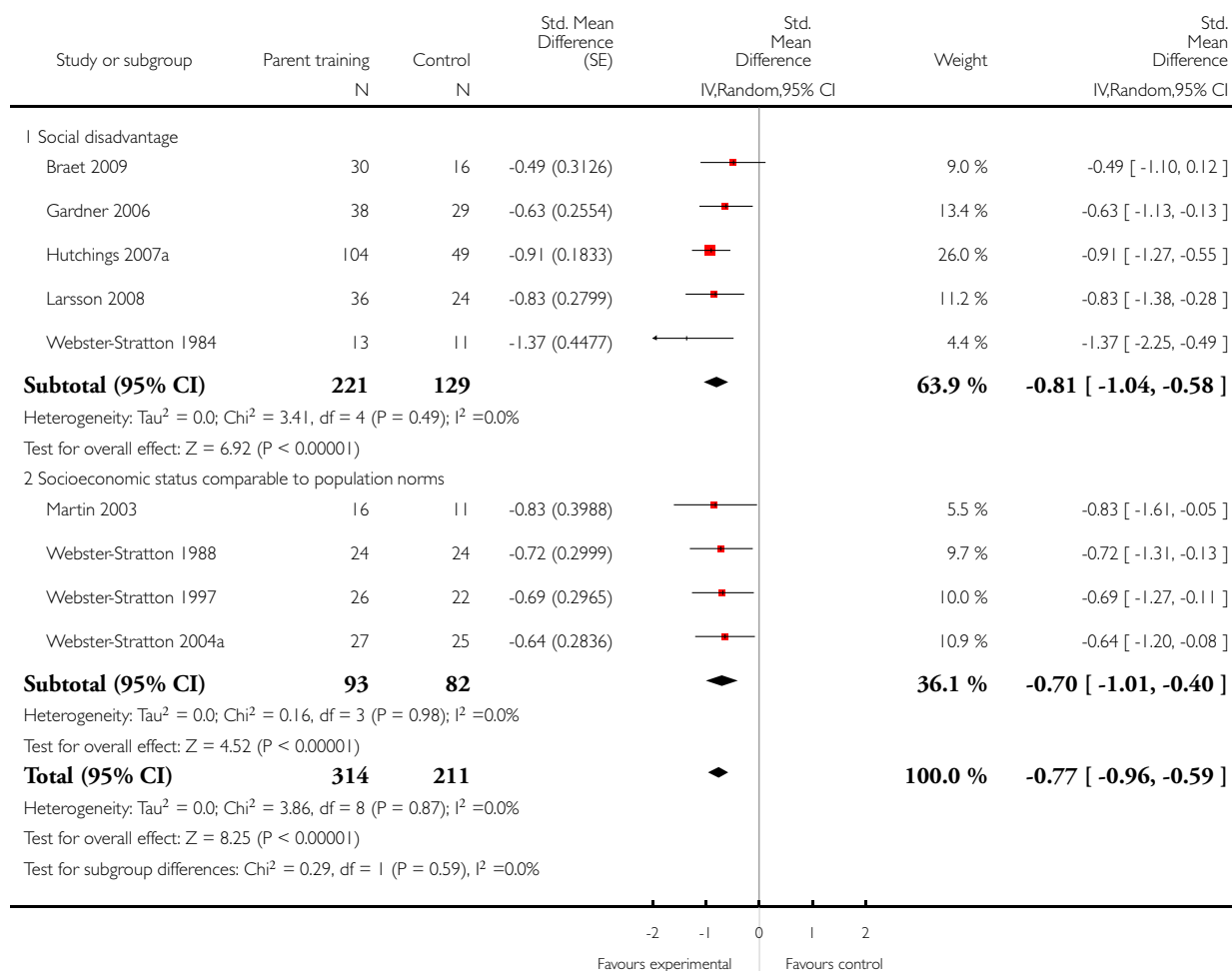


**Analysis 12.10. Comparison 12 Parent training versus control meta-analysis of negative parenting practices: parent-report, Outcome 10 Subgroup socioeconomic status of negative parenting practices: parent report.**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 12 Parent training versus control meta-analysis of negative parenting practices: parent-report

Outcome: 10 Subgroup socioeconomic status of negative parenting practices: parent report

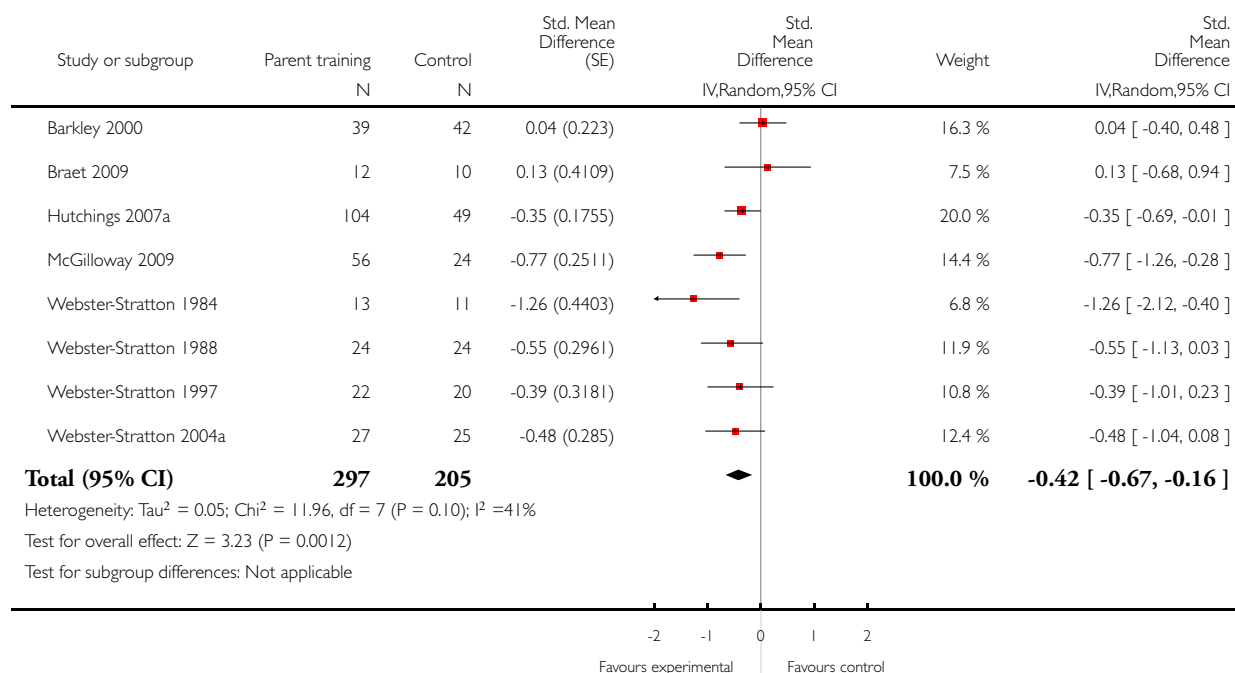


### Analysis 13.1. Comparison 13 Parent training versus control meta-analysis of negative parenting practices: independent report, Outcome 1 Meta-analysis of negative parenting practices: independent report.

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 13 Parent training versus control meta-analysis of negative parenting practices: independent report

Outcome: 1 Meta-analysis of negative parenting practices: independent report

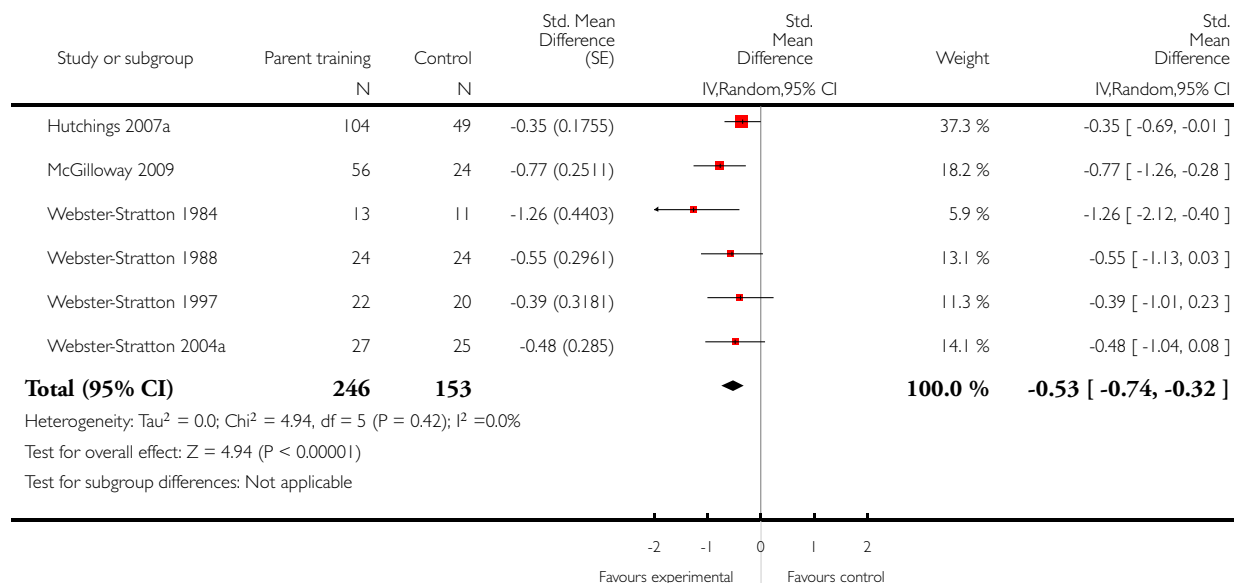


**Analysis 13.2. Comparison 13 Parent training versus control meta-analysis of negative parenting practices: independent report, Outcome 2 Sensitivity analysis remove quasi-randomised studies (Negative parenting practices: independent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 13 Parent training versus control meta-analysis of negative parenting practices: independent report

Outcome: 2 Sensitivity analysis remove quasi-randomised studies (Negative parenting practices: independent report)

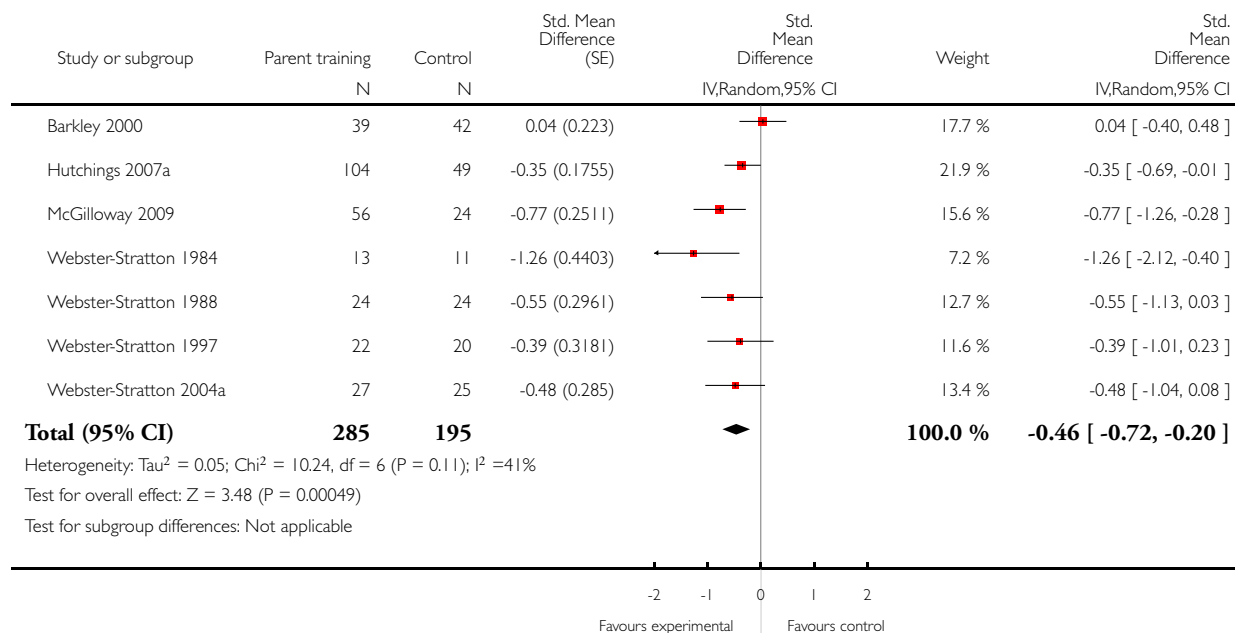


**Analysis 13.3. Comparison 13 Parent training versus control meta-analysis of negative parenting practices: independent report, Outcome 3 Sensitivity analysis remove studies with inadequate blinding (Negative parenting practices: independent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 13 Parent training versus control meta-analysis of negative parenting practices: independent report

Outcome: 3 Sensitivity analysis remove studies with inadequate blinding (Negative parenting practices: independent report)

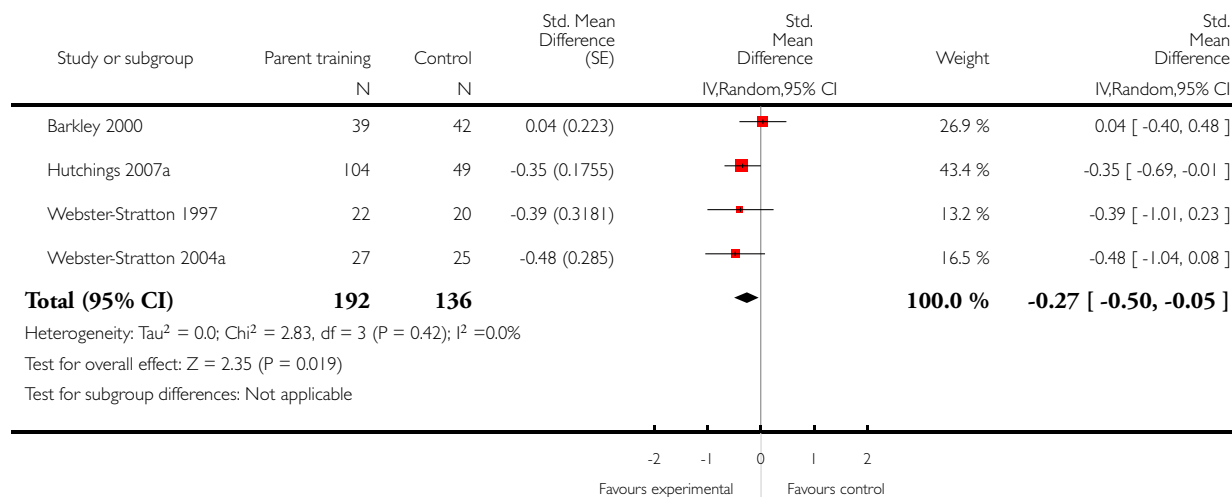


**Analysis 13.4. Comparison 13 Parent training versus control meta-analysis of negative parenting practices: independent report, Outcome 4 Sensitivity analysis remove studies without an intention to treat analysis (Negative parenting practices: independent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 13 Parent training versus control meta-analysis of negative parenting practices: independent report

Outcome: 4 Sensitivity analysis remove studies without an intention to treat analysis (Negative parenting practices: independent report)

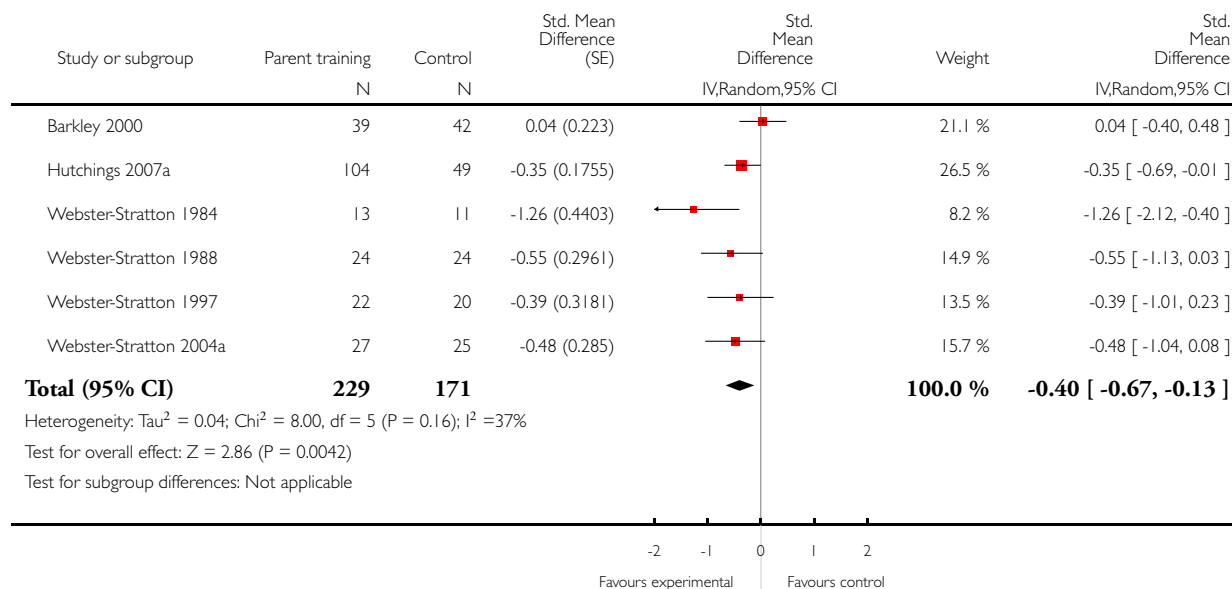


**Analysis 13.5. Comparison 13 Parent training versus control meta-analysis of negative parenting practices: independent report, Outcome 5 Sensitivity analysis remove studies with over 20% attrition and no ITT (Negative parenting practices: independent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 13 Parent training versus control meta-analysis of negative parenting practices: independent report

Outcome: 5 Sensitivity analysis remove studies with over 20% attrition and no ITT (Negative parenting practices: independent report)

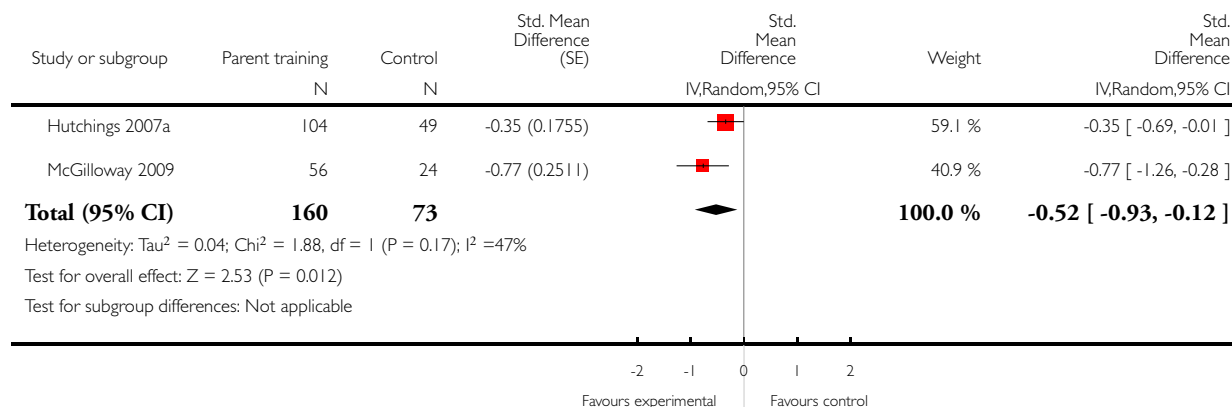


**Analysis 13.6. Comparison 13 Parent training versus control meta-analysis of negative parenting practices: independent report, Outcome 6 Sensitivity analysis remove studies without independent replication (Negative parenting practices: independent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 13 Parent training versus control meta-analysis of negative parenting practices: independent report

Outcome: 6 Sensitivity analysis remove studies without independent replication (Negative parenting practices: independent report)



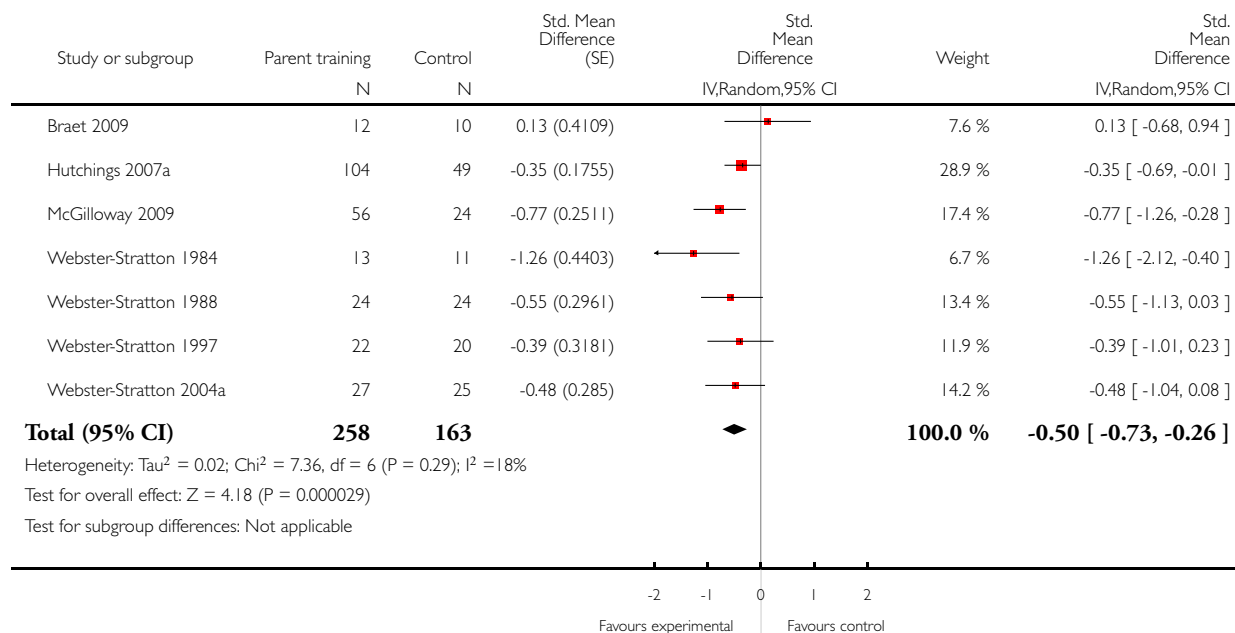


**Analysis 13.7. Comparison 13 Parent training versus control meta-analysis of negative parenting practices: independent report, Outcome 7 Sensitivity analysis remove non-validated studies (Negative parenting practices: independent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 13 Parent training versus control meta-analysis of negative parenting practices: independent report

Outcome: 7 Sensitivity analysis remove non-validated studies (Negative parenting practices: independent report)

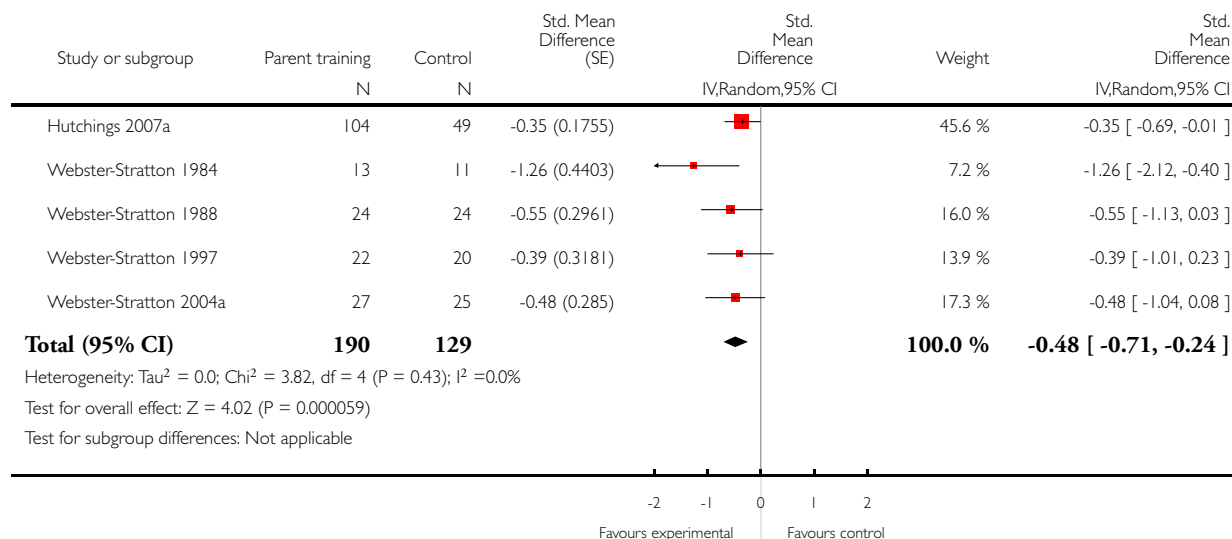


**Analysis 13.8. Comparison 13 Parent training versus control meta-analysis of negative parenting practices: independent report, Outcome 8 Sensitivity analysis remove studies at high risk of bias (Negative parenting practices: independent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 13 Parent training versus control meta-analysis of negative parenting practices: independent report

Outcome: 8 Sensitivity analysis remove studies at high risk of bias (Negative parenting practices: independent report)

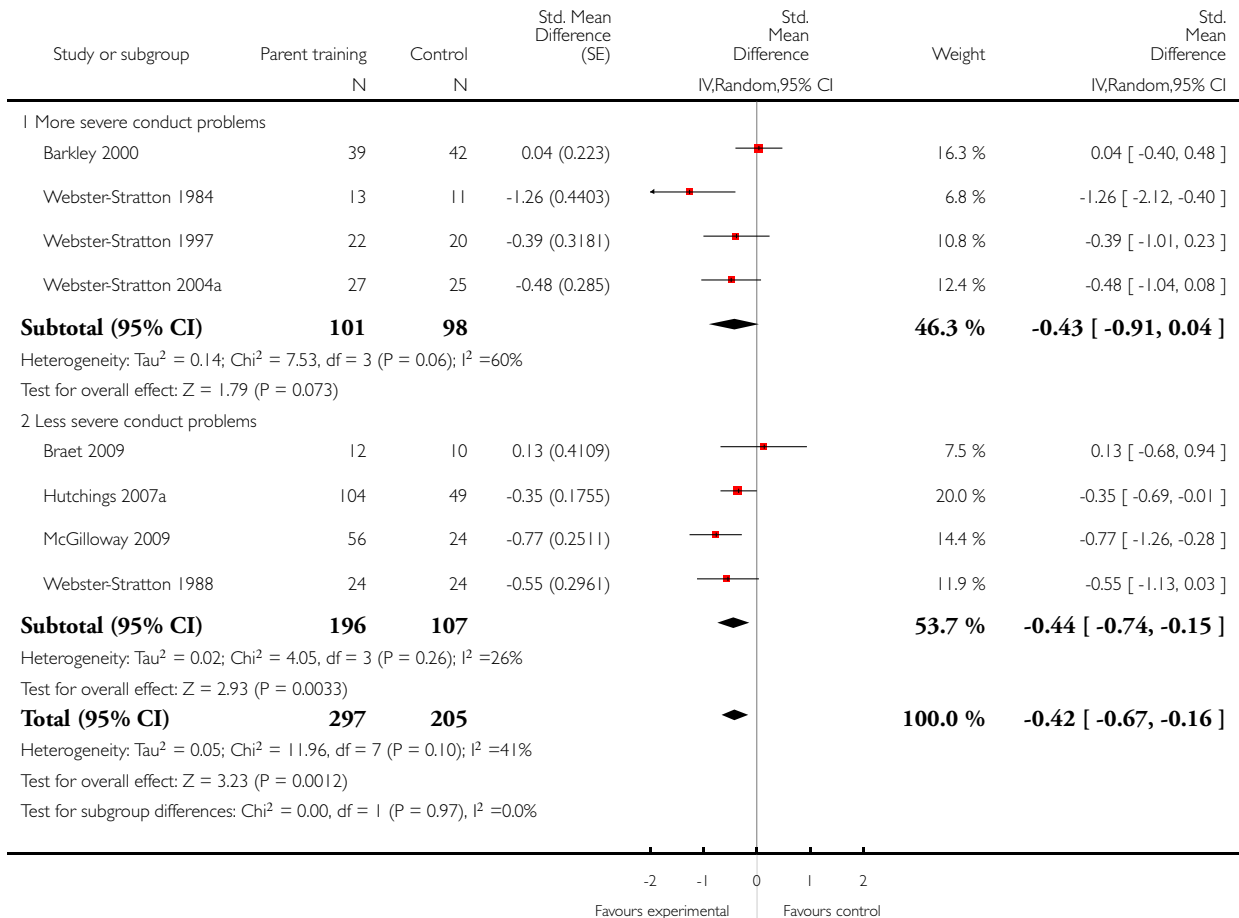


**Analysis 13.9. Comparison 13 Parent training versus control meta-analysis of negative parenting practices: independent report, Outcome 9 Subgroup severity of conduct problems of negative parenting practices: independent report.**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 13 Parent training versus control meta-analysis of negative parenting practices: independent report

Outcome: 9 Subgroup severity of conduct problems of negative parenting practices: independent report

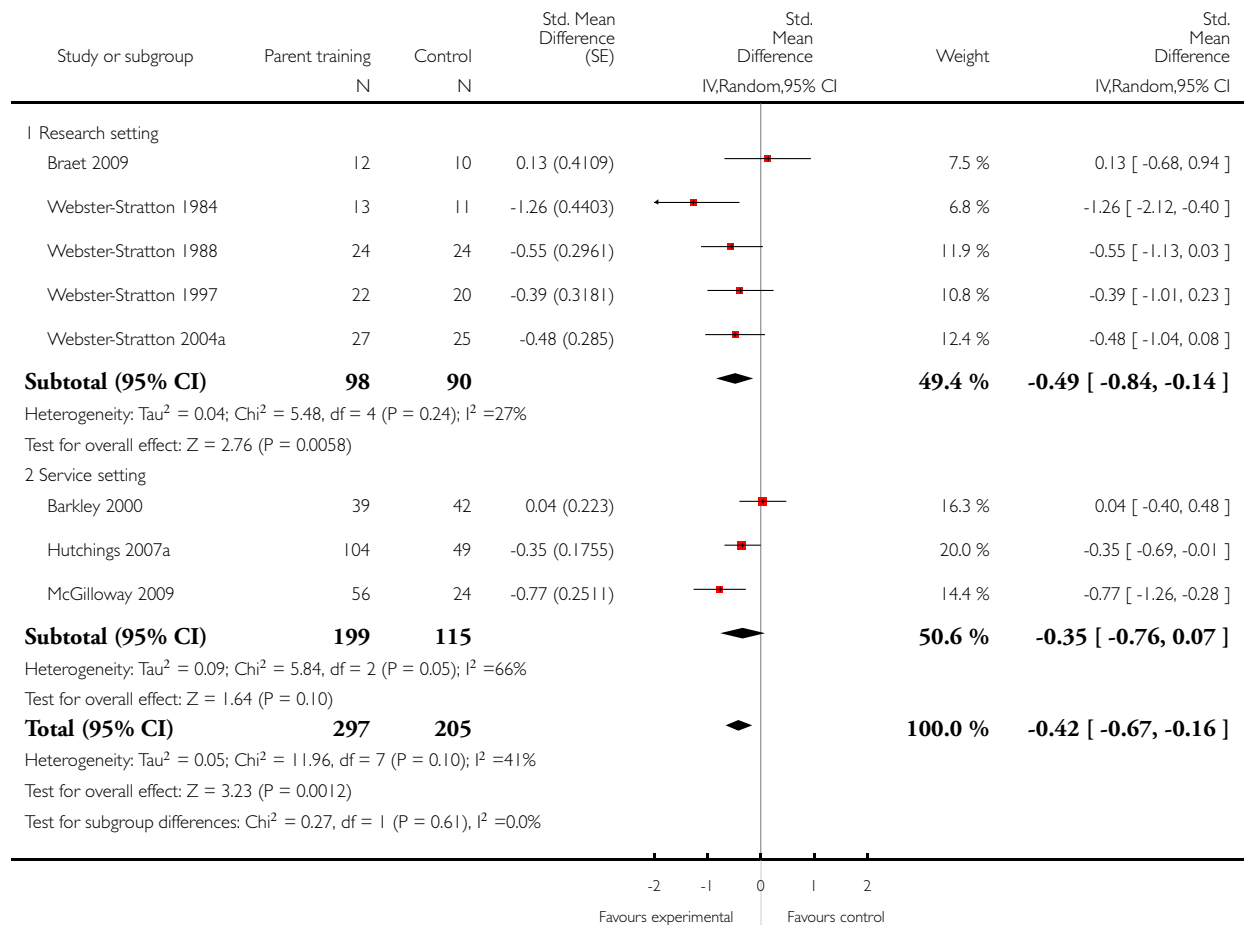


**Analysis 13.10. Comparison 13 Parent training versus control meta-analysis of negative parenting practices: independent report, Outcome 10 Subgroup trial setting of negative parenting practices: independent report.**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 13 Parent training versus control meta-analysis of negative parenting practices: independent report

Outcome: 10 Subgroup trial setting of negative parenting practices: independent report

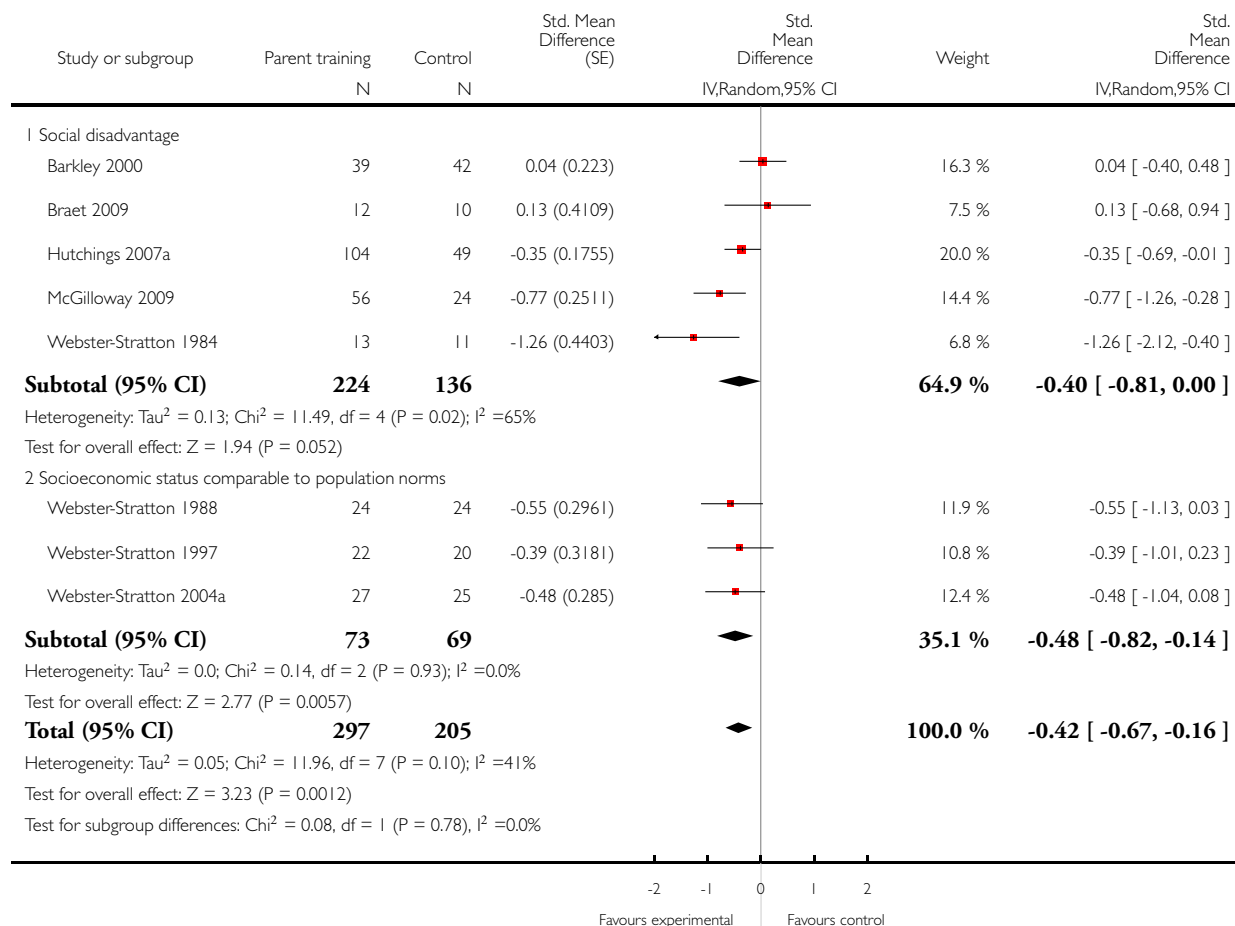


# **Analysis 13.11. Comparison 13 Parent training versus control meta-analysis of negative parenting practices: independent report, Outcome 11 Subgroup socioeconomic status of negative parenting practices: independent report.**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 13 Parent training versus control meta-analysis of negative parenting practices: independent report

Outcome: 11 Subgroup socioeconomic status of negative parenting practices: independent report

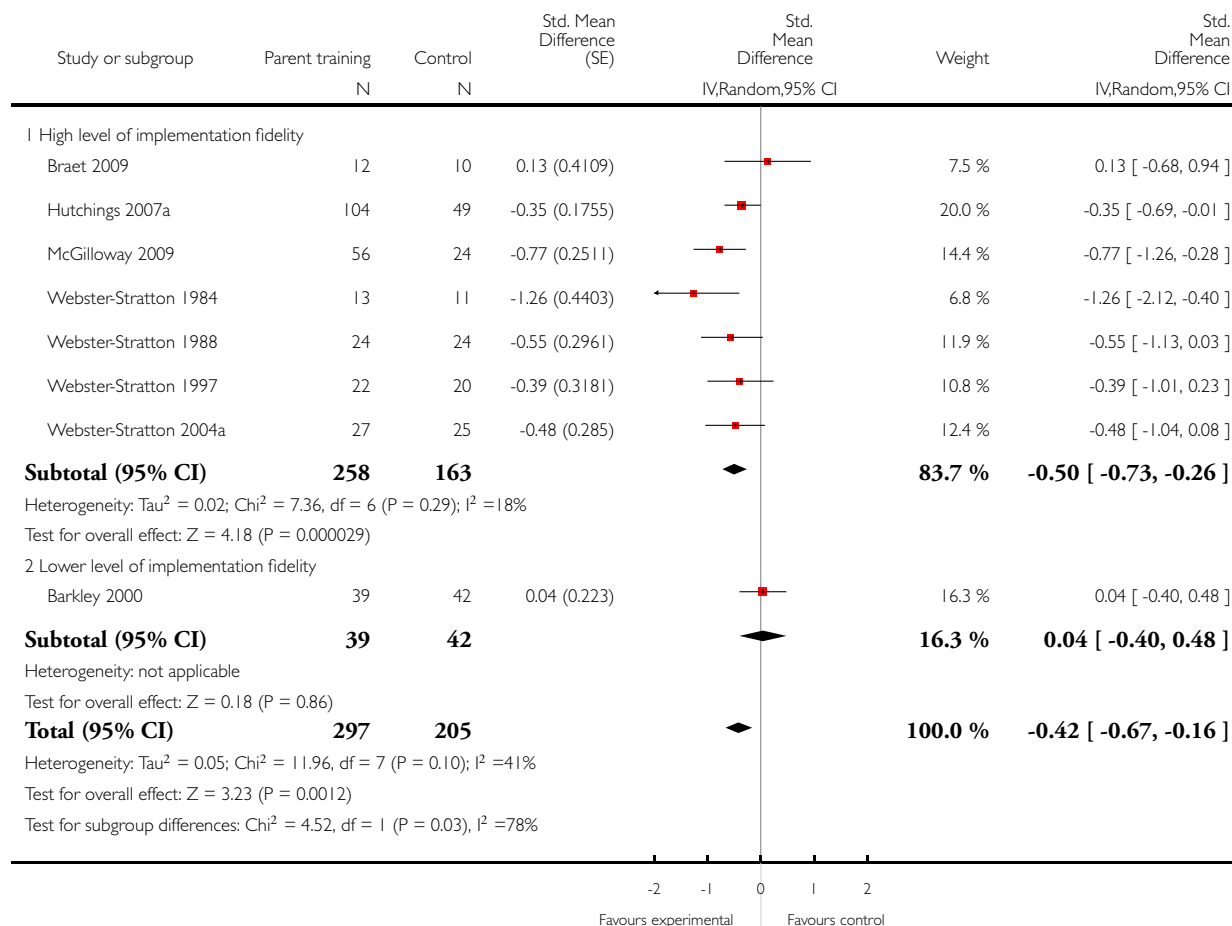


**Analysis 13.12. Comparison 13 Parent training versus control meta-analysis of negative parenting practices: independent report, Outcome 12 Subgroup level of implementation fidelity in negative parenting practices: independent report.**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 13 Parent training versus control meta-analysis of negative parenting practices: independent report

Outcome: 12 Subgroup level of implementation fidelity in negative parenting practices: independent report

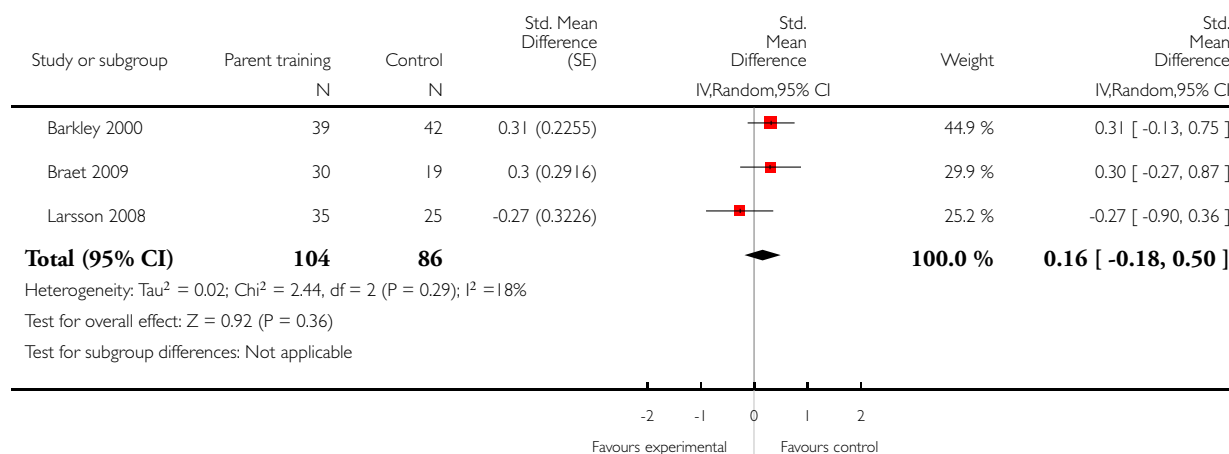


# **Analysis 14.1. Comparison 14 Parent training versus control meta-analysis of child emotional problems: parent-report, Outcome 1 Meta-analysis of child emotional problems: parent report.**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 14 Parent training versus control meta-analysis of child emotional problems: parent-report

Outcome: 1 Meta-analysis of child emotional problems: parent report

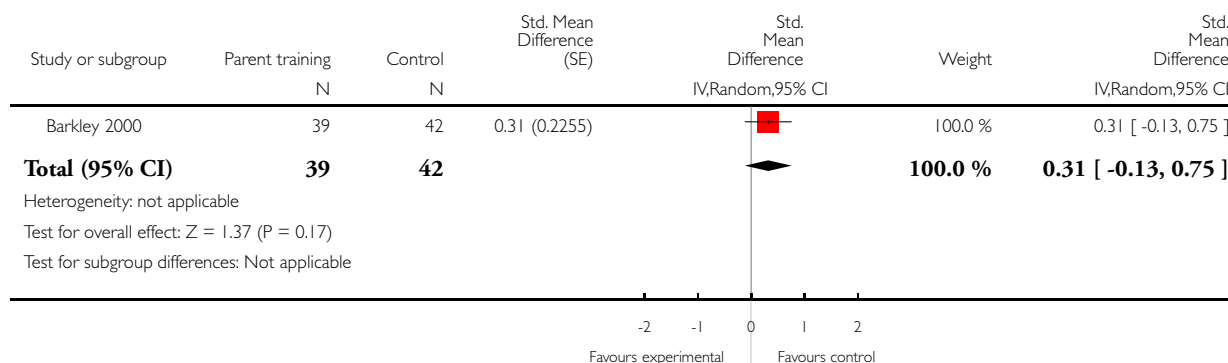


**Analysis 14.2. Comparison 14 Parent training versus control meta-analysis of child emotional problems: parent-report, Outcome 2 Sensitivity analysis remove studies with inadequate blinding (Child emotional problems: parent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 14 Parent training versus control meta-analysis of child emotional problems: parent-report

Outcome: 2 Sensitivity analysis remove studies with inadequate blinding (Child emotional problems: parent report)

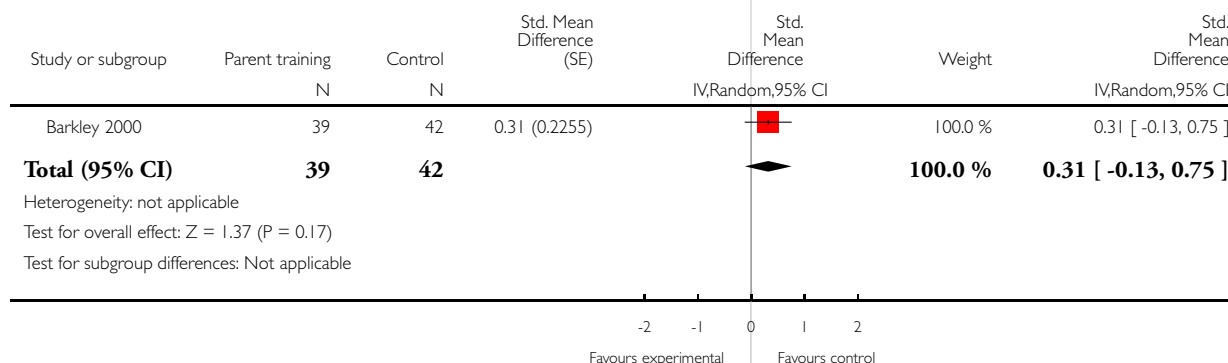


**Analysis 14.3. Comparison 14 Parent training versus control meta-analysis of child emotional problems: parent-report, Outcome 3 Sensitivity analysis remove studies without an intention to treat analysis (Child emotional problems: parent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 14 Parent training versus control meta-analysis of child emotional problems: parent-report

Outcome: 3 Sensitivity analysis remove studies without an intention to treat analysis (Child emotional problems: parent report)



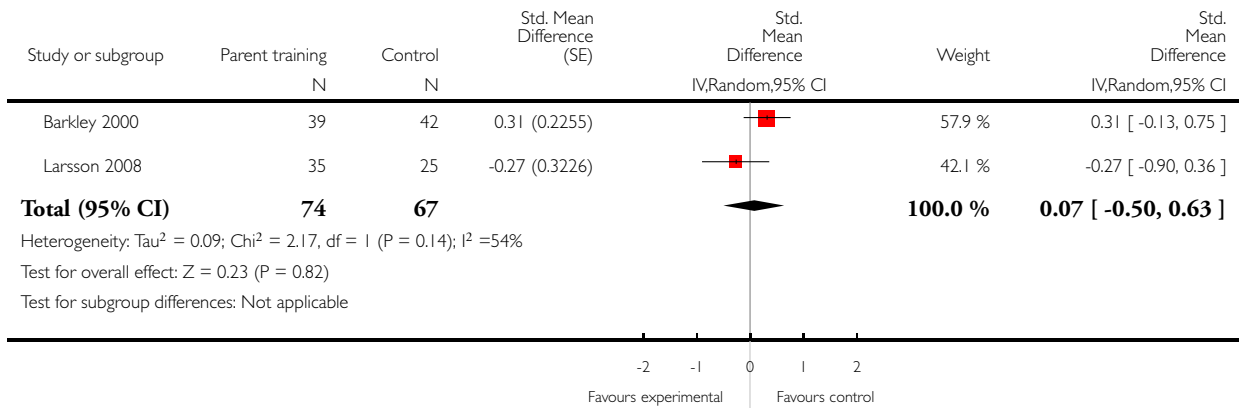


**Analysis 14.4. Comparison 14 Parent training versus control meta-analysis of child emotional problems: parent-report, Outcome 4 Sensitivity analysis remove studies with over 20% attrition and no ITT (Child emotional problems: parent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 14 Parent training versus control meta-analysis of child emotional problems: parent-report

Outcome: 4 Sensitivity analysis remove studies with over 20% attrition and no ITT (Child emotional problems: parent report)

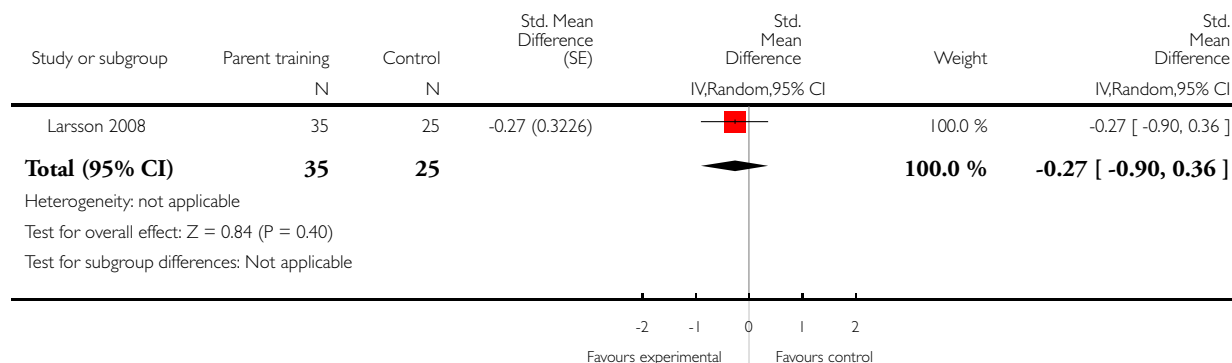


**Analysis 14.5. Comparison 14 Parent training versus control meta-analysis of child emotional problems: parent-report, Outcome 5 Sensitivity analysis remove studies without independent replication (Child emotional problems: parent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 14 Parent training versus control meta-analysis of child emotional problems: parent-report

Outcome: 5 Sensitivity analysis remove studies without independent replication (Child emotional problems: parent report)

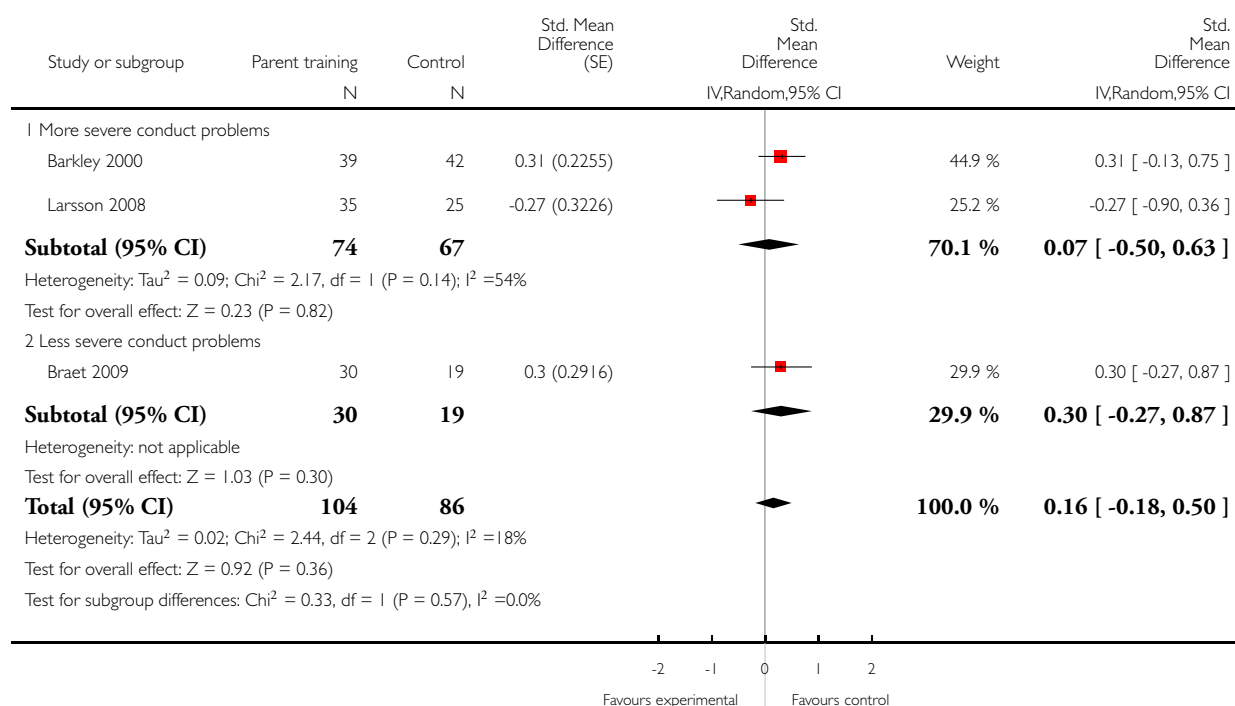


**Analysis 14.6. Comparison 14 Parent training versus control meta-analysis of child emotional problems: parent-report, Outcome 6 Subgroup severity of conduct problems of child emotional problems: parent report.**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 14 Parent training versus control meta-analysis of child emotional problems: parent-report

Outcome: 6 Subgroup severity of conduct problems of child emotional problems: parent report

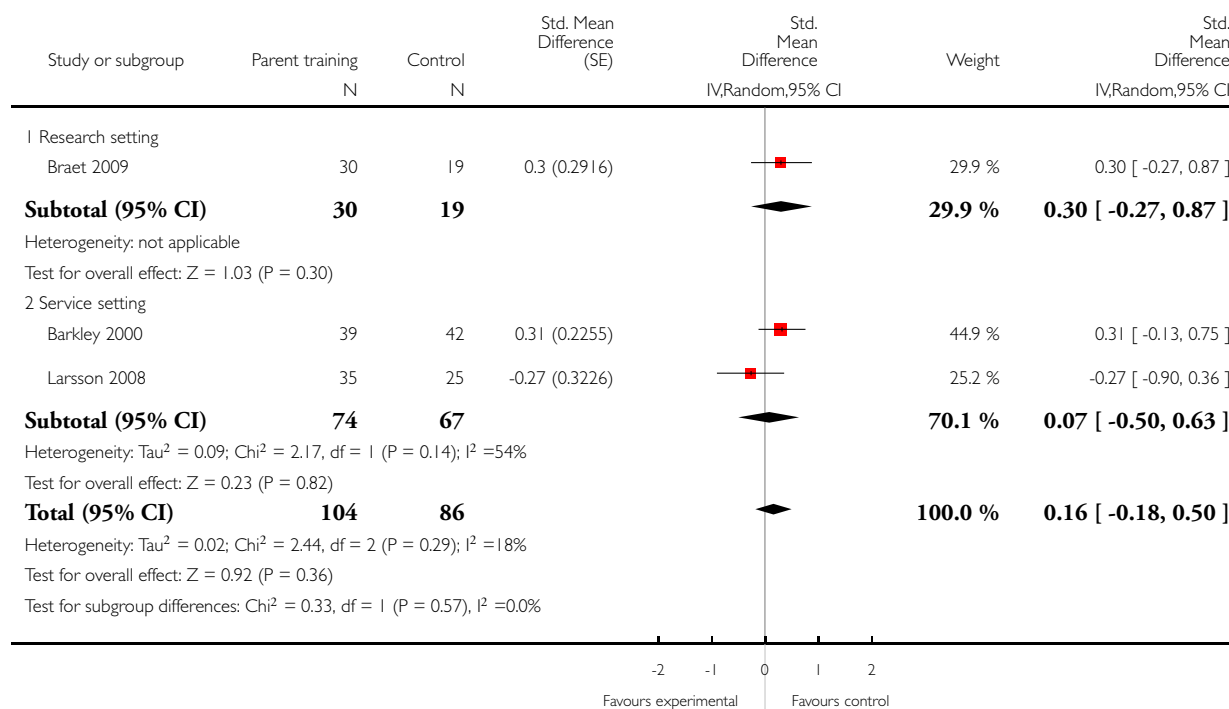


# **Analysis 14.7. Comparison 14 Parent training versus control meta-analysis of child emotional problems: parent-report, Outcome 7 Subgroup trial setting of child emotional problems: parent report.**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 14 Parent training versus control meta-analysis of child emotional problems: parent-report

Outcome: 7 Subgroup trial setting of child emotional problems: parent report

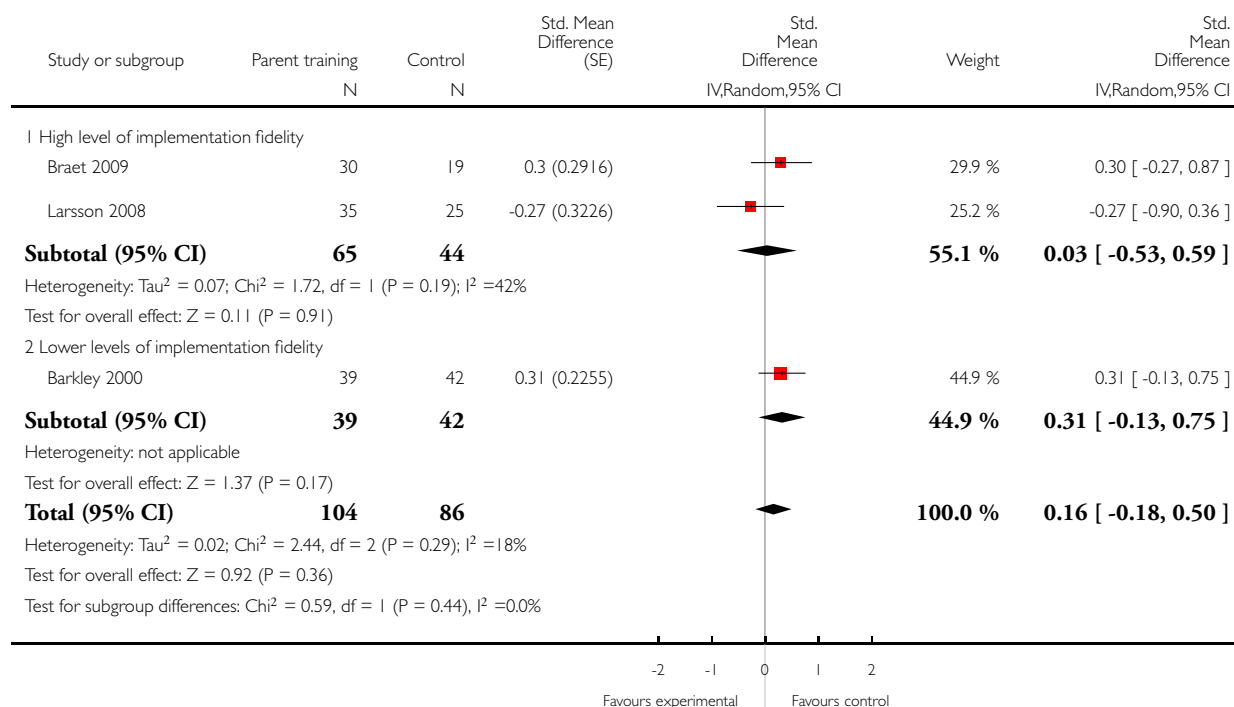


**Analysis 14.8. Comparison 14 Parent training versus control meta-analysis of child emotional problems: parent-report, Outcome 8 Subgroup implementation fidelity of child emotional problems: parent report.**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 14 Parent training versus control meta-analysis of child emotional problems: parent-report

Outcome: 8 Subgroup implementation fidelity of child emotional problems: parent report

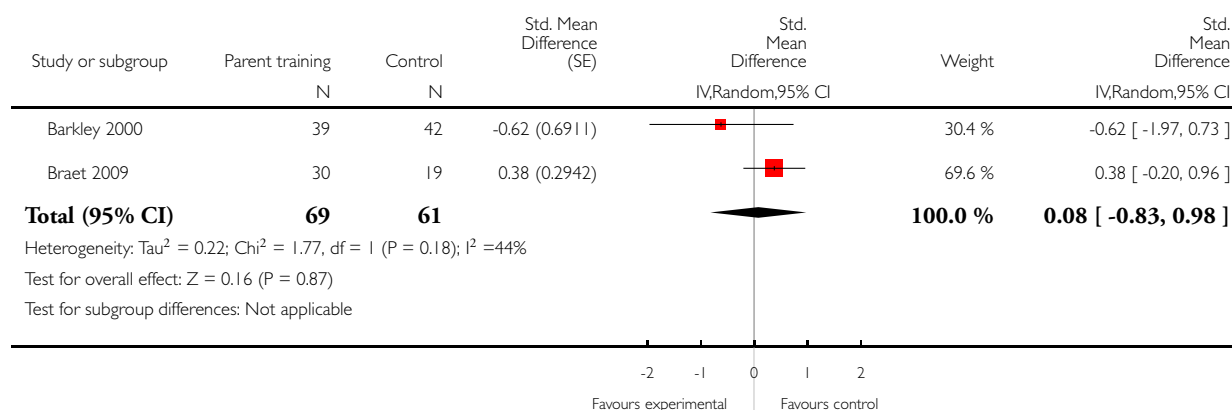


### Analysis 15.1. Comparison 15 Parent training versus control meta-analysis of child emotional problems: independent report, Outcome 1 Meta-analysis of child emotional problems: independent report.

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 15 Parent training versus control meta-analysis of child emotional problems: independent report

Outcome: 1 Meta-analysis of child emotional problems: independent report

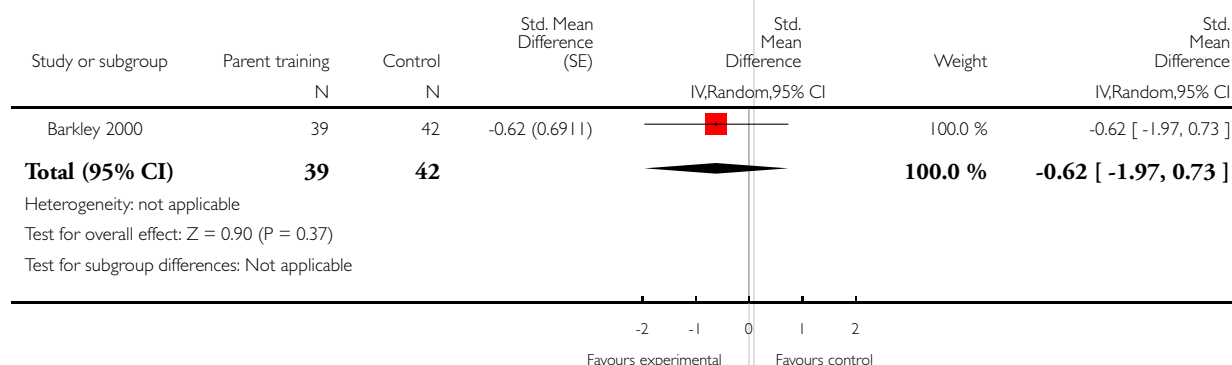


### Analysis 15.2. Comparison 15 Parent training versus control meta-analysis of child emotional problems: independent report, Outcome 2 Sensitivity analysis remove studies with inadequate blinding (Child emotional problems: independent report).

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 15 Parent training versus control meta-analysis of child emotional problems: independent report

Outcome: 2 Sensitivity analysis remove studies with inadequate blinding (Child emotional problems: independent report)

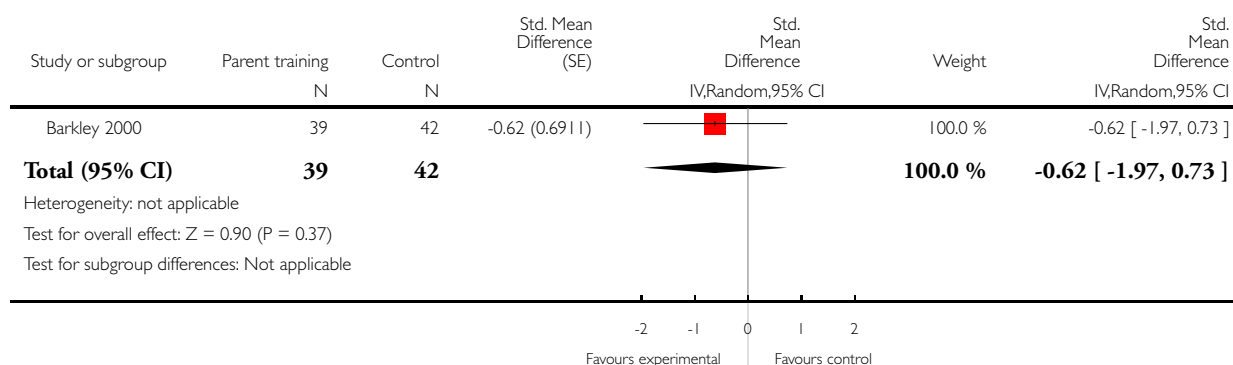


**Analysis 15.3. Comparison 15 Parent training versus control meta-analysis of child emotional problems: independent report, Outcome 3 Sensitivity analysis remove studies without an intention to treat analysis (Child emotional problems: independent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 15 Parent training versus control meta-analysis of child emotional problems: independent report

Outcome: 3 Sensitivity analysis remove studies without an intention to treat analysis (Child emotional problems: independent report)

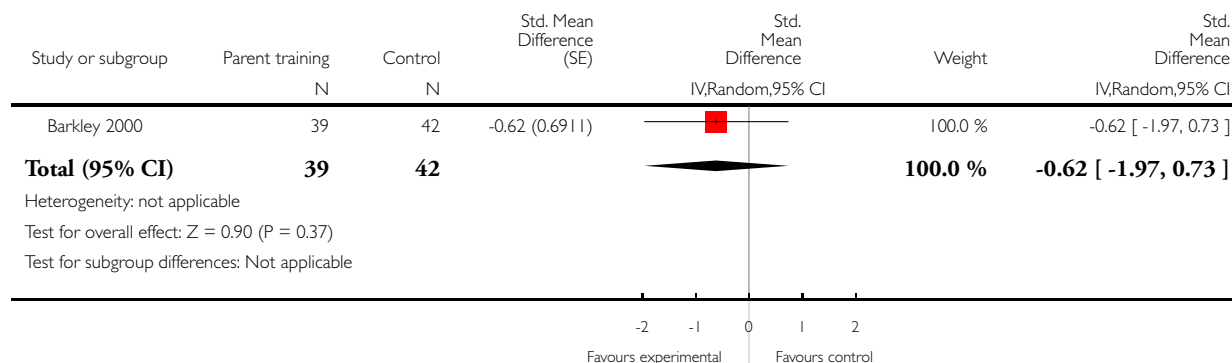


**Analysis 15.4. Comparison 15 Parent training versus control meta-analysis of child emotional problems: independent report, Outcome 4 Sensitivity analysis remove studies with over 20% attrition and no ITT (Child emotional problems: independent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 15 Parent training versus control meta-analysis of child emotional problems: independent report

Outcome: 4 Sensitivity analysis remove studies with over 20% attrition and no ITT (Child emotional problems: independent report)



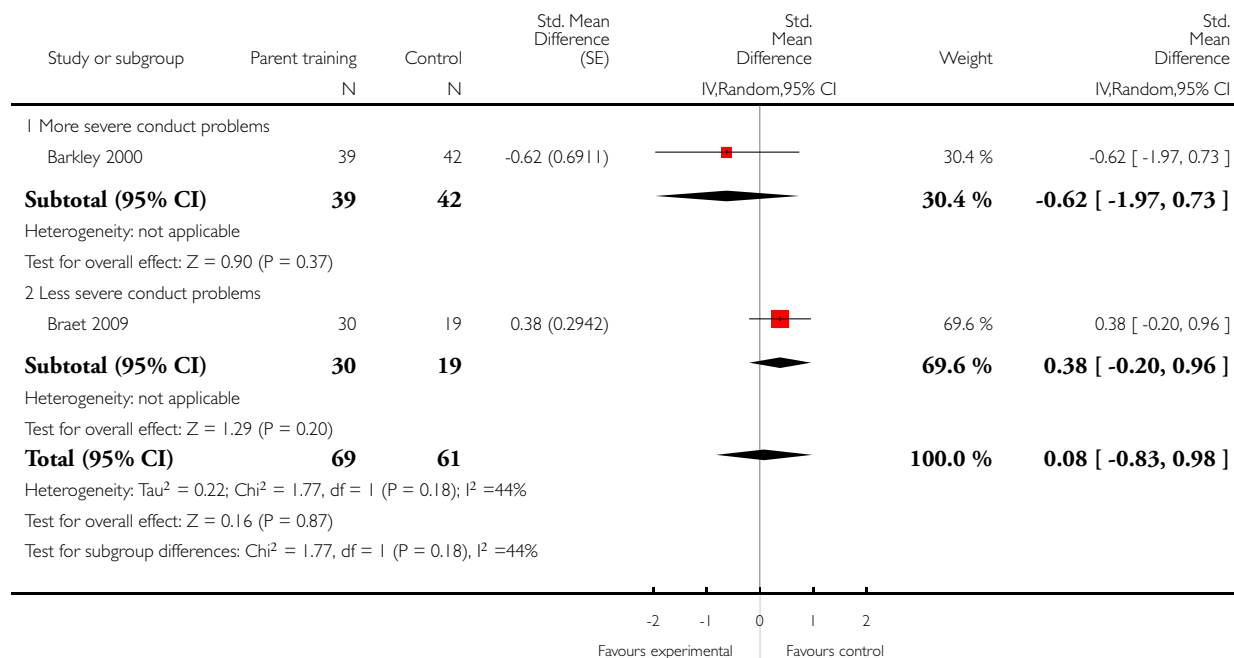


# **Analysis 15.5. Comparison 15 Parent training versus control meta-analysis of child emotional problems: independent report, Outcome 5 Subgroup severity of conduct problems of child emotional problems: independent report.**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 15 Parent training versus control meta-analysis of child emotional problems: independent report

Outcome: 5 Subgroup severity of conduct problems of child emotional problems: independent report

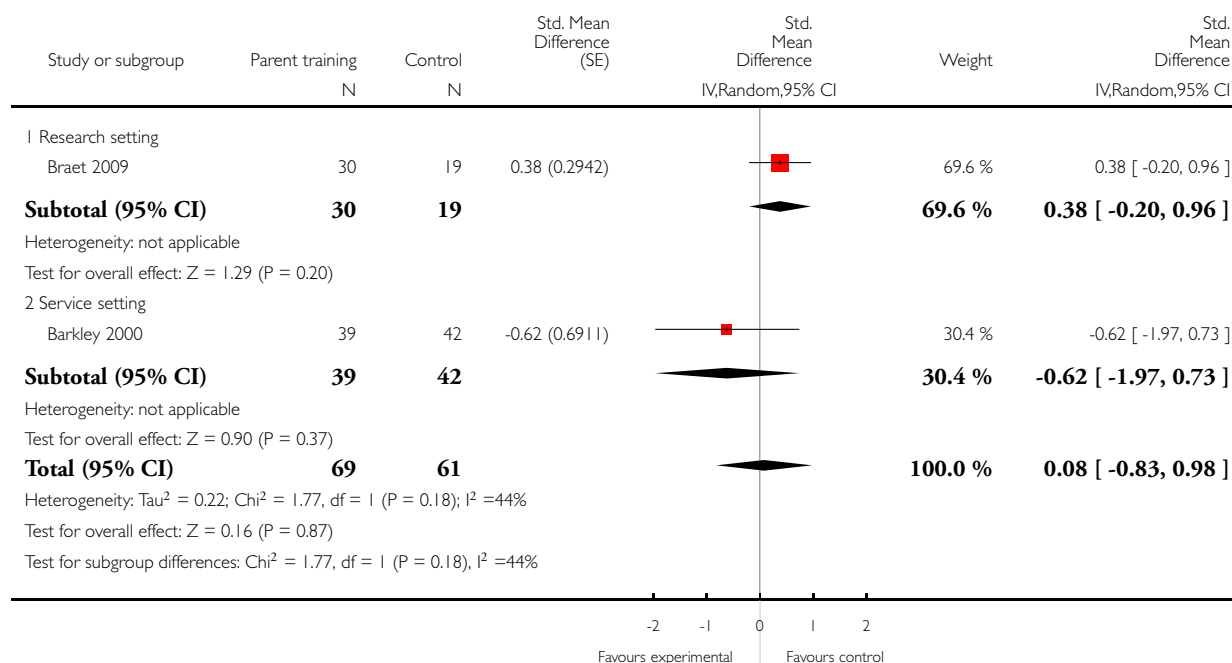


**Analysis 15.6. Comparison 15 Parent training versus control meta-analysis of child emotional problems: independent report, Outcome 6 Subgroup trial setting of child emotional problems: independent report.**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 15 Parent training versus control meta-analysis of child emotional problems: independent report

Outcome: 6 Subgroup trial setting of child emotional problems: independent report

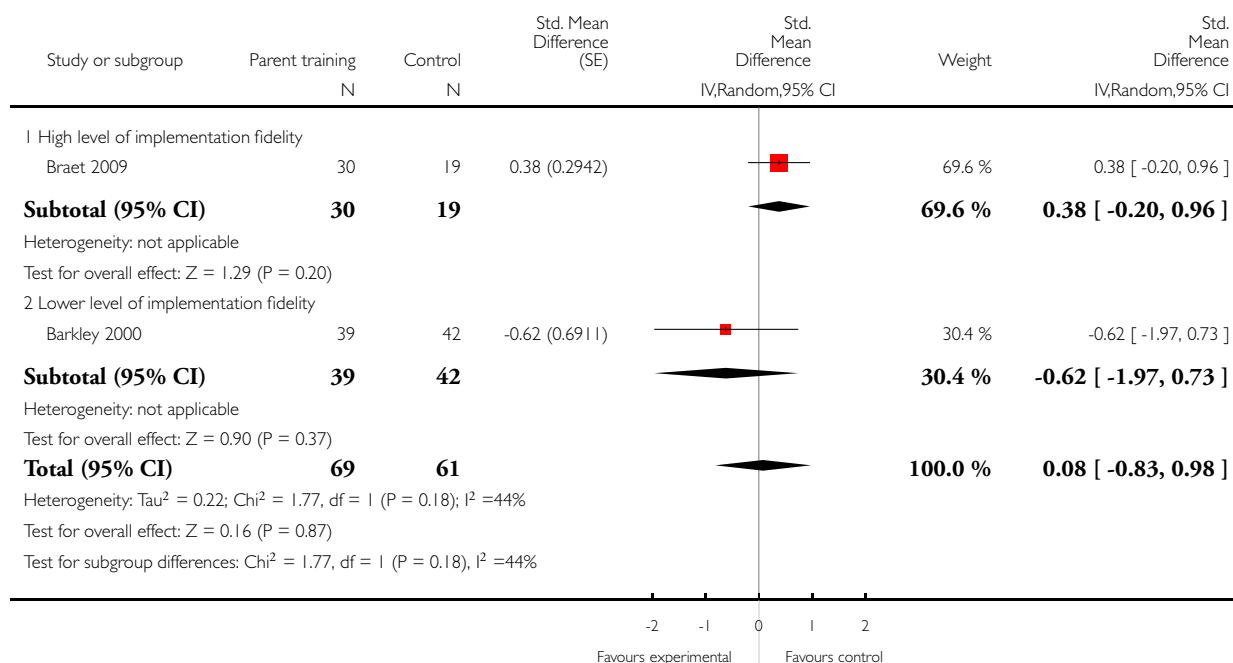


# **Analysis 15.7. Comparison 15 Parent training versus control meta-analysis of child emotional problems: independent report, Outcome 7 Subgroup level of implementation fidelity: independent report.**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 15 Parent training versus control meta-analysis of child emotional problems: independent report

Outcome: 7 Subgroup level of implementation fidelity: independent report

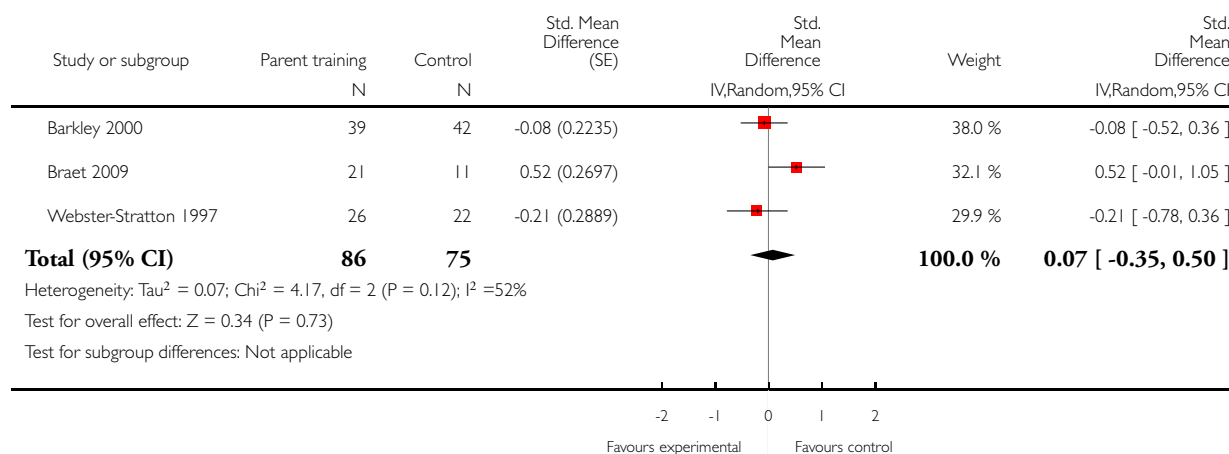


# **Analysis 16.1. Comparison 16 Parent training versus control meta-analysis of child cognitive ability: independent report, Outcome 1 Meta-analysis of child cognitive ability: independent report.**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 16 Parent training versus control meta-analysis of child cognitive ability: independent report

Outcome: 1 Meta-analysis of child cognitive ability: independent report

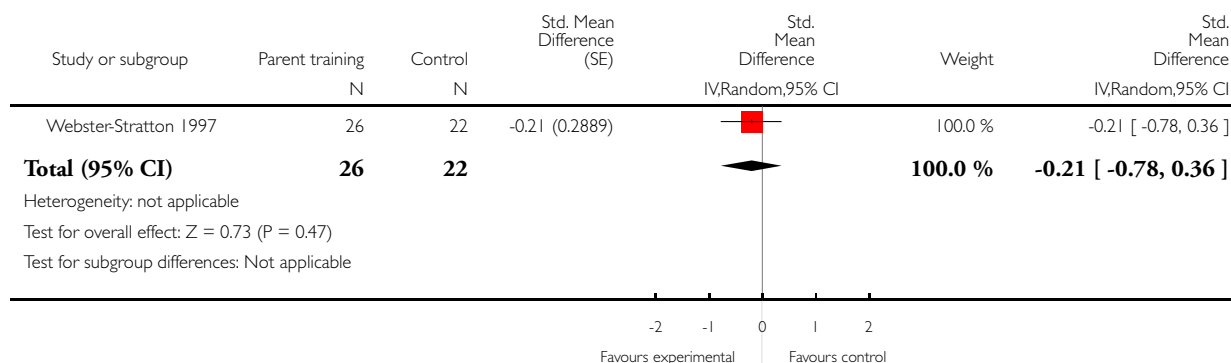


**Analysis 16.2. Comparison 16 Parent training versus control meta-analysis of child cognitive ability: independent report, Outcome 2 Sensitivity analysis remove quasi-randomised studies (Child cognitive ability: independent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 16 Parent training versus control meta-analysis of child cognitive ability: independent report

Outcome: 2 Sensitivity analysis remove quasi-randomised studies (Child cognitive ability: independent report)

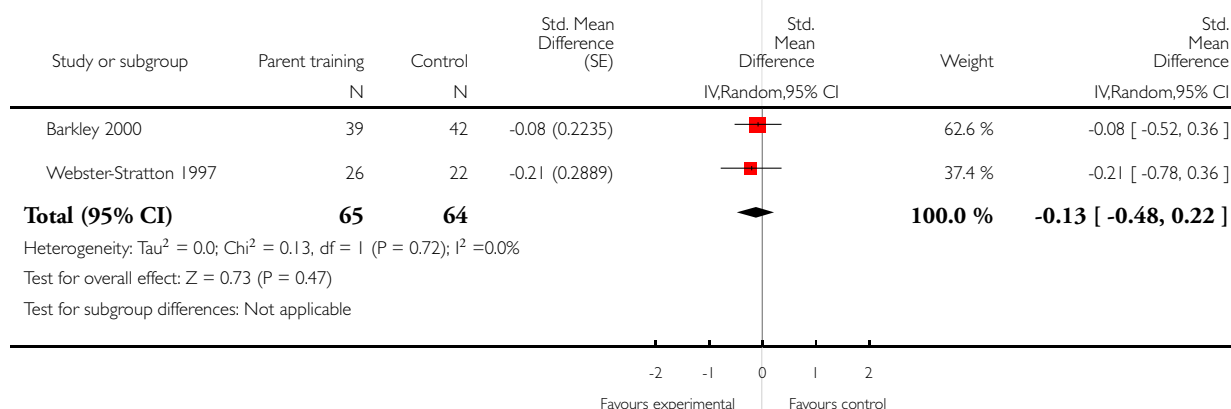


**Analysis 16.3. Comparison 16 Parent training versus control meta-analysis of child cognitive ability: independent report, Outcome 3 Sensitivity analysis remove studies with inadequate blinding (Child cognitive ability: independent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 16 Parent training versus control meta-analysis of child cognitive ability: independent report

Outcome: 3 Sensitivity analysis remove studies with inadequate blinding (Child cognitive ability: independent report)

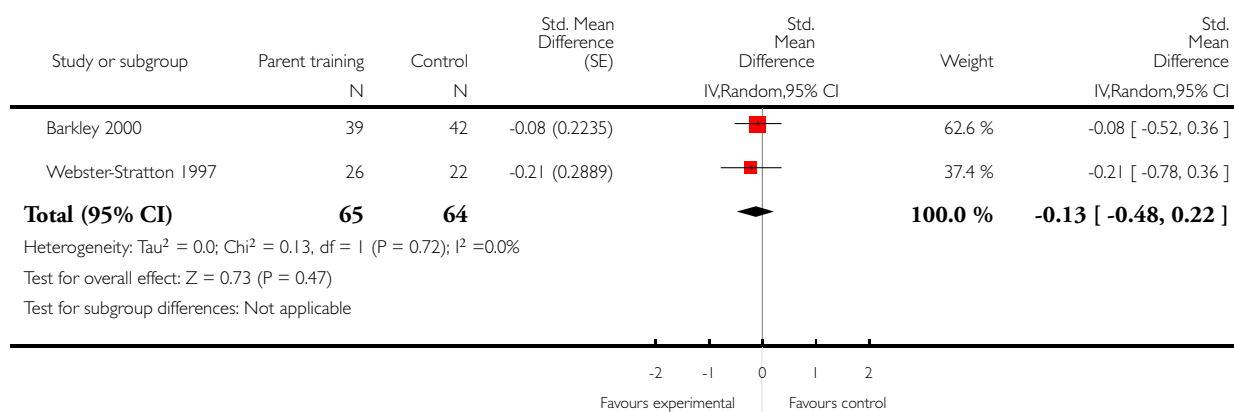


**Analysis 16.4. Comparison 16 Parent training versus control meta-analysis of child cognitive ability: independent report, Outcome 4 Sensitivity analysis remove studies with no intention to treat analysis (Child cognitive ability: independent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 16 Parent training versus control meta-analysis of child cognitive ability: independent report

Outcome: 4 Sensitivity analysis remove studies with no intention to treat analysis (Child cognitive ability: independent report)

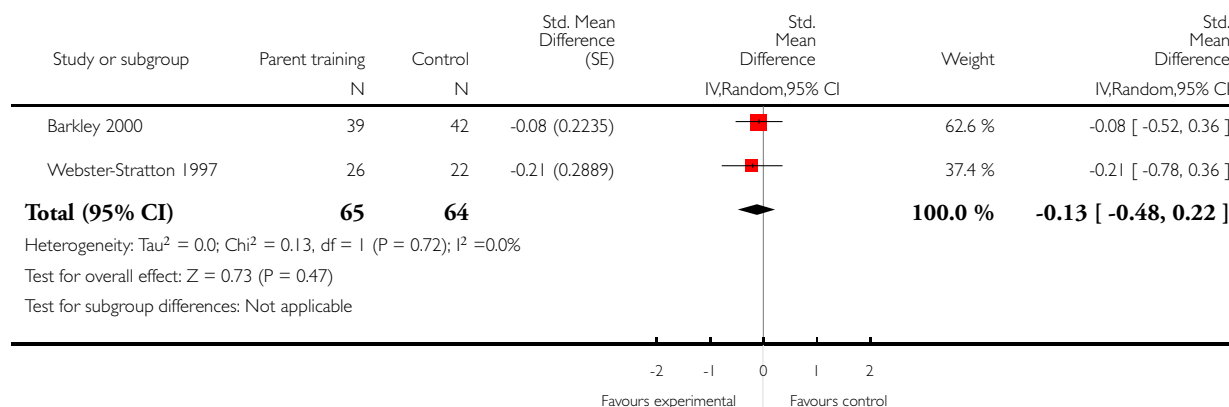


**Analysis 16.5. Comparison 16 Parent training versus control meta-analysis of child cognitive ability: independent report, Outcome 5 Sensitivity analysis remove studies with attrition over 20% and no ITT (Child cognitive ability: independent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 16 Parent training versus control meta-analysis of child cognitive ability: independent report

Outcome: 5 Sensitivity analysis remove studies with attrition over 20% and no ITT (Child cognitive ability: independent report)

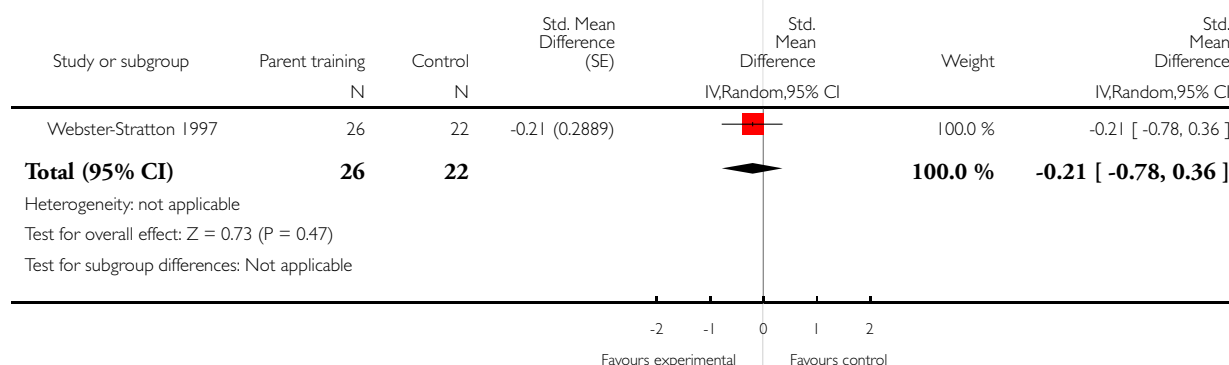


**Analysis 16.6. Comparison 16 Parent training versus control meta-analysis of child cognitive ability: independent report, Outcome 6 Sensitivity analysis remove studies with high risk of bias (Child cognitive ability: independent report).**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 16 Parent training versus control meta-analysis of child cognitive ability: independent report

Outcome: 6 Sensitivity analysis remove studies with high risk of bias (Child cognitive ability: independent report)

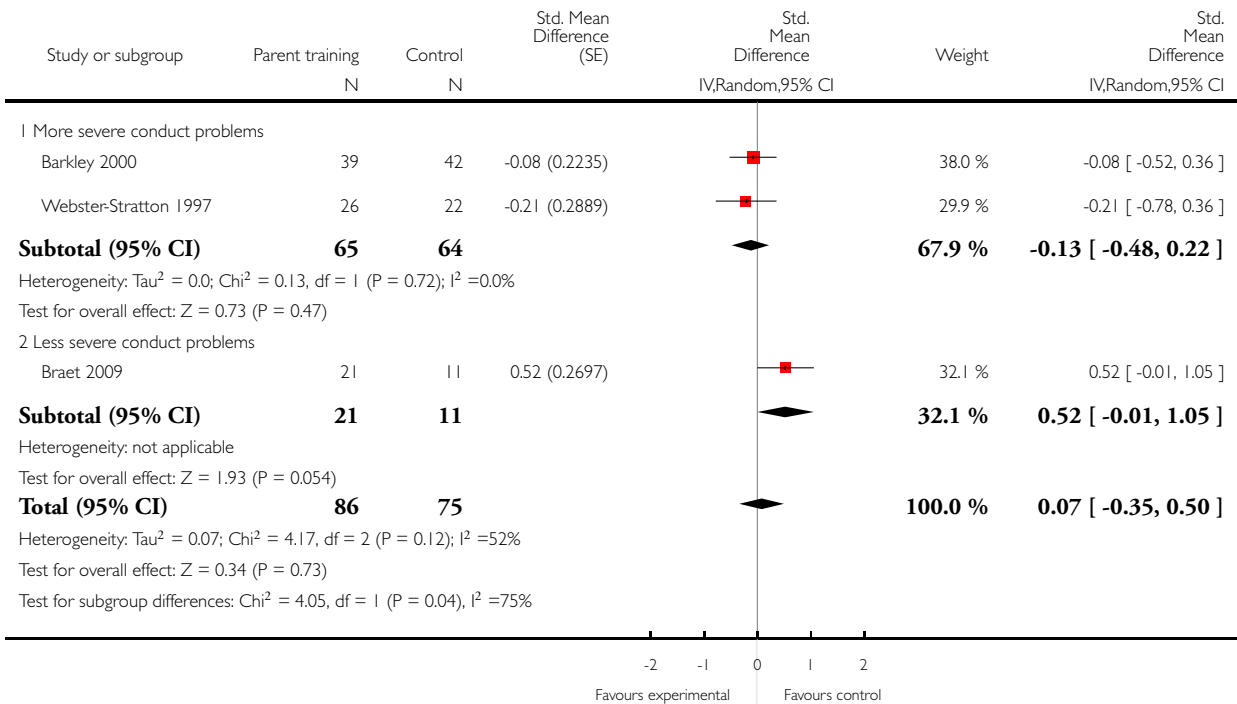


**Analysis 16.7. Comparison 16 Parent training versus control meta-analysis of child cognitive ability: independent report, Outcome 7 Subgroup severity of conduct problems of child cognitive ability: independent report.**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 16 Parent training versus control meta-analysis of child cognitive ability: independent report

Outcome: 7 Subgroup severity of conduct problems of child cognitive ability: independent report



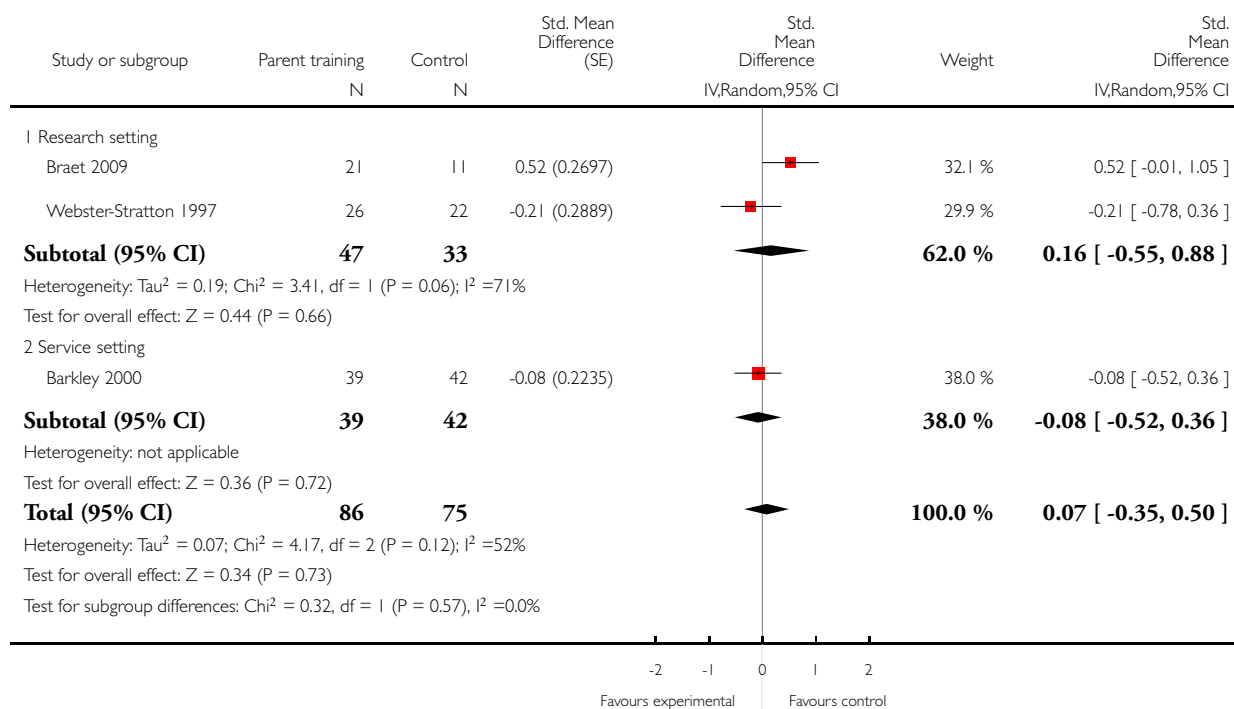


# **Analysis 16.8. Comparison 16 Parent training versus control meta-analysis of child cognitive ability: independent report, Outcome 8 Subgroup trial setting of child cognitive ability: independent report.**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 16 Parent training versus control meta-analysis of child cognitive ability: independent report

Outcome: 8 Subgroup trial setting of child cognitive ability: independent report

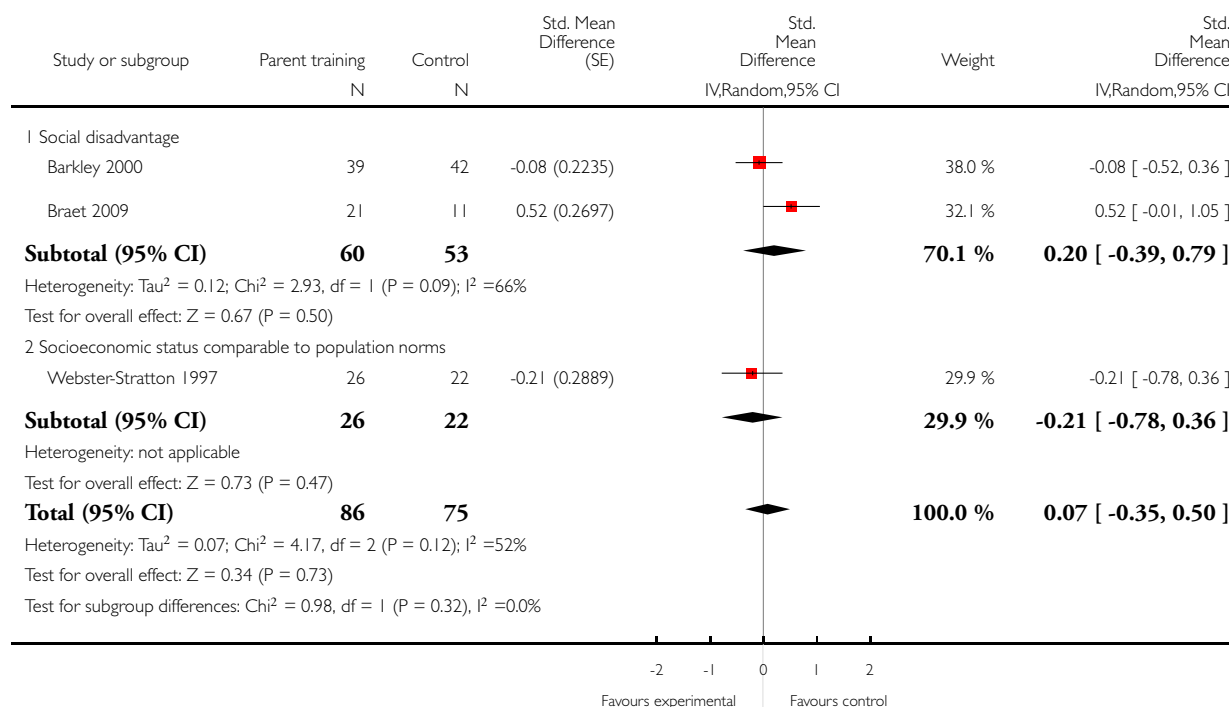


**Analysis 16.9. Comparison 16 Parent training versus control meta-analysis of child cognitive ability: independent report, Outcome 9 Subgroup socioeconomic status of child cognitive ability: independent report.**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 16 Parent training versus control meta-analysis of child cognitive ability: independent report

Outcome: 9 Subgroup socioeconomic status of child cognitive ability: independent report

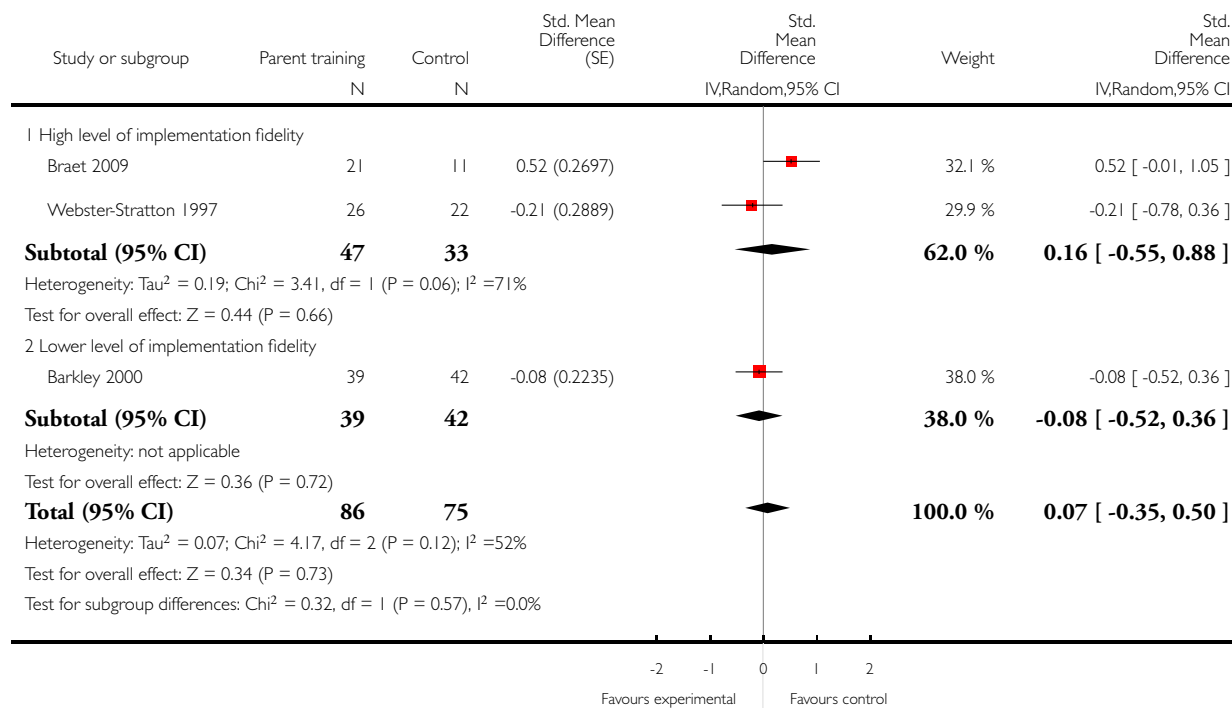


**Analysis 16.10. Comparison 16 Parent training versus control meta-analysis of child cognitive ability: independent report, Outcome 10 Subgroup level of implementation fidelity of child cognitive ability: independent report.**

Review: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years

Comparison: 16 Parent training versus control meta-analysis of child cognitive ability: independent report

Outcome: 10 Subgroup level of implementation fidelity of child cognitive ability: independent report



## APPENDICES

### Appendix I. Search strategies

We identified records through (1) searching electronic databases; (2) using Google to search parent training websites; and (3) hand-searching reference lists of included studies and of previous reviews in the field of parenting programmes.

(1) These are the search terms entered into electronic databases:

#### MEDLINE search strategy

MEDLINE, 1950 to present. Searched via First Search 23/01/2011

- 1 Conduct Disorder/
  - 2 conduct disorder\*.ab.
  - 3 (oppositional n3 (defiant\* or disorder\*)).ab.
  - 4 (conduct n3 (difficult\* or disorder\* or problem\*)).ab.
  - 5 (behavio?ral n3 (problem\* or difficult\* or disorder\*)).ab.
  - 6 aggressive behavio?r\*.ab.
  - 7 (emotional n1 behavio?ral problem\*).ab.
  - 8 (child\* n3 behavio?r\* disorder\*).ab.
  - 9 social behavio?r disorder\*.ab.
  - 10 or/1-9
  - 11 ((parent\* or famil\*) n1 (program\* or intervention\* or train\* or educat\*)).ab.
  - 12 behavior therapy/ or cognitive therapy/
  - 13 (behavio?r\* n3 train\*).ab.
  - 14 (behavio?r\* n3 intervention\*).ab.
  - 15 cbt.ab.
  - 16 (behavio?r\* n3 therap\*).ab.
  - 17 (cognitive n3 (therap\* or train\* or intervention\* or program\*)).ab.
  - 18 or/12-17
  - 19 antisocial behavio?r.ab.
  - 20 antisocial problem\*.ab.
  - 21 antisocial difficult\*.ab.
  - 22 externalising disorder\*.ab.
  - 23 child psychopathol\*.ab.
  - 24 externalising problem\*.ab.
  - 25 disruptive behavio?r.ab.
  - 26 or/19-25
  - 27 10 or 26
  - 28 11 and 18 and 27
  - 29 Econom\* or cost\* or price\* or budget\* or resource\* or utilisation n3 ((parent\* or famil\*) n1 (program\* or intervention\* or train\* or educat\* or effect\* or evaluat\*)).ab.
  - 30 "Costs and Cost Analysis"/
  - 31 29 or 30
  - 32 11 and 18 and 27 and 31
  - 33 28 or 32
- (498 records)

#### CENTRAL search strategy

CENTRAL searched via the Cochrane Library 23/01/2011 (2011, Issue 1)

- 1 Conduct Disorder.ti, ab, kw.
- 2 conduct disorder\*.ti, ab, kw.
- 3 (oppositional near/3 (defiant\* or disorder\*)).ti, ab, kw.
- 4 (conduct near/3 (difficult\* or disorder\* or problem\*)).ti, ab, kw.

5 (behavio?ral near/3 (problem\* or difficult\* or disorder\*)).ti, ab, kw.  
 6 aggressive behavio?r\*.ti, ab, kw.  
 7 (emotional near/1 behavio?r\* problem\*).ti, ab, kw.  
 8 (child\* near/3 behavio?r\* disorder\*).ti, ab, kw.  
 9 social behavio?r disorder\*.ti, ab, kw.  
 10 or/1-9  
 11 ((parent\* or famil\*) next (program\* or intervention\* or train\* or  
 educat\*)).ti, ab, kw.  
 12 behavior therapy or cognitive therapy. ti, ab, kw.  
 13 (behavio?r\* near/3 train\*).ti, ab, kw.  
 14 (behavio?r\* near/3 intervention\*).ti, ab, kw.  
 15 cbt.ti, ab, kw.  
 16 (behavio?r\* near/3 therap\*).ti, ab, kw.  
 17 (cognitive near/3 (therap\* or train\* or intervention\* or  
 program\*)).ti, ab, kw.  
 18 or/12-17  
 19 antisocial behavio?r.ti, ab, kw.  
 20 antisocial problem\*.ti, ab, kw.  
 21 antisocial difficul\*.ti, ab, kw.  
 22 externalising disorder\*.ti, ab, kw.  
 23 child psychopathol\*.ti, ab, kw.  
 24 externalising problem\*.ti, ab, kw.  
 25 disruptive behavio?r.ti, ab, kw.  
 26 or/19-25  
 27 10 or 26  
 28 11 and 18 and 27  
 29 Econom\* or cost\* or price\* or budget\* or resource\* or utili?sation near/3  
 ((parent\* or famil\*) near/2 (program\* or intervention\* or training or  
 education or effect\* or evaluat\*)).ti, ab, kw.  
 30 Costs and Cost Analysis. ti, ab, kw.  
 31 29 or 30  
 32 11 and 18 and 27 and 31  
 33 28 or 32  
 (2,858 records)

#### **Academic Search Premier (EBSCO Publishing)**

Academic Search Premier, 1970 to present. Searched via EBSCO 24/01/2011

(Conduct disorder\* or oppositional n5 (defiant\* or disorder\*) or conduct n5 difficult\* or conduct n5 disorder\* or conduct n5 problem\*  
 or behavio#r\* n5 problem\* or behavio#r\* n5 difficult\* or behavio#r\* n5 disorder\* or aggressive n3 behavio#r\* or emotional n5 behavio#  
 r\* problem\* or child\* n1 behavio#r\* disorder\* or social n1 behavio#r\* n1 disorder\* or antisocial n3 behavio#r\* or antisocial n3 problem\*  
 or antisocial n3 difficult\* or externalising n3 disorder\* or child\* n3 psychopathol\* or externalising n3 problem\* or disruptive n3  
 behavio#r\*).tx AND (parent\* n5 program\* or parent\* n5 intervention\* or parent\* n5 training or parent\* n5 education\* or famil\* n5  
 program\* or famil\* n5 intervention\* or famil\* n5 training or famil\* education\* or behaviour therapy or cognitive therapy or behavio#  
 r\* n3 train\* or behavio#r\* n3 intervention or cbt or behavio#r\* n5 therap\* or cognitive n3 therap\* or cognitive n3 train\* or cognitive  
 n3 intervention\* or cognitive n3 program\*).tx or/and (economy\* or cost\* or price\* or budget\* or resource\* or utili#ation n5 (parent\*  
 or famil\*) n5 (program\* or intervention\* or train\* or education\* or effect\* or evaluat).tw or costs and cost analysis). tx (511 records)

#### **ASSIA (through CSA)**

ASSIA, 1987 to present. Searched via CSA 24/01/2011

(Conduct disorder\* or oppositional within 5 (defiant\* or disorder\*) or conduct within 5 difficult\* or conduct within 5 disorder\* or  
 conduct within 5 problem\* or behavio\*r\* within 5 problem\* or behavio\*r\* within 5 difficult\* or behavio\*r\* within 5 disorder\* or  
 aggressive within 3 behavio\*r\* or emotional within 5 behavio\*r\* problem\* or child\* behavio\*r\* disorder\* or social behavio\*r\* disorder\*  
 or antisocial within 3 behavio\*r\* or antisocial within 3 problem\* or antisocial within 3 difficult\* or externalising within 3 disorder\* or  
 child\* within 3 psychopathol\* or externalising within 3 problem\* or disruptive within 3 behavio\*r\*).ab, kw AND (parent\* within 5  
 program\* or parent\* within 5 intervention\* or parent\* within 5 training or parent\* within 5 education\* or famil\* within 5 program\* or

famil\* within 5 intervention\* or famil\* within 5 training or famil\* education\* or behaviour therapy or cognitive therapy or behavior\*  
n3 train\* or behavior\* within 3 intervention or cbt or behavior\* within 5 therap\* or cognitive within 3 therap\* or cognitive within  
3 train\* or cognitive within 3 intervention\* or cognitive within 3 program\*).ab, kw or/and (economy\* or cost\* or price\* or budget\* or  
resource\* or utilization within 5 (parent\* or famil\*) within 5 (program\* or intervention\* or train\* or education\* or effect\* or evaluat).ab  
or costs and cost analysis). ab, kw (1177 records)

#### **CINAHL**

CINAHL, 1982 to present. Searched via EBSCO 24/01/2011

(Conduct disorder\* or oppositional n5 (defiant\* or disorder\*) or conduct n5 difficult\* or conduct n5 disorder\* or conduct n5 problem\*  
or behavior#r\* n5 problem\* or behavior#r\* n5 difficult\* or behavior#r\* n5 disorder\* or aggressive n3 behavior#r\* or emotional n5 behavior#  
r\* problem\* or child\* n1 behavior#r\* disorder\* or social n1 behavior#r\* n1 disorder\* or antisocial n3 behavior#r\* or antisocial n3 problem\*  
or antisocial n3 difficult\* or externalising n3 disorder\* or child\* n3 psychopathol\* or externalising n3 problem\* or disruptive n3  
behavior#r\*).tx AND (parent\* n5 program\* or parent\* n5 intervention\* or parent\* n5 training or parent\* n5 education\* or famil\* n5  
program\* or famil\* n5 intervention\* or famil\* n5 training or famil\* education\* or behaviour therapy or cognitive therapy or behavior#  
r\* n3 train\* or behavior#r\* n3 intervention or cbt or behavior#r\* n5 therap\* or cognitive n3 therap\* or cognitive n3 train\* or cognitive  
n3 intervention\* or cognitive n3 program\*).tx or/and (economy\* or cost\* or price\* or budget\* or resource\* or utilization n5 (parent\*  
or famil\*) n5 (program\* or intervention\* or train\* or education\* or effect\* or evaluat).tw or costs and cost analysis). tx (1334 records)

#### **Dissertations and Theses Abstracts**

Dissertations and Theses Abstracts, 1980 to present. Searched via ProQuest 27/01/2011

TEXT(parent\* w/1 program\* OR parent\* w/1 intervention\* OR parent\* w/1 train\* OR parent\* w/1 education\* OR famil\* w/1  
program\* OR famil\* w/1 intervention\* OR famil\* w/1 train\* OR famil\* w/1 education OR behavior therap\* OR cognitive therap\* OR  
behavior\* w/3 train\* OR behavior\* w/3 intervention\* OR cbt OR behavior\* w/3 therap\* OR cognitive w/3 therap\* OR cognitive  
w/3 train\* OR cognitive w/3 intervention\* OR cognitive w/3 program\* ) AND TEXT(conduct disorder or conduct disorder\* OR  
oppositional w/3 defiant\* OR oppositional w/3 disorder\* OR conduct w/3 difficult\* OR conduct w/3 disorder\* OR conduct w/3  
problem\* OR behavior\* w/3 problem\* OR behavior\* w/3 difficult\* OR behavior\* w/3 disorder\* OR aggressive behavior\* OR  
emotional w/1 behavior\* problem\* OR child\* w/3 behavior\* disorder\* OR social behavior\* disorder\* or antisocial behavior\* OR  
antisocial problem\* OR antisocial difficult\* OR externalising disorder\* OR externalising problem\* OR child\* psychopathol\* OR  
disruptive behavior\*) (57 records)

#### **EMBASE**

EMBASE, 1980 to present. Searched via Ovid 27/01/2011

- 1 Conduct Disorder/
- 2 conduct disorder\$.tw
- 3 (oppositional adj3 (defiant\$ or disorder\$)).tw
- 4 (conduct adj5 (difficult\$ or disorder\$ or problem\$)).tw.
- 5 (behavior#r\$ adj5 (problem\$ or difficult\$ or disorder\$)).tw.
- 6 aggressive behavior#r\$.tw.
- 7 (emotional adj5 behavior#r\$ problem\$).tw.
- 8 (child\$ adj3 behavior#r\$ disorder\$).tw.
- 9 social behavior#r disorder\$.tw.
- 10 or/1-9
- 11 ((parent\$ or famil\$) adj5 (program\$ or intervention\$ or training or  
education)).tw.
- 12 behavior therapy or cognitive therapy.tw
- 13 (behavior#r\$ adj5 train\$).tw.
- 14 (behavior#r\$ adj5 intervention\$).tw.
- 15 cbt.tw.
- 16 (behavior#r\$ adj5 therap\$).tw.
- 17 (cognitive adj3 (therap\$ or train\$ or intervention\$ or  
program\$)).tw.
- 18 or/12-17
- 19 antisocial behavior#r\$.tw.
- 20 antisocial problem\$.tw.
- 21 antisocial difficult\$.tw.
- 22 externalising disorder\$.tw.

23 child psychopathol\$.tw.  
 24 externalising problem\$.tw.  
 25 disruptive behavior\$.tw.  
 26 or/19-25  
 27 10 or 26  
 28 11 and 18 and 27  
 29 Econom\$ or cost\$ or price\$ or budget\$ or resource\$ or utilization adj  
 ((parent\$ or famil\$) adj (program\$ or intervention\$ or training or  
 education or effect\$ or evaluation\$)).tw  
 30 Costs and Cost Analysis/  
 31 29 or 30  
 32 11 and 18 and 27 and 31  
 33 28 or 32

(248 records)

#### ERIC search strategy

ERIC, 1966 to present. Searched via First Search 28/01/2011

1 Conduct Disorder/  
 2 conduct disorder\*.ab.  
 3 (oppositional n3 (defiant\* or disorder\*)).ab.  
 4 (conduct n3 (difficult\* or disorder\* or problem\*)).ab.  
 5 (behavioral n3 (problem\* or difficult\* or disorder\*)).ab.  
 6 aggressive behavior\*.ab.  
 7 (emotional n1 behavioral problem\*).ab.  
 8 (child\* n3 behavior\* disorder\*).ab.  
 9 social behavior\* disorder\*.ab.  
 10 or/1-9  
 11 ((parent\* or famil\*) n1 (program\* or intervention\* or train\* or  
 education\*)).ab.  
 12 behavior therapy/ or cognitive therapy/  
 13 (behavior\* n3 train\*).ab.  
 14 (behavior\* n3 intervention\*).ab.  
 15 cbt.ab.  
 16 (behavior\* n3 therap\*).ab.  
 17 (cognitive n3 (therap\* or train\* or intervention\* or  
 program\*)).ab.  
 18 or/12-17  
 19 antisocial behavior\*.ab.  
 20 antisocial problem\*.ab.  
 21 antisocial difficult\*.ab.  
 22 externalising disorder\*.ab.  
 23 child psychopathol\*.ab.  
 24 externalising problem\*.ab.  
 25 disruptive behavior\*.ab.  
 26 or/19-25  
 27 10 or 26  
 28 11 and 18 and 27  
 29 Econom\* or cost\* or price\* or budget\* or resource\* or utilization n3  
 ((parent\* or famil\*) n1 (program\* or intervention\* or train\* or  
 education\* or effect\* or evaluation\*)).ab.  
 30 "Costs and Cost Analysis"/  
 31 29 or 30  
 32 11 and 18 and 27 and 31  
 33 28 or 32

(1707 records)

**metaRegister of Controlled Trials (mRCT)**

mRCT, 1998 to present. Searched 29/01/2011

(Conduct disorder% or oppositional defiant disorder% or conduct difficult% or conduct disorder% or conduct problem% or behavior% problem% or behavior% difficult% or behavior% disorder% or aggressive behavior% or emotional behavior% problem%) or child% behavior% disorder% or social behavior% disorder% or antisocial behavior% or antisocial problem% or antisocial difficult% or externalising disorder% or child% psychopathol% or externalising problem% or disruptive behavior%) AND (parent% program% or parent% intervention% or parent% training or parent% education% or famil% program% or famil% intervention% or famil% training or famil% education% or behaviour therapy or cognitive therapy or behavior% train% or behavior% intervention or cbt or behavior% therap% or cognitive therap% or cognitive train% or cognitive intervention% or cognitive program%) or/and (economy% or cost% or price% or budget% or resource% or utilisation (parent% or famil% or program% or intervention% or train% or education% or effect% or evaluat%) or cost and cost analysis%). (124 records)

**PsycINFO**

PsycINFO, 1872 to present. Searched via EBSCO 30/01/2011

(Conduct disorder\* or oppositional n5 (defiant\* or disorder\*) or conduct n5 difficult\* or conduct n5 disorder\* or conduct n5 problem\* or behavior#r\* n5 problem\* or behavior#r\* n5 difficult\* or behavior#r\* n5 disorder\* or aggressive n3 behavior#r\* or emotional n5 behavior#r\* problem\* or child\* n1 behavior#r\* disorder\* or social n1 behavior#r\* n1 disorder\* or antisocial n3 behavior#r\* or antisocial n3 problem\* or antisocial n3 difficult\* or externalising n3 disorder\* or child\* n3 psychopathol\* or externalising n3 problem\* or disruptive n3 behavior#r\*).tw AND (parent\* n5 program\* or parent\* n5 intervention\* or parent\* n5 training or parent\* n5 education\* or famil\* n5 program\* or famil\* n5 intervention\* or famil\* n5 training or famil\* education\* or behaviour therapy or cognitive therapy or behavior#r\* n3 train\* or behavior#r\* n3 intervention or cbt or behavior#r\* n5 therap\* or cognitive n3 therap\* or cognitive n3 train\* or cognitive n3 intervention\* or cognitive n3 program\*).tw or/and (economy\* or cost\* or price\* or budget\* or resource\* or utilization n5 (parent\* or famil\*) n5 (program\* or intervention\* or train\* or education\* or effect\* or evaluat).tw or cost and cost analysis). tw (4131 records)

**Social Science Citation Index**

SSCI, 1956 to present. Searched via ISI Web of Knowledge 30/01/2011

(Conduct disorder\* or oppositional (defiant\* or disorder\*) or conduct difficult\* or conduct disorder\* or conduct problem\* or behavior\$\* problem\* or behavior\$r\* difficult\* or behavior\$r\* disorder\* or aggressive behavior\$\* or emotional behavior\$\* problem\* or child\* behavior\$r\* disorder\* or social behavior\$r\* disorder\* or antisocial behavior\$\* or antisocial problem\* or antisocial difficult\* or externalising disorder\* or child\* psychopathol\* or externalising problem\* or disruptive behavior\$r\*).tw, RCT filter AND (parent\* program\* or parent\* intervention\* or parent\* training or parent\* education\* or famil\* program\* or famil\* intervention\* or famil\* training or famil\* education\* or behaviour therapy or cognitive therapy or behavior\$r\* train\* or behavior\$r\* intervention or cbt or behavior\$r\* therap\* or cognitive therap\* or cognitive train\* or cognitive intervention\* or cognitive program\*).tw, RCT filter or/and (economy\* or cost\* or price\* or budget\* or resource\* or utilization (parent\* or famil\*) (program\* or intervention\* or train\* or education\* or effect\* or evaluat) or cost and cost analysis). tw (175 records)

**Sociological Abstracts**

Sociological Abstracts, 1963 to present. Searched via CSA 30/01/2011

- 1 Randomi\*
- 2 Clin\* near trial\*
- 3 Conduct Disorder
- 4 conduct disorder\*
- 5 (oppositional near (defiant\* or disorder\*))
- 6 conduct near (difficult\* or disorder\* or problem\*))
- 7 (behavior?r\* near (problem\* or difficult\* or disorder\*))
- 8 aggressive behavior?r\*
- 9 emotional near behavior?ral problem\*
- 10 child\* near behavior?r\* disorder\*
- 11 social behavior:r disorder\*
- 12 or/1-11
- 13 ((parent\* or famil\*) near (program\* or intervention\* or training or education))
- 14 behavior therapy or cognitive therapy
- 15 behavior?r\* near train\*
- 16 behavior?r\* near intervention\*



17 cbt  
 18 behavio?r\* near therap\*  
 19 (cognitive near (therap\* or train\* or intervention\* or  
 program\*))  
 20 or/13-19  
 21 antisocial behavio?r  
 22 antisocial problem\*  
 23 antisocial difficult\*  
 24 externalising disorder\*  
 25 child psychopathol\*  
 26 externalising problem\*  
 27 disruptive behavio?  
 28 or/21-27  
 29 12 or 28  
 30 13 and 20 and 29  
 31 Econom\* or cost\* or price\* or budget\* or resource\* or utili?sation near  
 ((parent\* or famil\*) near (program\* or intervention\* or training or  
 education or effect\* or evaluat\*))  
 32 Costs and Cost Analysis\*  
 33 31 or 32  
 34 13 and 20 and 29 and 33  
 35 30 or 34  
 (476 records)

#### ***Economic sources***

#### **NHS Economic Evaluation Database, Health Economic Evaluations Database, DARE, Health Technology Assessments**

All four databases were searched through the CRD and Cochrane library 31/01/2011

Econ\* or cost\* near ((conduct disorder\* near (parent\* train\* or parent\* program\* or parent\* intervention\* or parent\* education\*) mh.))  
 or Econ\* or cost\* near ((oppositional defiant disorder\* near (parent\* train\* or parent\* program\* or parent\* intervention\* or parent\*  
 education\*) mh.)) or Econ\* or cost\* near ((behavio\*r\* disorder\* near (parent\* train\* or parent\* program\* or parent\* intervention\* or  
 parent\* education\*) mh.)) or Econ\* or cost\* near ((antisocial disorder\* near (parent\* train\* or parent\* program\* or parent\* intervention\*  
 or parent\* education\*) mh.)) (111 records)

#### **Econlit**

Econlit, 1969 to present. Searched through EBSCO 31/01/2011

(economy\* or cost\* or price\* or budget\* or resource\* or utili#ation n5 (parent\* or famil\*) n5 (program\* or intervention\* or train\* or  
 education\* or effect\* or evaluat).tx or costs and cost analysis). tx (11 records)

#### **Paediatric Economic Database Evaluation**

PEDE, 1980 to present. Searched 31/01/2011

Econ\* or cost\* near ((conduct disorder\* near (parent\* train\* or parent\* program\* or parent\* intervention\* or parent\* education\*))  
 or Econ\* or cost\* near ((oppositional defiant disorder\* near (parent\* train\* or parent\* program\* or parent\* intervention\* or parent\*  
 education\*)) or Econ\* or cost\* near ((behavio\*r\* disorder\* near (parent\* train\* or parent\* program\* or parent\* intervention\* or parent\*  
 education\*)) or Econ\* or cost\* near ((antisocial disorder\* near (parent\* train\* or parent\* program\* or parent\* intervention\* or parent\*  
 education\*)) or Econ\* or cost\* near ((disruptive disorder\* near (parent\* train\* or parent\* program\* or parent\* intervention\* or parent\*  
 education\*)) or econ\* or cost\* near (behavio\*r therap\* or cognitive therap\*) (33 records)

#### ***(2) Parent training websites:***

The following websites were searched:

#### **Triple P Library**

Triple P library, 1990 to present. Searched 31/01/2011

www.education.auckland.ac.nz/uoa/home/about/schools-departments/tchldv/tchldv-research/tld-research-projects/triple-p/triple-p-  
 publications`1 (143 records)

#### **Incredible Years Library**

Incredible Years library, 1980 to present. Searched 31/01/2011

www.incredibleyears.com/library (191 records)

#### **Parent Management Training**

Parent Management Training searched 31/01/2011

“Parent Management Training” entered into Google search engine. Across many websites, found 74 journal articles.

### (3) Handsearching

We examined reference lists of the included studies and of systematic and non-systematic reviews (Brestan 1998; Dimond 1999; Barlow 2000; Farmer 2002; Dretzke 2005; Dretzke 2009) identified through database searches to identify further relevant studies. We screened 2, 153 studies and retrieved the full text of any reference identified as being potentially eligible. In addition, where possible, we contacted experts and researchers working in the area, in order to search for unpublished and ongoing studies (for example, conference papers, unpublished dissertations or working papers).

## Appendix 2. Risk of bias for economic evaluations using checklists

### Edwards 2007 economic evaluation - risk of bias based on Drummond and Evers' checklists

	Issue addressed	Explanation
<b>Study design</b>		
1. The research question is stated	Yes	Examine the cost effectiveness of an RCT of the Incredible Years (IY) parenting programme versus a comparator of services as usual
2. The economic importance of the research question is stated	Yes	To investigate whether an effective intervention is also cost effective
3. The viewpoint(s) of the analysis are clearly stated and justified	Yes	A multi-agency public sector perspective, including health, social and special educational services
4. The rationale for choosing alternative programmes or interventions compared is stated	Yes	Public sector services are the standard treatment received in Wales, UK. This comparator was chosen because families would receive usual care and would also have access to the parenting programme (p.2)
5. The alternatives being compared are clearly described	Yes	The IY parenting programme delivered in 11 Sure Start service areas in Wales compared to a six month waiting list control receiving services as usual
6. The form of economic evaluation used is stated	Yes	A cost effectiveness analysis
7. The choice of form of economic evaluation is justified in relation to the questions addressed	Yes	A cost utility analysis was not conducted as study authors considered the QALY to be inappropriate for child outcomes as it measures aspects of health (for example: ability to wash self, mobility, perception of health) more appropriate to post-operative and drug interventions than to parenting programmes
<b>Data collection</b>		
8. The source(s) of effectiveness estimates used are stated	Yes	An incremental cost effectiveness ratio point estimate with a 1000 replication bootstrap to provide a confidence interval (p.11)

(Continued)

9. Details of the design and results of effectiveness study are given	Yes	Calculated ICER based on costs of programme per parent combined with service utilisation by intervention and control. Then applied ICER to unit decrease on the Eyberg Child Behaviour inventory (ECBI) (p.2). Results given on pp.1, 3-4
10. Details of the methods of synthesis or meta-analysis of estimates are given	Not appropriate	
11. The primary outcome measure(s) for the economic evaluation are clearly stated	Yes	Primary outcome was the incremental cost per unit of improvement on the intensity score of ECBI, based on mean difference between control and intervention. Other sub-outcomes included mean costs of programme per parent and mean service utilisation costs per parent
12. Methods to value benefits are stated	Yes	Used costs diaries filled in by group facilitators in four of the eleven Sure Start areas, a Client Service Receipt Inventory (CSRI) to measure service usage across health, education and social sectors, and an ICER calculation based on such data
13. Details of the subjects from whom valuations were obtained were given	Yes	Costs were calculated for 116/153 parents as had service utilisation costs data for that number, 73 were intervention and 43 were control group participants. Twenty parents were lost to follow up and a further 17 participants with incomplete service use data were excluded (p2). There were no differences on the demographical scores between those who were and were not included in the economic sample. However there was a slight difference between mean difference ECBI scores between that in the economic sample of 116 parents (27.29) and that in the Hutchings 2007a RCT (25.05). See Hutchings 2007a for more detail on participant demographics
14. Productivity changes are reported separately	No	Productivity costs were not included
15. The relevance of productivity changes to the study question is discussed	No	Productivity costs were not discussed
16. Quantities of resource use are reported separately from their unit costs	No	Frequency and costs reported separately in Tables 2, 3 and 5 for service utilisation costs but not for cost of programme per parent in Table 4.
17. Methods for estimation of quantities and unit costs are described	Yes	Cost of running programme per parent, using weekly cost diaries filled in by group leaders detailing non-recurrent costs and recurrent costs. Non-recurrent costs included programme materials and initial training of group facilitators. Recurrent costs included staff costs in preparing and delivering programme, travel costs, supervision, refreshments, transport and crèche facilities and managerial overheads, such as venue rental. For service utilisation services, national costs were applied, drawn from a number of published sources including Unit Costs of Health and Social Care 2004, NHS reference costs for

(Continued)

		2003-4, and local NHS trust and councils
18. Currency and price data are recorded	Yes	In 2003/4 euros, UK £ sterling and dollars
19. Details of currency of price adjustments for inflation or currency conversion are given	Yes	Price year was 2004 so no adjustments made for data across time points as all data was collected within 12 months
20. Details of any model used are given	Yes	A cost effectiveness analysis
21. The choice of model used and the key parameters on which it is based are justified	Yes	The ICER was based on costs of programme per parent combined with service utilisation by intervention and control. Then applied ICER to unit decrease on the ECBI across six months
<b>Analysis and interpretation of results</b>		
22. Time horizon of costs and benefits is stated	Yes	Six month data from ECBI, one full year data from CSRI. Appropriate time horizon for short term costs
23. The discount rate(s) is stated	N/A	Discounting was not needed due to costs and benefits being accrued during less than one year
24. The choice of discount rate(s) is justified	N/A	
25. An explanation is given if costs and benefits are not discounted	Yes	Discounting was not needed due to costs and benefits being accrued during less than one year
26. Details of statistical tests and confidence intervals are given for stochastic data	Yes	An incremental cost effectiveness ratio point estimate with a 1000 replication bootstrap to provide a confidence interval (p.11)
27. The approach to sensitivity analysis is given	Yes	Sensitivity analyses examined costs of roll-out of programme excluding initial set-up costs. The impact of size of group (either 8 or 12 parents per group) on mean cost of running programme was also calculated. Sensitivity analyses were conducted for children at mild, moderate and severe risk of CD (from ECBI scores) to determine whether cost-effectiveness varied with intensity of risk at baseline
28. The choice of variables for sensitivity analysis justified	Yes	ICER costs vary depending on severity of conduct problems at baseline
29. The ranges over which the variables are varied is justified	Yes	A full account of varied costs is provided and justified
30. Relevant alternatives are compared	Yes	They are compared using the ICER calculation
31. Incremental analysis is reported	Yes	An incremental cost effectiveness ratio point estimate with a 1000 replication bootstrap to provide a confidence interval was reported

(Continued)

32. Major outcomes are presented in a disaggregated as well as aggregated form	Yes	A breakdown of how the ICER was calculated was provided through reporting mean costs of running programme and mean service utilisation costs, and linked to unit decrease on the ECBI
33. The answer to the study question is given	Yes	The IY parenting intervention can reduce clinically significant conduct problems for a modest cost per child
34. Conclusions follow from the data reported	Yes	The conclusions follow based on the costs that were presented
35. Conclusions are accompanied by the appropriate caveats	Yes	Sensitivity analyses reveal how costs can differ depending on the variables outlined above
<b>Other issues, modified from Evers checklist</b>		
36. Are all important and relevant costs for each alternative identified?	Unclear	Both non-recurrent and recurrent costs were included, as well as a detailed breakdown of service frequency and unit costs. Any possible productivity costs or productivity benefits to parents were not discussed. Attending the programme may have affected work hours or leisure time. However costs to employment agencies could be offset considering the improved mental health of parents and the improved behaviour of their children
37. Measures of variance for all parameters	No	95% confidence intervals were provided for the ICER. However there were no measures of variance for the mean cost of running the parenting programme or for mean service utilisation costs
38. Does the article indicate that there is no potential conflict of interest of study researchers(s) and funder(s)?	Yes	Research grant was from the Health Foundation, grant no 1583/2594. Although JH is paid by Incredible Years for running occasional training courses in the delivery of the parent programme, the funding from the research grant could not be said to act as a conflict of interest

#### O' Neill 2010 economic evaluation - risk of bias based on Drummond and Evers' checklists

	Issue addressed	Explanation
<b>Study design</b>		
1. The research question is stated	Yes	Examine the cost effectiveness of an RCT of the Incredible Years (IY) parenting programme versus a comparator of services as usual
2. The economic importance of the research question is stated	Yes	To investigate whether an effective intervention is also cost effective

(Continued)

3. The viewpoint(s) of the analysis are clearly stated and justified	Yes	A multi-agency public sector perspective, including health, social and special educational services
4. The rationale for choosing alternative programmes or interventions compared is stated	Yes	Public sector services are the standard treatment received in Ireland
5. The alternatives being compared are clearly described	Yes	The IY parenting programme delivered in community-based settings in Ireland compared to a six month waiting list control receiving services as usual
6. The form of economic evaluation used is stated	Yes	A cost effectiveness analysis and cost benefit analysis
7. The choice of form of economic evaluation is justified in relation to the questions addressed	Yes	A cost utility analysis was not conducted as study authors considered the QALY to be inappropriate for child outcomes as it measures aspects of health (for example: ability to wash self, mobility, perception of health) more appropriate to post-operative and drug interventions than to parenting programmes
<b>Data collection</b>		
8. The source(s) of effectiveness estimates used are stated	Yes	An incremental cost effectiveness ratio point estimate with a 1000 replication bootstrap to provide a confidence interval (p.11)
9. Details of the design and results of effectiveness study are given	Yes	Calculated ICER based on costs of programme per parent combined with service utilisation by intervention and control. Then applied ICER to unit decrease on the Eyberg Child Behaviour inventory (ECBI). Results given on pp.8-12, Tables and Figures on p.26-30
10. Details of the methods of synthesis or meta-analysis of estimates are given	Not appropriate	
11. The primary outcome measure(s) for the economic evaluation are clearly stated	Yes	Primary outcome was the incremental cost per unit of improvement on the intensity score of ECBI, based on mean difference between control and intervention. Other sub-outcomes included mean costs of programme per parent and mean service utilisation costs per parent
12. Methods to value benefits are stated	Yes	Used costs diaries filled in by all group facilitators, a Service Utilisation Questionnaire (SUQ) to measure service usage across health, education and social sectors, and an ICER calculation based on such data
13. Details of the subjects from whom valuations were obtained were given	Yes	Costs were calculated for 112/149 parents as had service utilisation costs data for that number, 74 were intervention and 38 were control group participants. Twelve parents were lost to follow up and a further 25 participants with incomplete service use data were excluded (p4). There were no differences on the ECBI scores and demographic scores between those who were and were not included in the eco-

(Continued)

		nomic sample. See McGilloway 2009 for more detail on participant demographics
14. Productivity changes are reported separately	No	Productivity costs were not included
15. The relevance of productivity changes to the study question is discussed	No	Productivity costs were not discussed
16. Quantities of resource use are reported separately from their unit costs	No	Frequency and costs reported separately in Tables 2, 3 and 5 for service utilisation costs but not for cost of programme per parent in Table 4.
17. Methods for estimation of quantities and unit costs are described	Yes	Cost of running programme per parent, using weekly cost diaries filled in by group leaders detailing recurrent costs. Recurrent costs included staff costs in preparing and delivering programme, travel costs, supervision, refreshments, transport and crèche facilities and managerial overheads, such as venue rental. For service utilisation services, some categories (for example, GP visits), there are well-established national costs. For some of the others (for example: A&E, Outpatient and Overnight stay in paediatric hospital) costs were obtained from the Casemix/HIPE unity of the Health Service Executive, the organisation charged with running the public health system in Ireland
18. Currency and price data are recorded	Yes	In 2009 euros, UK £ sterling and dollars
19. Details of currency of price adjustments for inflation or currency conversion are given	Yes	Price year was 2009 so no adjustments made for data across time points as all data was collected within 12 months
20. Details of any model used are given	Yes	A cost effectiveness analysis
21. The choice of model used and the key parameters on which it is based are justified	Yes	The ICER was based on costs of programme per parent combined with service utilisation by intervention and control. Then applied ICER to unit decrease on the ECBI across six months
<b>Analysis and interpretation of results</b>		
22. Time horizon of costs and benefits is stated	Yes	Six month data from ECBI, one full year data from SUQ. Appropriate time horizon for short term costs
23. The discount rate(s) is stated	N/A	Discounting was not needed due to costs and benefits being accrued during less than one year
24. The choice of discount rate(s) is justified	N/A	

(Continued)

25. An explanation is given if costs and benefits are not discounted	Yes	Discounting was not needed due to costs and benefits being accrued during less than one year
26. Details of statistical tests and confidence intervals are given for stochastic data	Yes	An incremental cost effectiveness ratio point estimate with a 1000 replication bootstrap to provide a confidence interval (p.11)
27. The approach to sensitivity analysis is given	Yes	Sensitivity analyses were conducted for children at mild, moderate and severe risk of CD (from ECBI scores) to determine whether cost-effectiveness varied with intensity of risk at baseline
28. The choice of variables for sensitivity analysis justified	Yes	ICER costs vary depending on severity of conduct problems at baseline
29. The ranges over which the variables are varied is justified	Yes	A full account of varied costs is provided and justified
30. Relevant alternatives are compared	Yes	They are compared using the ICER calculation
31. Incremental analysis is reported	Yes	An incremental cost effectiveness ratio point estimate with a 1000 replication bootstrap to provide a confidence interval was reported
32. Major outcomes are presented in a disaggregated as well as aggregated form	Yes	A breakdown of how the ICER was calculated was provided through reporting mean costs of running programme and mean service utilisation costs, and linked to unit decrease on the ECBI
33. The answer to the study question is given	Yes	The IY parenting intervention can reduce clinically significant conduct problems for a modest cost per child
34. Conclusions follow from the data reported	Yes	The conclusions follow based on the costs that were presented
35. Conclusions are accompanied by the appropriate caveats	Not clear	The study does not include non-recurrent start up costs of running programme and how this may have increased the ICER estimate
<b>Other issues, modified from Evers checklist</b>		
36. Are all important and relevant costs for each alternative identified?	No	Non-recurrent start up costs of running programme are not included, which represent 18% of total costs of running programme in Edwards 2007. SUQ may not include all possible health, social and educational costs. The impact of these missing costs on the ICER estimate is unclear
37. Measures of variance for all parameters	No	Standard deviations were provided for mean service utilisation costs. 95% confidence intervals were provided for the ICER. However there were no measures of variance for the mean cost of running the parenting programme



(Continued)

38. Does the article indicate that there is no potential conflict of interest of study researchers(s) and funder(s)?	Yes	Funding was provided by Atlantic Philanthropies and the research was conducted as an independent evaluation of the Incredible Years series in Ireland
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### Appendix 3. Response from contacted authors

All included authors were contacted for further details on participant characteristics, randomisation and blinding procedures, validity of measures used and incomplete data in outcomes. All authors responded except [Larsson 2008](#). All of those authors who responded, provided extra information on participant characteristics, randomisation, blinding, validity of measures used and some gave reasons for attritions and/or exclusions. The authors of nine studies ([Webster-Stratton 1984](#); [Webster-Stratton 1988](#); [Webster-Stratton 1997](#); [Scott 2001a](#); [Martin 2003](#); [Webster-Stratton 2004a](#); [Gardner 2006](#); [Larsson 2008](#); [Braet 2009](#)) did not conduct an ITT analysis and were requested to provide either the means and Sds for all outcomes using an ITT analysis, or to present their raw data in order to allow us to conduct an ITT analyses upon the raw data. Only [Scott 2001a](#) provided their raw data and an ITT analysis, using the method of last observation carried forward, was subsequently performed. The other authors stated that, due to time and funding restraints, they were not in a position to conduct ITT analyses on their data. We were able to calculate the adjusted Sds within [Webster-Stratton 1984](#) from the p, t, and mean values reported in the study. [Webster-Stratton 2004a](#) also provided us with individual means and Sds for each outcome in their study, which had been reported as aggregated/composite results within the published paper. In addition, they provided us with the sample sizes for a number of dichotomous outcomes of child conduct problems which were not reported fully in the paper. We were unable to include a number of outcomes from [Larsson 2008](#) due to missing sample sizes for, and reportage of, composite rather than individual means and Sds for outcomes. Authors from the two costs studies ([Edwards 2007](#); [O' Neill 2011](#)) provided extra information on resource utilisation and unit costs.

### Appendix 4. Total costs and cost per child of running Incredible Years parenting programme

Edwards 2007: Recurrent and non-recurrent costs of running the Incredible Years parenting group over 12 sessions

	Mean (SD) unit cost (2004 UK £)	Mean (SD) units	Total cost (£)
<b>Non-recurrent initial training and group set up costs</b>			
Materials (programme kit)	735	1	735
<i>Initial group leader training:</i>			
Training course fee	350.00 per leader	2 leaders/group	700
Time at training course for two leaders	22.94 (5.27)/hour	45 hours	1032.1
Travel time to training course	22.94 (5.27)/hour	8 hours	183.52
Mileage to attend course for two leaders	0.34/mile	160 miles	54.24

(Continued)

Subtotal			2704.86
<b>Recurrent group running costs</b>			
<i>Supervision of group leaders before start of programme:</i>			
Time for two group leaders with trainer	22.94 (5.27)/hour	6 hours	137.61
Travel time for two group leaders to supervision	22.94 (5.27)/hour	4 hours	91.7
Mileage	0.34/mile	640 miles	217.6
Trainer costs	62.50/hour	1 hour	62.5
<i>Recruitment of parents:</i>			
Time for two group leaders spent in visits to recruit parents	22.94 (5.27)/hour	24 hours	550.56
Group leader travel time to recruit parents	22.94 (5.27)/hour	12 hours	275.28
Cost of telephone calls to recruit parents	0.03 per min	210 mins	6.3
<i>Group costs:</i>			
Group materials pack			611.45
Time for two group leaders running sessions	22.94 (5.27)/hour	51.81 (2.94) hours	1188.35
Time for two group leaders outside sessions (preparation, administration, follow up with parents)	22.94 (5.27)/hour	139.11 (13.73) hours	3190.51
Time for two group leaders in three hour weekly supervision with trainer	22.94 (5.27)/hour	72 hours	1651.36
Travel time for two group leaders to attend weekly supervision with trainer	22.94 (5.27)/hour	48 hours	1100.91

(Continued)

Mileage	0.34/mile	1920 miles	650.88
IY trainer costs for weekly supervision	62.50/hour	12 hours	750
Costs of clerical support to group	9.70/hour	8 hours	77.6
Telephone calls to parents	0.03/min	1129.8 (688.8) mins	33.98
Transport and crèche facilities			1057.57
Venue rental and refreshments			1109.63
<b>Subtotal</b>			12 763.65
<i>Cost of establishing and running parenting group over 12 week programme:</i>			
Total			15 468.51
Cost/child based on 8/group			1933.56
Cost/child based on 12/group			1289.04
<i>Cost of running parenting programme excluding non-recurrent costs:</i>			
Total			12 763.65
Cost/child based on 8/group			1595.46
Cost/child based on 12/group			1063.64

**O' Neill 2010: Recurrent costs of running the Incredible Years parenting programme over 12-14 weekly sessions**

	<b>Total cost of programme (2009 Ireland EURO)</b>	<b>Average cost per group (2009 EURO)</b>	<b>Average cost per client (2009 EURO)</b>
Direct Wage costs	128 321	14 257	1296
Other costs	15 219	1691	153
Travel costs	1389.5	154	14
Total	144 929.5	16 102	1463

## Appendix 5. Service utilisation costs for intervention and control over six months: Edwards 2007

Table 4.1. Summary of health, special education, social services and hospital costs for intervention and control group across six months using 2003/4 UK Sterling values. Figures are mean total cost per child

Baseline			Six month follow up		
Cost type	Cost per Child (£)		Cost type	Cost per Child (£)	
	Intervention	Control		Intervention	Control
Health	85.85	78.06	Health	63.09	63.99
Special Education	554.59	254.78	Special Education	634.47	365.92
Social Services	57.51	60.37	Social Services	68.05	17.67
Hospital Services	190.73	80.74	Hospital Services	181.80	75.51
			Intervention	1933.56	
<b>Total</b>	888.68	473.95	<b>Total</b>	2880.98	523.09
Change in mean costs over 2 time points				1992.29	49.14
Net change in costs				1943.15	

Table 4.2. Health costs: breakdown of resources, frequency and unit costs

				Baseline				Six month follow up				
				Intervention		Wait List Control		Intervention		Waiting List Control		
Service	Unit cost (£)	Unit	Year on which unit costs based	Total units of service utilisation	Cost over six-month period (£)	Total units of service utilisation	Cost over six-month period (£)	Total units of service utilisation	Cost over six-month period (£)	Total units of service utilisation	Cost over six-month period (£)	Source of unit cost information
GP (Surgery)	18	Per Contract	2003/2004	156	2808.00	80	1440.00	81	1458.00	49	882.00	Netten & Curtis

(Continued)

												2004, Schema 9.8b
Gp (Home)	56	Per Con- tact	2003/ 2004	2	112.00	1	56.00	1	56.00	0	0.00	Netten & Cur- tis 2004, Schema 9.8b
GP (Clinic)	24	Per Con- tact	2003/ 2004	6	144.00	6	144.00	5	120.00	0	0.00	Netten & Cur- tis 2004, Schema 9.8b
Nurse (Surgery)	9	Per Con- tact	2003/ 2004	18	162.00	8	72.00	11	99.00	5	45.00	Netten & Cur- tis 2004, Schema 9.6
Nurse (Home)	16	Per Con- tact	2003/ 2004	8	128.00	0	0.00	1	16.00	0	0.00	Netten & Cur- tis 2004, Schema 9.6
Nurse (Clinic)	9.6	Per Con- tact	2003/ 2004	1	9.60	4	38.40	3	28.80	1	9.60	Netten & Cur- tis 2004, Schema 9.6
Nurse (School)	9.6	Per Con- tact	2003/ 2004	3	28.80		0.00	0	0.00	0	0.00	Netten & Cur- tis 2004, Schema 9.6
Health Visitor (Surgery)	30	Per Con- tact	2003/ 2004	14	420.00	10	300.00	7	210.00	5	150.00	Netten & Cur- tis

(Continued)

												2004, Schema 9.3
Health Visitor (Home)	31	Per visit	2003/ 2004	49	1519. 00	18	558.00	46	1426. 00	33	1023. 00	Netten & Cur- tis 2004, Schema 9.3
Health Visitor (Clinic)	30	Per contact	2003/ 2004	22	660.00	17	510.00	11	330.00	14	420.00	Netten & Cur- tis 2004, Schema 9.3
Physio- therapist (Home)	48.00	Per Visit	2003/ 2004	0	0.00	1	48.00	0	0.00	0	0.00	Netten & Cur- tis 2004, Schema 8.1
Physio- therapist (Clinic)	18.00	Per Con- tact	2003/ 2004	4	72.00	3	54.00	29	522.00	1	18.00	Netten & Cur- tis 2004, Schema 8.1
Com- munity Paedia- trician	68.00	Per Hour	2003/ 2004	3	204.00	2	136.00	5	340.00	3	204.00	Netten & Cur- tis 2004, Schema 11.3
Health services costs sub- total					6267. 40		3356. 40		4605. 80		2751. 60	
<b>Mean costs</b>				n=73	85.85	n=43	78.06	n=73	63.09	n=43	63.99	

**Table 4.5. Education costs: breakdown of resources, frequency and unit costs**

				Baseline				Six month follow up				
				Intervention		Wait List Control		Intervention		Waiting List Control group		
Service	Unit cost (£)	Unit	Year on which unit costs based	Total units of service utilisation	Cost over six-month period (£)	Total units of service utilisation	Cost over six-month period (£)	Total units of service utilisation	Cost over six-month period (£)	Total units of service utilisation	Cost over six-month period (£)	Source of unit cost information
State-ment of educa-tional needs	75	Per state-ment	2003/ 2004	4	300.00	1	75.00	2	150.00	1	75.00	Netten & Cur-tis 2004. Schema 11.5
School Doctor	56	Per Con-tact	2003/ 2004	1	56.00	2	112.00	1	56.00	0	0.00	Netten & Cur-tis 2004 Schema 9.8b
School Nurse	9.6	Per Con-tact	2003/ 2004	2	19.20	2	19.20	5	48.00	14	134.40	Netten & Cur-tis 2004 Schema 9.6
Educa-tional Social Worker	27	Per Con-tact	2003/ 2004	3	81.00	0	0.00	0	0.00	1	27.00	Netten & Cur-tis 2004 Schema 11.6
Psycho-logical Asses-ment at School	75	Per Ass-esment	2003/ 2004	3	225.00	1	75.00	3	225.00	1	75.00	Netten & Cur-tis 2004. Schema 11.5
Parent Con-sulta-tion with Head	32.85	Per Con-sulta-tion	2003/ 2004	2	65.70	2	65.70	8	262.80	2	65.70	Based on one hour of L10 spine

(Continued)

Teacher												Head Teacher time (1265 hrs a year)
Parent Con-sulta-tion with ClassTeac	18.87	Per Con-sulta-tion	2003/2004	111	2094.57	129	2434.23	41	773.67	160	3019.20	NHS Refer-ence Costs 2004, 142 TOPS FA
Physio-thera-pist	18	Per Con-tact	2003/2004	0	0.00	0	0.00	0	0.00	1	18.00	Netten & Cur-tis 2004. Schema 8.1
Speech Thera-pist	17	Per Con-tact	2003/2004	0	0.00	0	0.00	10	170.00	0	0.00	Netten & Cutis 2004. Schema 12.3
Dentist	120	Per Con-sulta-tion	2003/2004	0	0.00	0	0.00	1	120.00	0	0.00	
One-to-one class-room assis-tance (teach-ing as-sistant)	13.27	Per hour	2003/2004	2102	27893.54	616	8174.32	1202	15950.54	260	3450.20	Gwynedd Coun-cil Ed-ucation Dept
Small group assis-tance (teach-ing as-	4.42	Per hour per child (based on	2003/2004	650	2873.00	0	0.00	1794	7929.48	780	3447.60	Gwynedd Coun-cil Ed-ucation



(Continued)

stant)		3 chil- dren per group)										Dept
Special teach- ing (special needs teacher)	26.45	Per hour	2001/2	260	6877. 00	0	0.00	780	20631. 00	205	5422. 25	Gwynedd Coun- cil Ed- ucation Dept
Educa- tional costs sub- total					40485. 01		10955. 45		46316. 49		15734	
<b>Mean costs</b>				n=73	£554. 59	n=43	£254. 78	n=73	£634. 47	n=43	365.91	

**Table 4.4. Social services costs: breakdown of resources, frequency and unit costs**

				Baseline				Six month follow up				
				Intervention		Wait List Control		Intervention		Wait List Control		
Service	Unit cost (£)	Unit	Year on which unit costs based	Total units of service utilisation	Cost over six-month period (£)	Total units of service utilisation	Cost over six-month period (£)	Total units of service utilisation	Cost over six-month period (£)	Total units of service utilisation	Cost over six-month period (£)	Source of unit cost information
Respite Foster care	438.00	Per child per week	2003/ 2004	0	0.00	0	0.00	0	0.00	0	0.00	Netten & Curtis 2004, Schema 6.4
Ses-sional worker assis-tance	10.00	Per hour	2003/ 2004	2	20.00	0	0.00	0	0.00	0	0.00	Netten & Curtis 2004, Schema 10.2

(Continued)

Child social worker (Home)	52.00	Per hour	2003/2004	14	728.00	30	1560.00	32	1664.00	3	156.00	Netten & Curtis 2004, Schema 10.3
Child Social Worker (Surgery)	32.00	Per hour	2003/2004	24	768.00	0	0.00	0	0.00	1	32.00	Netten & Curtis 2004, Schema 10.3
Child social worker (Clinic)	32.00	Per hour	2003/2004	0	0.00	0	0.00	15	480.00	0	0.00	Netten & Curtis 2004, Schema 10.3
Speech Therapist (Home)	41.00	Per Contact	2003/2004	0	0.00	0	0.00	21	861.00	0	0.00	Netten & Curtis, 2004 Schema 10.3
Speech Therapist (GP Surgery)	17.00	Per Contact	2003/2004	0	0.00	0	0.00	5	85.00	1	17.00	Netten & Curtis, 2004 Schema 10.3
Speech Therapist (Clinic)	17.00	Per Contact	2003/2004	91	1547.00	10	170.00	7	119.00	8	136.00	Netten & Curtis, 2004 Schema 10.3
Speech Therapist (School)	19.30	Per Contact	2003/2004	13	250.90	26	501.80	89	1717.70	0	0.00	Netten & Curtis, 2004 Schema 10.3

(Continued)

CAMHS team member	41.00	Per hour	2003/2004	12	492.00	0	0.00	1	41.00	1	41.00	Netten & Curtis 2004, Schema 11.2
Home-start	14.00	Per hour	2001/2002	28	392.00	26	364.00	0	0.00	27	378.00	Netten & Curtis 2004, Pg 27
Social services costs sub-total					4197.90		2595.80		4967.70		760.00	
<b>Mean costs</b>				n=73	57.51	n=43	60.37	n=73	68.05	n=43	17.67	

Table 4.5. Hospital costs: breakdown of resources, frequency and unit costs

				Baseline				Six month follow Up				
				Intervention group		Wait List Control		Intervention group		Wait List Control		
Service	Unit cost (£)	Unit	Year on which unit costs based	Total units of service utilisation	Cost over six-month period (£)	Total units of service utilisation	Cost over six-month period (£)	Total units of service utilisation	Cost over six-month period (£)	Total units of service utilisation	Cost over six-month period (£)	Source of unit cost information
Emergency Services												
A+E	106.00	Per Attendance	2003/2004	16	1696.00	7	742.00	23	2438.00	13	1378.00	NHS Reference Costs

(Continued)

												2004, 180 TOPS FA
Ambu- lance call-out	211.00	Per call- out	2003/ 2004	1	211.00	1	211.00	2	422.00	0	0.00	Netten & Cur- tis 2004, Schema 7.2
<b>Outpa- tient Ap- point- ments</b>												
Ortho- pe- dics Fist Atten- dance	126.00	Per At- ten- dance	2003/ 2004	3	378.00	2	252.00	1	126.00	0	0.00	NHS Refer- ence Costs 2004, 110N TOPS FA
Ortho- pedics Follow- Up	78.00	Per At- ten- dance	2003/ 2004	0	0.00	4	312.00	0	0.00	0	0.00	NHS Refer- ence Costs 2004, 110N TOPS FU
Paedi- atrics Fist At- ten- dance	199.00	Per At- ten- dance	2003/ 2004	2	398.00	0	0.00	1	199.00	0	0.00	NHS Refer- ence Costs 2004, 420 TOPS FA
Paedi- atrics Follow-	133.00	Per At- ten- dance	2003/ 2004	2	266.00	0	0.00	0	0.00	0	0.00	NHS Refer-

(Continued)

Up												ence Costs 2004, 420 TOPS FU
Paedi- atric Den- tistry	120.00	Per At- ten- dance	2003/ 2004	1	120.00	0	0.00	1	120.00	0	0.00	NHS Refer- ence Costs 2004, 142 TOPS FA
Or- thodon- tics Fist Atten- dance	140.00	Per At- ten- dance	2003/ 2004	2	280.00	0	0.00	0	0.00	0	0.00	NHS Refer- ence Costs 2004, 143 TOPS FA
Urol- ogy Fist Atten- dance	124.00	Per At- ten- dance	2003/ 2004	1	124.00	0	0.00	1	124.00	0	0.00	NHS Refer- ence Costs 2004, 101 TOPS FA
Urol- ogy Follow- Up	78.00	Per At- ten- dance	2003/ 2004	0	0.00	0	0.00	1	78.00	0	0.00	NHS Refer- ence Costs 2004, 101 TOPS FU
Optol- ogy Fist Atten- dance	45.00	Per At- ten- dance	2003/ 2004	1	45.00	0	0.00	3	135.00	0	0.00	NHS Refer- ence Costs 2004, OPT

(Continued)

												TOPS FA
Optol- ogy Follow- Up	42.00	Per At- ten- dance	2003/ 2004	0	0.00	0	0.00	3	126.00	0	0.00	NHS Refer- ence Costs 2004, OPT TOPS FU
Hernioto Proce- dures	786.00	Per Pro- cedure	2003/ 2004	0	0.00	0	0.00	1	786.00	0	0.00	NHS Refer- ence Costs 2004, TDC F75
Speech Ther- apy Ser- vices	293.00	Per At- ten- dance	2003/ 2004	6	1758. 00	0	0.00	1	293.00	0	0.00	NHS Refer- ence Costs 2004, TTPHYS (2)
Audio- logical Medicine	111.00	Per At- ten- dance	2003/ 2004	2	222.00	0	0.00	1	111.00	1	111.00	NHS Refer- ence Costs 2004, 310 TOPS FA
Changed Dress- ing	9.60	Per At- ten- dance	2003/ 2004	0	0.00	0	0.00	4	38.40	0	0.00	
Derma- tology	96.00	Per At- ten- dance	2003/ 2004	0	0.00	0	0.00	1	96.00	0	0.00	
Physio- therapy	87.00	Per At- ten- dance	2003/ 2004	2	174.00	0	0.00	0	0.00	0	0.00	NHS Refer- ence

(Continued)

												Costs 2004, TTPHYS (2)
General Medicine	181.00	Per At- ten- dance	2003/ 2004	3	543.00	0	0.00	1	181.00	2	362.00	NHS Refer- ence Costs 2004, 300 TOPS FA
<b><i>Inpa- tient Care</i></b>												
Ap- pendic- tomy	2001. 00	Per Treat- ment	2003/ 2004	1	2001. 00	0	0.00	0	0.00	0	0.00	NHS Refer- ence Costs 2004, F81 TELIP
Sus- pected Appen- dicitis	1328. 00	Per Treat- ment	2003/ 2004	0	0.00	0	0.00	1	1328. 00	0	0.00	NHS Refer- ence Costs 2004, F83 TELIP
Head Injury	1005. 00	Per Treat- ment	2003/ 2004	1	1005. 00	0	0.00	1	1005. 00	0	0.00	NHS Refer- ence Costs 2004, H63 TELIP
Gas- troen- terol- ogy In- patient	436.00	Per Pa- tient day	2003/ 2004	1	436.00	0	0.00	0	0.00	0	0.00	Finance Depart- ment, Ysbyty Gwynedd

(Continued)

Ortho- pe- dic In- patient	768.00	Per Pa- tient day	2003/ 2004	1	768.00	0	0.00	1	768.00	0	0.00	Finance Depart- ment, Ysbyty Gwynedd
Urinary tract in- fections	2099. 00	Per Treat- ment	2003/ 2004	1	2099. 00	0	0.00	1	2099. 00	0	0.00	NHS Refer- ence Costs 2004, L09 TELIP
General Respi- tory Di- agnoses	1399. 00	Per Treat- ment	2003/ 2004	1	1399. 00	0	0.00	2	2798. 00	0	0.00	NHS Refer- ence Costs 2004, D33 TELIP
Viral Illness	1396. 00	Per Treat- ment	2003/ 2004	0	0.00	0	0.00	0	0.00	1	1396. 00	NHS Refer- ence Costs 2004, S14 TELIP
Chil- dren's Ward	88.00	Per night	2003/ 2004	0	0.00	3	264.00	0	0.00	0	0.00	NHS Refer- ence Costs 2004, 410 TWA
Grom- mets	1691. 00	Per Treat- ment	2003/ 2004	0	0.00	1	1691. 00	0	0.00	0	0.00	NHS Refer- ence Costs 2004, C31 TELIP



(Continued)

Hospital services sub-total				13923.00		3472.00		13271.40		3247.00	
Mean costs			n=73	190.73	n=43	80.74	n=73	181.80	n=43	75.51	

## Appendix 6. Service utilisation costs for intervention and control over six months: O' Neill 2010

Table 5.1. Summary of health, special education, social services and hospital costs for intervention and control groups across six months using 2009 Ireland EURO values. Figures are mean total cost per child (EURO) with standard deviations in brackets

Type of Service	Baseline		Six month follow up	
	Control	Treatment	Control	Treatment
Primary Care	112.43 (25)	150.93 (31)	107.6 (5.2)	98.7 (26.6)
Hospital Services	152.02 (75)	405.58 (179)	195.57 (76.8)	196.97 (70.34)
Special Education	826.8 (373)	556.75 (231)	450 (318)	560.5 (251.3)
Social Services	3.03 (2.6)	4.93 (2.67)	21.25 (1.46)	0
Parenting Programme	None	None	None	1463
<b>Total</b>	1094.28 (381.29)	1118.09 (293.89)	774.42 (327.19)	2319 (no Sd given)
Change in cost over 6 months			-319.86 (195.78)	1201
Net Change in Cost				1201+319.86=1520

Table 5.2. Mean frequency and unit costs of services across primary care, hospital, special education and social services at baseline and six month follow up for control and intervention conditions

			Baseline		Six month follow up		Source of costs
Service (mean visits)	Unit (EURO)	costs	Control	Intervention	Control	Intervention	
GP/doctor	45 an hour		1.16	1.74	1.32	1.24	Not given

(Continued)

Nurse	24 an hour	0.18	0.16	0.05	0.095	Dept. of Health & Children pay scales for public health nurse
Health Visitor	22.11 an hour	0.07	0.49	0.052	0.027	Dept. of Health & Children pay scales
Speech Therapist	22.11 an hour	1.9	2.4	1.24	1.45	Dept. of Health & Children pay scales
Physiotherapist	22.11 an hour	0.61	0.59	0.89	0.36	Dept. of Health & Children pay scales
Social Worker	19.23 an hour	0.15	0.26	1.1	0.01	Dept. of Health & Children pay scales for social care worker
Community Paediatrician	24 an hour	0.02	0.09	0	0.01	Not given
Special Needs Assistant (Hours)	15.20 an hour	54	36	29	37	Dept. of Education pay scales for SNA
A&E Department	273	0.11	0.23	0.21	0.14	Dept. of Health Casemix/ HIPE Unit
Outpatient stay in hospital	160	0.5	0.62	0.58	0.31	Dept. of Health Casemix/ HIPE Unit
Overnight Stay in hospital (nights)	1562	0.03	0.15	0.03	0.07	Dept. of Health Casemix/ HIPE Unit

## Appendix 7. Individual results for studies

This appendix provides a summary of Individual results of the studies for primary and secondary outcome measures. The table provides an overview of the number of individual results across studies. More detail on these results is presented within the text below.

For continuous data, a minus sign indicates that the results favour the intervention. Effect sizes smaller than 0.20 are interpreted as no evidence of effectiveness. Effect sizes above 0.20 were all treated as clinically meaningful but as small (0.20 - 0.40), moderate (0.40 - 0.75) or large (>0.75) respectively, depending on the range within which they fell. For dichotomous data, an effect size less than 1 (the line of no effect) indicates that the results favour the intervention, with a score of 0.60, for example, indicating that the intervention (when compared to the control group) reduces the risk of the child having conduct problems by 40%.

Outcome	No. of studies that measured outcome	No. of measurements for outcome across studies	No. of statistically significant results favouring PT	No. of statistically non-significant results	No. of statistically significant results favouring control
Child conduct problems	13	120	67	51	2
Parental mental health	8	13	3	10	0
Parenting practices	13	78	38	39	1
Child emotional problems	3	11	0	11	0
Child cognitive abilities	4	14	0	14	0
Parental social support	1	1	0	1	0

### 1. Individual study results for child conduct problems

All 13 studies involved an evaluation of the effectiveness of behavioural/cognitive-behavioural group-based parenting interventions in relation to child conduct problems, using a range of self report (mother and father report) and independent report measures (for example, home, classroom and clinic observations, teacher report or diagnostic interview). However, some results could not be used. There were insufficient data in [Larsson 2008](#) to calculate effect sizes for the measures of the Social Competence Scale (parent report), the Preschool Behaviour Questionnaire or the Child Behaviour Checklist (CBCL) teacher report form (both independent reports). In addition, [Gardner 2006](#) reported non-normally distributed data for this outcome using the Gardner Observation Scheme (independent report) and could not be used.

Overall, and excluding the outcome measures mentioned above, 80 different instruments (including sub-scales) with 120 comparisons were assessed across 13 studies (Analysis 1.1-1.80). Twelve of the 120 outcome measurements used dichotomous data and the remainder used continuous data. The results for 67 of the 120 outcome measurements from 11 studies showed statistically significant differences favouring the intervention group. Two studies ([Barkley 2000](#); [Braet 2009](#)) did not report any results favouring the parent training. Of the 67 positive results, one result was a small effect size of below SMD -0.40, 25 outcome measurements were moderate effect sizes ranging from SMD -0.40 to -0.75; 36 outcome measurements were large effect sizes of above SMD -0.75; and five used dichotomous data, which statistically favoured the parent training. The results from the dichotomous data are as follows:

[Scott 2001a](#) - clinical diagnosis of ODD (using ICD-10) was statistically significant in reducing the risk of conduct problems by 45% (RR 0.55; 95% CI 0.42 to 0.72, Analysis 1.70);

[Martin 2003](#) - parent report (ECBI intensity scale) was statistically significant in reducing the risk of conduct problems by 95% (RR 0.05; 95% CI 0.00 to 0.75, Analysis 1.71);

[Webster-Stratton 1997](#) - parent report (CBCL total score) was statistically significant in reducing the risk of conduct problems by 74% (RR 0.26; 95% CI 0.12 to 0.61, Analysis 1.73);

[Webster-Stratton 1997](#) - parent report (PDR negative scale) was statistically significant in reducing the risk by 89% (RR 0.11; 95% CI 0.03 to 0.41, Analysis 1.74); and

[Webster-Stratton 2004a](#) - teacher report (TASB) was statistically significant in reducing the risk by 64% (RR 0.36; 95% CI 0.17 to 0.76, Analysis 1.76).

Of the 67 positive results, 50 were parent reports and 17 were independent reports (comprising 11 home observations, two clinic observations, two teacher reports and two diagnostic interviews).

Thirty-two results across 11 studies produced statistically non-significant findings, although there was a trend favouring the intervention group. Twenty of these results were above -0.20, but they had wide confidence intervals (CIs) which run the risk of potentially producing harm as well as benefit. Of the 32 results, 14 were parent reports and 18 were independent reports. Nineteen results across four studies (Webster-Stratton 1997; Barkley 2000; Webster-Stratton 2004a; Braet 2009) showed statistically non-significant findings, with a trend favouring the control group; two of these results were based on dichotomous outcome measurements. Four of these 16 results were parent reports and 15 were independent reports (comprising eight teacher reports, four clinic observations, two diagnostic interviews and one home observation).

Two results within one study (Barkley 2000) indicated statistically significant findings favouring the control group, with both effect sizes being of moderate size: Barkley 2000 - parent report (CBCL social problems subscale): (SMD 0.45; 95% CI 0.01 to 0.89, Analysis 1.4); and Barkley 2000 - teacher report (CBCL social problems subscale): (SMD 0.48; 95% CI 0.04 to 0.92, Analysis 1.12).

## 2. Individual study results for parental mental health

Eight studies (Webster-Stratton 1988; Barkley 2000; Martin 2003; Gardner 2006; Hutchings 2007a; Larsson 2008; Braet 2009; McGilloway 2009) included an assessment of the effectiveness of behavioural/cognitive-behavioural group-based parenting interventions in relation to parental mental health. Results involved six different instruments (and subscales) with 13 outcome comparisons across the eight studies (Analysis 2.1 to 2.6). All results were based on continuous data and all were parent reports. Three of the 13 outcome measurements were statistically significant favouring the intervention group and all were of moderate effect size. These included: Hutchings 2007a (PSI total score): (SMD -0.54; 95% CI -0.89 to -0.20, Analysis 2.1); McGilloway 2009 (PSI total score): (SMD -0.41; 95% CI -0.76 to -0.06, Analysis 2.1); and Larsson 2008 - mother report (PSI total score): (SMD -0.72; 95% CI -1.21 to -0.23, Analysis 2.2).

Ten results were statistically non-significant. These were: Barkley 2000 (PSI total score): (SMD -0.37; 95% CI -0.81 to 0.07, Analysis 2.1); Braet 2009 (PSI total score): (SMD -0.04; 95% CI -0.65 to 0.57, Analysis 2.1); Webster-Stratton 1988 - mother report (PSI total score): (SMD -0.33; 95% CI -0.87 to 0.20, Analysis 2.2); Larsson 2008 - father report (PSI total score): (SMD -0.52; 95% CI -1.10 to 0.07, Analysis 2.3); Webster-Stratton 1988 - father report (PSI total score): (SMD -0.47; 95% CI -1.09 to 0.16, Analysis 2.3); Gardner 2006 (BDI): (SMD -0.34; 95% CI -0.83 to 0.15, Analysis 2.4); Hutchings 2007a (BDI): (SMD -0.28; 95% CI -0.62 to 0.06, Analysis 2.4); McGilloway 2009 (BDI): (SMD -0.18; 95% CI -0.52 to 0.17, Analysis 2.4); Martin 2003 (Depressed/anxious scale): (SMD -0.49; 95% CI -1.27 to 0.29, Analysis 2.5); and Martin 2003 (Work Stress scale): (SMD -0.19; 95% CI -0.95 to 0.58, Analysis 2.6).

## 3. Individual study results for positive and negative parenting practices

All 13 studies incorporated an evaluation of the effectiveness of the intervention in relation to positive parenting skills and 11 studies assessed the impact of the intervention on negative parenting practices, using a range of parent report (mother and father report) and independent report measures (for example, home, classroom and clinic observations, teacher report). However, one result could not be used. Gardner 2006 reported non-normally distributed data for negative parenting practices using the Gardner Observation Scheme (independent report) and was not used.

Overall, and excluding the outcome measure mentioned above, 37 comparisons across 13 studies assessed positive parenting practices (16 parent reports and 22 independent reports) and 41 comparisons across nine studies assessed negative parenting practices (see Analyses 3.1-3.63). Of the 37 assessments of positive parenting practices, 15 were statistically significant favouring the intervention group, with five results indicating moderate effect sizes and 10 results indicating large effect sizes. Twenty-one comparisons were statistically non-significant and one result was statistically significant favouring the control group: Webster-Stratton 1988 (DPICS positive affect): (SMD 0.87; 95% CI 0.31 to 1.43, Analysis 3.33). Of the 41 assessments of negative parenting practices, 23 were statistically significant favouring the intervention group, with one result indicating a small effect, seven results indicating a moderate effect and 15 results indicating a large effect. The single dichotomous result was statistically significant in reducing the risk of negative parenting practices by 58% in comparison to the control group: Webster-Stratton 1997 - home observation (DPICS clinical reduction in parental criticism): (RR 0.42; 95% CI 0.23 to 0.80, Analysis 3.50). Eighteen comparisons were statistically non-significant.

## 4. Individual study results for child emotional problems

Three studies (Barkley 2000; Larsson 2008; Braet 2009) included an evaluation of the effectiveness of behavioural/cognitive-behavioural group-based parenting interventions in relation to child emotional problems. However, there were insufficient data in one study (Larsson

2008) to calculate effect sizes for the measures of the the Preschool Behaviour Questionnaire or the CBCL -teacher report form (both independent reports).

Results involved nine different instruments (and subscales) with 11 outcome comparisons across the three studies (Analysis 4.1 to 4.9). None of the findings showed statistically significant results favouring the parent training. Seven of the results across the three studies were statistically non-significant with a trend favouring the intervention group, of which four were based on continuous data and three were dichotomous outcomes. The three dichotomous outcomes reduced the risk of childhood emotional problems but had very wide CIs, suggesting harm as well as benefit. The seven results comprised three parent reports and four independent reports.

Four results were statistically non-significant with a trend favouring the control group. They were all continuous outcomes and comprised two parent reports and two teacher reports. The effect sizes ranged from small to moderate with wide CIs.

### 5. Individual study results for child educational/cognitive abilities

Four studies (Webster-Stratton 1997; Barkley 2000; Larsson 2008; Braet 2009) involved an assessment of the effectiveness of behavioural/cognitive-behavioural group-based parenting interventions in relation to child educational/cognitive abilities. However, Larsson 2008 had insufficient data to calculate the effect size for the Wally problem-solving task and this result could not be used.

Thus, results involved 14 different instruments (including subscales) measuring 14 outcome comparisons across three studies (Analysis 5.1-5.14). None of the results showed statistical significance favouring the intervention group. Eleven of the findings showed statistically non-significant results, with a trend favouring parent training, with effect sizes ranging from very small to small. Of the eleven results, seven were based on a psycho-educational test and four were based on a clinic-based problem-solving task. Three results were statistically non-significant, with a trend favouring the control group, with a range of small to moderate effect sizes. These three results comprised one finding based on a psycho-educational test (Barkley 2000 [Woodcock humanities subscale]: SMD 0.04; 95% CI -0.40 to 0.47, Analysis 5.7), one result based on a clinic-based problem-solving task (Braet 2009 [Wally problem-solving task]: SMD 0.52; 95% CI -0.22 to 1.26, Analysis 5.10) and one based on teacher report (Barkley 2000 [SSRS academic subscale]: SMD 0.23; 95% CI -0.20 to 0.67, Analysis 5.1).

### 6. Individual study results for parental social support

The authors of only one study (Martin 2003) evaluated the effectiveness of behavioural/cognitive-behavioural group-based parenting interventions in relation to parental social support. The result was a parent report and was statistically non-significant, with a trend favouring the control group: Martin 2003 (Social support scale): (SMD 0.18; 95% CI -0.59 to 0.95, Analysis 6.1). Braet 2009 indicated within their methods that they would evaluate parental social support, but did not report it in their results

None of the studies reported on secondary outcomes such as long-term outcomes for children in adolescence and adulthood (including criminal justice system involvement or unemployment), or on adverse outcomes associated with taking part in the parenting intervention, such as increased conflict within the home due to introduction of new parenting techniques, or financial or psychological burden in accessing and attending the course.

## HISTORY

Protocol first published: Issue 1, 2010

Review first published: Issue 2, 2012

## CONTRIBUTIONS OF AUTHORS

Mairead Furlong (MF) wrote the text of the protocol with input and amendments advised by all members of the review team (Sinéad McGilloway (SMcG), Tracey Bywater (TB), Judy Hutchings (JH), Michael Donnolly (MD) and Susan Smith (SS)). MF developed the search strategy for this protocol in conjunction with Jo Abbott, Trials Search Coordinator of the Cochrane CDPLPG. The searches were conducted by MF. Both MF and TB independently selected potentially eligible studies from the search lists, with any differences resolved by discussion. MF retrieved the full text of any potentially eligible study and any differences were discussed between TB and MF, and where necessary with SMcG. Both MF and TB contacted authors if necessary to enable the inclusion or exclusion of studies. Both MF and TB independently extracted data from included studies. Most differences in data extraction were resolved between MF and TB, although SMcG was also involved in discussions. MF contacted all included authors to obtain missing data. MF drew up a table of outcomes and a characteristics of included studies table which were analysed by the full team in order to make decisions on whether meta-analysis was suitable and other issues pertaining to the analysis. MF conducted the analyses and wrote the text within the review, with input and support provided by all team members.

## DECLARATIONS OF INTEREST

Dr Sinéad McGilloway, Dr Tracey Bywater and Dr Michael Donnelly are currently members of a collaborative research team that has been commissioned to undertake a four-year national evaluation of Webster-Stratton's *Incredible Years Parent, Child and Teacher Training Series* in Ireland.

Ms Mairead Furlong is a Doctoral Fellow and member of the *Incredible Years Ireland Study* project team; she is leading on the process evaluation of the parent training RCT. The *Incredible Years Ireland Study* is funded by the Atlantic Philanthropies (an American philanthropic organisation who fund high quality research in Ireland and elsewhere) in collaboration with a community-based organisation in Ireland called Archways. The proposed review is not part of the funded programme of research but, instead, forms an independent piece of work that is led by Mairead Furlong.

Professor Judy Hutchings is currently external advisor to the above research and is based at Bangor University, Wales. The Welsh team have conducted a series of evaluations of the Incredible Years programmes.

## SOURCES OF SUPPORT

### Internal sources

- Department of Psychology, NUI Maynooth, Maynooth, Ireland.

### External sources

- Cochrane Fellowship Funding, Health Research Board (HRB), Ireland.

## DIFFERENCES BETWEEN PROTOCOL AND REVIEW

We made eight amendments.

Why it is important to do this review: we amended the second paragraph in order to provide a more thorough description and analysis of previous reviews conducted in the area. Thus, the differences between the current and previous reviews are more clearly delineated.

Types of studies: in the protocol, we inadvertently omitted to mention that studies involving children with serious comorbid physical and intellectual impairments (for example, autism spectrum disorders, Down Syndrome, tic disorders, significant language delay and learning problems) were also excluded from the review.

Types of outcomes: in the protocol, we stated that the follow-up should be at least three months following treatment. This proved to be too restrictive and it was amended, therefore, to include all short-term outcomes, whether conducted immediately post-treatment or up to three months following treatment.

Types of outcomes: in the protocol, we stated that we would investigate the impact of the intervention on the outcome of parenting skills. However, during the review process, it was necessary to differentiate between positive (for example, praise, positive affect, play, proactive discipline) and negative (for example, physical and verbal criticism, negative commands) parenting practices as the intervention could possibly effect change in either one or the other, in both or in none of them. Moreover, it was necessary to distinguish between positive and negative parenting practices in order to explore which aspects of parenting practices act as causal mechanisms within behavioural and cognitive-behavioural group-based parenting interventions.

Measures of treatment effect: dichotomous data for child conduct problems and child emotional problems are presented as risk ratios (RR) rather than as odds ratios (OR) as specified in the protocol. After seeking advice at Cochrane workshops, we understand that risk ratios are more commonly reported and are much easier for the reader to interpret and use.

Subgroup analyses: in the protocol, we stated that we would conduct a subgroup analysis on implementation fidelity, as measured by assessing the training and supervision of facilitators delivering the programme. However, in conducting the review, we found that this measure of fidelity was rather basic and incomplete and so we included additional measures of implementation fidelity, namely, evidence of adherence to protocols, exposure to the programme, quality of delivery and programme differentiation.

Sensitivity analyses: in the protocol, we stated that we would exclude studies with attrition rates larger than 20%. In order to provide a more rigorous examination of the impact of missing data, we added that we would also exclude studies without an intention-to-treat analysis. Furthermore, within the review, we provided a more operational definition of quasi-randomisation, i.e. the removal of studies with inadequate sequence generation or inadequate allocation concealment. We also included one additional sensitivity analysis that was not specified in the protocol; in order to provide an overall picture of the effect of risk of bias on the meta-analyses, we excluded any studies with evidence of risk of bias in any key domain of inadequate randomisation, blinding, or attrition greater than 20% in either the control or intervention groups. Lastly, the sensitivity analyses on fidelity and short-term versus long-term outcomes were not conducted within the current review as all of the studies reported on fidelity and all included studies reported only short-term outcomes.

## NOTES

This review is co-registered within the Campbell Collaboration.

## INDEX TERMS

### Medical Subject Headings (MeSH)

Age of Onset; Child Behavior Disorders [\*therapy]; Cognitive Therapy [economics; \*methods]; Parenting [\*psychology]; Parents [education; \*psychology]; Psychotherapy, Group [economics; \*methods]; Randomized Controlled Trials as Topic

### MeSH check words

Child; Child, Preschool; Humans