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Behavioural and cognitive behavioural training interventions for assisting foster carers in the management of difficult behaviour (Review)

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[Intervention Review]

Behavioural and cognitive behavioural training interventions for assisting foster carers in the management of difficult behaviour

William Turner¹, Geraldine Macdonald², Jane A Dennis¹

¹School for Policy Studies, University of Bristol, Bristol, UK. ²Director of Education, School of Sociology, Social Policy and Social Work, Belfast, Northern Ireland, UK

Contact: William Turner, School for Policy Studies, University of Bristol, No. 8 Priory Road, Bristol, BS8 1TZ, UK. w.turner@bristol.ac.uk.

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ABSTRACT

Background

The provision of training for foster carers is now seen as an important factor contributing to the successful outcome of foster care placements. Since the late 1960s, foster carer training programs have proliferated, and few of the many published and unpublished training curricula have been systematically evaluated. The advent of cognitive-behavioural therapy (CBT) and the research evidence demonstrating its effectiveness as a psychotherapeutic treatment of choice for a range of emotional and behavioural problems, has prompted the development of CBT-based training programmes. CBT approaches to foster care training derive from a 'skill-based' training format that also seeks to identify and correct problematic thinking patterns that are associated with dysfunctional behaviour by changing and/or challenging maladaptive thoughts and beliefs.

Objectives

To assess the effectiveness of cognitive-behavioural training interventions in improving a) looked-after children's behavioural/relationship problems, b) foster carers' psychological well-being and functioning, c) foster family functioning, d) foster agency outcomes.

Search methods

We searched databases including: CENTRAL (Cochrane Library Issue 3, 2006), MEDLINE (January 1966 to September 2006), EMBASE (January 1980 to September 2006), CINAHL (January 1982 to September 2006), PsycINFO (January 1872 to September 2006), ASSIA (January 1987 to September 2006), LILACS (up to September 2006), ERIC (January 1965 to September 2006), Sociological Abstracts (January 1963 to September 2006), and the National Research Register 2006 (Issue 3). We contacted experts in the field concerning current research.

Selection criteria

Random or quasi randomised studies comparing behavioural or cognitive-behavioural-based training intervention (in a group or one-to-one settings or both) versus a no-treatment or wait-list control, for foster parents/carers.

Data collection and analysis

Two authors independently assessed trial quality and extracted data. We contacted study authors for additional information.

Main results

Six trials involving 463 foster carers were included. Behavioural and cognitive-behavioural training interventions evaluated to date appear to have very little effect on outcomes relating to looked-after children, assessed in relation to psychological functioning, extent of

behavioural problems and interpersonal functioning. Results relating to foster carer(s) outcomes also show no evidence of effectiveness in measures of behavioural management skills, attitudes and psychological functioning. Analysis pertaining to fostering agency outcomes did not show any significant results. However, caution is needed in interpreting these findings as their confidence intervals are wide.

Authors' conclusions

There is currently little evidence about the efficacy of behavioural or cognitive-behavioural training intervention for foster carers. The need for further research in this area is highlighted.

PLAIN LANGUAGE SUMMARY**Behavioural and cognitive behavioural training interventions for assisting foster carers in the management of difficult behaviour**

Providing training for foster carers is thought to enhance caring attitudes and skills, help foster carers deal more effectively with foster children's behaviour, and decrease foster carer attrition. Although training programs have proliferated, there has been minimal evaluative research to determine whether they are effective.

This review attempted to determine the effectiveness of cognitive-behavioural training interventions. Only six trials involving 463 foster carers were included. Results suggest little evidence of effect on looked-after children, foster carers and fostering agency outcomes.

BACKGROUND

Description of the condition

The concept of child welfare encompasses all of the policies, programmes, and practices centred on the well-being of children. The child welfare system, however, refers to a discrete network of services created to protect and serve children and their families when the families are either not able or not willing to provide an acceptable level of care (McGowan 1991). If children are unable to remain with their families because of court-ordered removal due to maltreatment or through voluntary arrangements with the family, the child welfare system assumes responsibility for caring for the children. State legislation and legal precedent establish the legal framework for placement procedures and for the periodic review of the child's out-of-home placement status. Traditional foster care, kinship care, residential group home care, and therapeutic foster care are the primary types of substitute care (Zukoski 1999). Traditional foster care could be further distinguished into respite care, short-term (either for emergencies, assessment or preparation for long-term), medium or long-term, and specialist foster care (such as care provided by those who 'specialise' in looking after young people with disabilities, on remand, or who have been identified as potential abusers) (Kelly 2000).

Foster care has been defined as care "provided in the carer's home, on a temporary or permanent basis, through the mediation of a recognised authority, by specific carers, who may be relatives or not" (Colton 1997). Foster carers are individuals who agree to provide care in a family environment for children who are in the custody of the child welfare system. Foster care is sometimes designed as a temporary measure, lasting until children can be reunited with their families or some other permanent placement can be arranged. Sometimes it can be planned as a long-term, alternative form of care for children who cannot be cared for by their natural parents. In some circumstances children can find themselves in unplanned foster care, for example following a crisis within the family or investigation of child abuse.

Foster carers are responsible for providing the daily care for children placed with them, and carry a significant responsibility for the children's experiences while in public care. The profile of children in foster care has changed significantly over time, with the majority now requiring much more than a stable home environment and adequate supervision. Foster parents are often asked to care for children with complex medical and behavioural problems. This has been increasingly the case as child care policy in many countries has moved away from placing children with special needs in residential schools, seeking instead to place them within families. A substantial number of children now in foster care have some form of disability and often come from home environments that have contributed to the development of behavioural and emotional difficulties (Parker 1992). They are likely to have histories of parent-child conflict, aggressive or self-destructive behaviour or both, disruptive community behaviour, school difficulties and emotional disturbance (Berridge 1997). Blatt and Simms (Blatt 1997) reported that foster children "have three to seven times more chronic medical conditions, birth defects, emotional disorders, and academic failure than children from similar socio-economic backgrounds"; later studies also emphasise the specific mental health problems of children placed in the foster care system (Richardson 2000; Meltzer 2004). Foster carers, therefore, often face exceptional challenges in caring for children placed with them.

The difficulties inherent in working with children with challenging behaviour have turned the task of fostering into an extremely demanding job.

Providing foster care to children with special medical or emotional needs or both requires not only extra time, but also greater patience, skill and endurance in dealing with the child's demands and their effects on the foster carers' personal and social life (Cliffe 1991). Those carers fostering adolescents may need to be particularly skilled and well-supported (e.g. Bebbington 1989; Sinclair 1995; Stern 1989; Triseliotis 1995). Utting (Utting 1997) has suggested that many foster parents are unprepared to meet the demands of behaviourally and emotionally disordered children. This situation can result in placement breakdowns, which further strain the resources of foster care. The effects of placement disruption pervade all aspects of foster care, foster children, foster carers and indeed family placement workers. Disruptions to placements and frequent changes of carers can undermine children's capacity for developing meaningful attachments, disrupt friendships, and contribute to discontinuities in education and health (Macdonald 2004). Unplanned terminations of placement have the potential to drain the field of experienced carers, a much needed but limited resource, and compound the problems of finding and training an adequate supply of foster carers to provide children with stable care. Foster carers look to child welfare agency staff for guidance, support and reassurance but the latter are generally hard-pressed and often crisis-driven, which hinders their ability to respond to the on-going needs of foster carers not experiencing crises. In the UK, the Audit Commission (1994) identified the absence of support and training as the feature most likely to affect recruitment, retention and quality of foster carers (Audit Comm. 1994).

Description of the intervention

The term 'foster carer training' typically refers to an educational or training process or both designed to provide foster carers with information and skills designed to help them fulfil their responsibilities. Foster carer training differs from training programs designed for parents whose children are in foster care or residential care. The latter generally concentrate on helping parents to address those aspects of their parenting which contributed to the decision to place their child(ren) in foster care. This may be knowledge (of child development or management strategies), particular skills, or personal problems which may interfere with their ability adequately to parent their children. Pasztor and Evans (Pasztor 1992) noted that while parenting training programs can be traced to the early 1800s, foster parent training is a relatively recent development, as indeed is foster care in its present form. Pasztor and Wynne (Pasztor 1995) note that because parents did not typically receive training to parent their own children, the need to train foster carers was not recognised until relatively recently.

The provision of training for foster parents is now seen as an important factor contributing to the successful outcome of foster care placements. Foster carer training is believed to be associated with enhancing caring attitudes and skills, reducing behaviour problems in foster children, improving relationships between foster carers and child welfare agencies, and decreasing foster carer attrition (Boyd 1978; Hampson 1983; Lee 1991; Runyan 1981; Simon 1982; Sinclair 2004). Likewise, a lack of training is associated with failed placements (Audit Comm. 1994; Runyan 1981). Since the late 1960s, foster carer training programs have proliferated, and

numerous unpublished curricula have been developed by both state and private child welfare agencies (cf. [Zukoski 1999](#)). They use numerous formats and a broad range of training methods (for example, [Berry 1988](#)). Foster carers generally are trained in groups, with training broadly aimed at meeting the needs of foster carers looking after children of all ages.

It is possible to identify two broad categories of foster care training. One is skill-based training, providing information about the typical developmental needs of children together with child management techniques. The other type focuses on providing foster parents with information and support to assist them in understanding their roles and responsibilities and supporting their efforts as they encounter the variety of issues associated with being a foster carer ([Hampson 1985](#)). Lee and Holland (Lee 1991a) found that "the content of many fostering training efforts often includes attention to three broad areas: (a) understanding child development and preparing for anticipated difficulties between child and parents, (b) orientation of foster carers to the agency and community services available to them, (c) support for the functioning of the foster family in order to increase placement stability".

How the intervention might work

Behavioural and cognitive-behavioural approaches fall into the 'skill-based' category, combining the use of techniques from cognitive therapy (based on cognitive theories) and behavioural therapy (derived from learning theory). Whilst behavioural approaches emphasised the environmental antecedents and consequences of behaviour in their development and maintenance, cognitive-behavioural (CBT) approaches emphasise that the role of cognition as a major determinant of behaviour and mood. CBT approaches combine behavioural (e.g., reinforcement and response cost) and cognitive techniques (such as challenging negative automatic thoughts) to identify and correct problematic thinking patterns that are associated with dysfunctional behaviour. The term 'cognitive-behavioural' is now often used to describe interventions using behavioural approaches as well as those incorporating more explicitly the use of cognitive techniques, and in the body of this review the term CBT will be used to refer to both.

Recent research evidence suggests that CBT approaches are effective interventions for a range of behavioural problems (cf. [DOH 2001](#); [Scott 2001](#)). As behaviour problems are a major contributory factor to placement breakdown (cf. [Cliffe 1991](#); [Kazdin 1997](#); [Nissim 1994](#)) the use of CBT approaches in foster carer training has potential to help carers better manage a range of challenging behaviour that children in their care may present, thereby optimising the chances of placement stability and its consequences.

Why it is important to do this review

To date, no systematic review of the effectiveness of any foster carer training approach has been undertaken. This review begins to address this gap in our knowledge by examining the efficacy of cognitive-behavioural training programmes in this context.

OBJECTIVES

To assess the effectiveness of behavioural and cognitive-behavioural training interventions in improving a) placement stability, b) foster carers' psychological well-being and functioning,

and c) looked-after children's behavioural and relationship problems.

METHODS

Criteria for considering studies for this review

Types of studies

Studies were eligible for the review if the allocation of study participants to experimental or control groups was by random allocation or quasi-random allocation, i.e., by day of the week, alternate numbers, case number or alphabetical order. Only studies comparing a CBT-based intervention versus a no-treatment or wait-list control were included.

Types of participants

Foster parents/carers (either from single- and/or two-parent families) looking after children and adolescents up to and including 18 years of age.

Types of interventions

Interventions (whether in a group or one-to-one) which were described by the authors as behavioural or cognitive-behavioural or which described the use of interventions derived from one or more of the following or both CBT and one of the following:

- operant learning: for example, positive and negative reinforcement, differential reinforcement, extinction, response cost ([WebsterStratton 1997](#)), 'time out';
- classical (respondent or Pavlovian) learning e.g. graded in vivo exposure, enuresis alarms;
- social learning theory: e.g. modelling, behaviour rehearsal;
- cognitive theories of learning e.g. understanding the influence of past events on current behaviour, challenging attributions and faulty information processing, reality testing, ([Clarke 1997](#))

Types of outcome measures

A. Looked-after child outcomes

- Psychological functioning (including psychiatric symptoms), e.g. depression, PTSD, anxiety;
- Behaviour problems (at foster home and/or at school, i.e. attendance, achievement, failure);
- Interpersonal functioning of the looked-after child (e.g. relationships with peers or other members of foster home or both).

B. Foster carer(s) outcomes

Measures of skills (e.g., behaviour management skills), knowledge, attitudes and behaviour change; Psychological functioning.

C. Foster family functioning

- Foster family functioning (e.g., communication patterns and interpersonal relationships);
- Foster parent(s) - looked-after child relations.

D. Fostering agency outcomes

Placement stability (e.g., number of requests for removal, number of unrequested removals) or completion of allocated stay, or both.

Data sources included:

- 1) Rating scales. Taking into consideration that instruments vary in quality and validity, the minimum standard for the inclusion of the data from outcome instruments was that the psychometric properties for the instrument had been documented. Instruments could include either self report, or reports completed by an independent rater, teacher or other foster carer.
- 2) Assessment and agency Records, e.g. records of placement.

Search methods for identification of studies

Electronic searches

We searched the following databases
 CENTRAL (The Cochrane Library Issue 3, 2006)
 MEDLINE (January 1966 to September 2006)
 EMBASE (January 1980 to September 2006)
 CINAHL (January 1982 to September 2006)
 PsycINFO (January 1887 - September 2006)
 Sociological Abstracts (January 1963 to September 2006)
 ERIC (January 1965 to September 2006)
 Assia (January 1987 to September 2006)
 National Research Register 2006 (Issue 3)
 LILACS (Up to September 2006)

Search terms were modified to meet the requirements of individual databases as regards to differences in fields. The search strategies used to search each database can be found in [Appendix 1](#), [Appendix 2](#), [Appendix 3](#), [Appendix 4](#), [Appendix 5](#), [Appendix 6](#), [Appendix 7](#), [Appendix 8](#), [Appendix 9](#) and [Appendix 10](#). There were no language or date restrictions. Search filters were used.

Searching other resources

Other sources of information included the bibliographies of systematic and non-systematic reviews and reference lists of articles identified through the search strategy. We also contacted authors and known experts to identify any additional or unpublished data.

Data collection and analysis

Selection of studies

All review authors (WT, JD and GM) screened titles and abstracts from the searches. WT and JD retrieved relevant articles, and all three authors assessed each article against the inclusion criteria, independently. No disagreement occurred which was not resolved by communication with the authors of a particular study (apart from the case of [Brown 1980](#), which remains in the category 'Studies awaiting assessment' due to difficulties in locating the author). No recourse to a fourth adjudicator was necessary.

Data extraction and management

The review authors independently extracted data, using a pro-forma. Data extracted included population, age, the control group, baseline characteristics, intervention characteristics and duration, compliance and outcome measures. These are summarised in the table 'Characteristics of included studies.' Citations and data were entered and organised in RevMan 4.2. We contacted authors of studies with missing data were contacted and some additional data were obtained as a result (in some cases; no attempts were made to impute missing data).

Assessment of risk of bias in included studies

Three review authors (WT, JD and GM) independently assessed the methodological quality of the included studies against agreed criteria (see below) for which a pro-forma was developed. No disagreement occurred which was not resolved by communication with the authors of a particular study. We contacted authors and others involved in included studies were contacted ([Barth 2004](#); [Barth 2006](#); [Chamberlain 2006](#); [Dunn 2004](#); [Edwards 2002](#); [Lowe 2004](#); [Lowe 2006](#); [Pithouse 2004](#)) to supply missing information from five included studies ([Barth 1994](#); [Edwards 2002](#); [Minnis 2001](#); [Pithouse 2002](#)). Blinding of providers and participants was identified at protocol stage as unlikely to be applicable within this review and was not used as a criterion to assess internal validity of included trials, however blinding of outcome assessors was assessed (see point 2iii, below).

i) Concealment of allocation

The two review authors independently assigned each included study to quality categories according to their degree of concealment of allocation to intervention groups, as described in the Cochrane Handbook for Systematic Reviews of Interventions ([Higgins 2005](#)). These were as follows:

- (A) indicates adequate concealment of allocation (e.g. by sealed envelopes or telephone randomisation)
- (B) indicates uncertainty about whether the allocation was adequately concealed (possibly where the method of allocation concealment is unknown)
- (C) indicates that the allocation was not adequately concealed (e.g. open random number lists or quasi-randomisation methods)

ii) Selection bias

In studies where allocation was not adequately concealed, the degree to which evidence of baseline imbalance and attempts to control for imbalance were reported were sought and summarised.

In addition, included studies were assessed with regard to the following criteria.

iii) Outcome assessment

MET: assessor unaware of the assigned treatment when collecting outcome measures.
 UNCLEAR: blinding of assessor not reported and could not be verified by contacting investigators.
 NOT MET: assessor aware of the assigned treatment when collecting outcome measures.

iv) Losses to follow up

MET: losses to follow up equally distributed between comparison groups.
 UNCLEAR: losses to follow up not reported.
 NOT MET: losses to follow up in excess of 20% OR unevenly distributed between comparison groups.

v) Intention-to-treat

MET: intention-to-treat analysis performed or possible with data provided.
 UNCLEAR: intention-to-treat not reported, and cannot be verified by contacting the investigators.
 NOT MET: intention-to-treat analyses not done and not possible with the data provided.

Other methodological issues were documented in the data extraction form.

Measures of treatment effect

No dichotomous data were reported in the included studies. Should they be available at future updates, methods for analysing them appear in [Table 1](#).

Continuous data in this review were analysed if means and standard deviations were available or if effect sizes could be calculated by other means (see 'Results' for further details). If continuous outcomes were measured with similar, but not identical, instruments across studies standardised mean differences (SMD) were compared across studies. Confidence intervals of 95% were used for individual study data and pooled estimates. We expected and found evidence of heterogeneity, hence we report results of random effects models, as planned in our protocol. Effects were examined at specific follow-up periods: short-term (up to three months) and medium to long term (six to nine months).

Dealing with missing data

If relevant missing data could not be obtained missing data and dropouts were assessed for each included study. The review reports the number of participants who are included in the final analysis as a proportion of all participants in each study. Reasons for missing data are provided in the narrative summary.

Assessment of heterogeneity

Consistency of results was assessed visually and by examining I^2 ([Higgins 2002](#)), a quantity which describes the approximate proportion of variation in point estimates that is due to heterogeneity rather than sampling error. We supplemented this with the chi-squared test of heterogeneity, and by comparing results of fixed and random-effects models.

Assessment of reporting biases

See [Table 1](#).

Data synthesis

Data synthesis was conducted with RevMan 4.2., the latest version of the Cochrane's Collaboration meta-analysis software. Dichotomous outcomes were not reported in any of the included studies.

Subgroup analysis and investigation of heterogeneity

Subgroup analysis was not possible for this version of the review. Plans for future updates are described in [Table 1](#).

Sensitivity analysis

Sensitivity analysis was not possible for this version of the review. Plans for future updates are described in [Table 1](#).

RESULTS

Description of studies

Results of the search

Searches for the initial version of this review were undertaken in April 2004 and 197 records of potential trials were identified.

Following assessment of titles and abstracts, 32 full text copies were obtained. After assessment, 25 studies were excluded from this review. Seven papers were assessed as meeting the eligibility criteria.

Five studies were included in the original version of this review (first published in 2005) and all were based on published data ([Barth 1994](#); [Chamberlain 1992](#); [Macdonald 2004](#); [Minnis 2001](#); [Pithouse 2002](#)). Two trials still awaited assessment despite attempts to clarify their eligibility - [Brown 1980](#) (an unpublished American PhD dissertation) and [Edwards 2002](#) (a British study for which results had yet to appear).

For the 2006 update of this review searches were rerun across all databases in September 2006. Thirteen results were located, of these two were duplicates; a further two had been identified in previous searches, six were clearly irrelevant, leaving three for assessment by all authors. Two RCTs ([Linares 2006](#); [Pacifci 2005](#)) were later excluded, as was one paper ([Patterson 2005](#)) which proved to be a review article. In the meantime, data for a study previously classed as 'awaiting assessment' appeared, although still in unpublished form, and is now included in this review ([Edwards 2002](#)). Thus, the current version of this review leaves six studies in the current version of this review.

Included studies

Setting

Two studies included in this review were conducted on the west coast of the USA (California ([Barth 1994](#)); Oregon ([Chamberlain 1992](#))). The remaining four were conducted in different regions of the UK: south Wales ([Pithouse 2002](#)), north Wales ([Edwards 2002](#)), the south west of England ([Macdonald 2004](#)), Scotland ([Minnis 2001](#)). No set of researchers conducted more than one study. The studies span the years 1988 to 2002. All studies included in this review are published journal articles except [Edwards 2002](#), which is based on a unpublished research report.

Baseline data

All studies provided some demographic data for the foster carers with varying degrees of detail, covering gender, family characteristics, number of biological children, occupation, income, educational level, number of previous placements, number and length of current placements, levels and years of fostering experience, and exposure to previous training opportunities (see [Table 2](#)). Foster carers in the studies usually were from two-parent households. The age of foster carers in each study ranged from early 30s to late 40s. Where demographic and other related information on the fostering context are provided, all investigators make a point of highlighting the equivalence of foster carers assigned to conditions on the reported characteristics.

All studies also provided information on the profiles of looked-after children/young persons with varying degrees of detail on age, gender, ethnic origin, diagnosis, health, general ability, natural family characteristics, current and previous placements, behaviour problems/psychopathology, and school adjustment (see [Table 3](#)). The age of the participants being looked-after ranged from 3 to 17 years of age within the included studies. Placement histories varied widely amongst individual studies. Length of current placement varied widely amongst individual children in all studies ranging from one month to 10 years. One source of

possible clinical heterogeneity occurs in Barth's 1994 study wherein the focus was on children who were in foster care following sexual abuse within their own biological families; this study also may contain some heterogeneity as to the foster carers themselves (a proportion of which were recorded as being related to the children they looked after in a 'kinship care' arrangement (Barth 1994)). Most children/young persons were reported to exhibit difficult/challenging behaviour based on foster carers' self reports or social work staff assessments or both.

All of the studies dealt with the effectiveness of training foster carers on a) children's emotional, psychological or behavioural functioning or both, and b) behaviour management methods. Training in all studies was delivered in groups led by experienced and qualified group leaders. Training arrangements varied widely among studies ranged from two hours per week over nine months (Chamberlain 1992) to six hours daily over three consecutive days (Minnis 2001). All of the studies were single two-group experiments except one evaluation of provision of enhanced services and stipends for foster parents, which included comparisons between that intervention, increased payment only, and a third group of 'foster care only' (Chamberlain 1992). (For this study, we chose to include only the first group (which involved a CBT component) and the no-treatment control in our analysis, as this approach best conformed to the original protocol). All studies employed a pre-post research design and all reported post-intervention data. All studies included data from self-report measures and two (Chamberlain 1992; Pithouse 2002) included data rated by researchers employed by the study. Follow-up periods were diverse and included measurements at one, three, six and nine months.

In addition to study details provided in the Table of 'Characteristics of included studies' and Table 2 and Table 3, we summarise each briefly below.

Psychoeducational Groups with Foster Parents of Sexually Abused Children (Barth 1994)

The authors acknowledged the lack of evaluations relating to training programmes designed to enhance the abilities of foster carers and set out to evaluate the effectiveness of training provision to foster carers looking after sexually abused children (Barth 1994). The sample, consisting of 27 foster carers, were allocated to a training group (N = 15) and a control group (N = 12). Method of allocation was not reported in the paper but identified as alternate allocation following personal communication with the first author (Barth 2004). Training was delivered in groups and utilised a psychoeducational approach whose origins, according to the authors, can be traced to the experience of the Child Protection Team at the Children's Hospital in Oakland, California (Barth 1994). The training was delivered over ten sessions; the content of each session is described in detail although no details are provided in relation to session's duration. Evaluation and assessment were based on self-reports from foster carers before the start of the training and approximately two months after the end of training. Outcome measures included psychopathology (measured by the Child Behavior Checklist (CBCL) (Achenbach 1983); the Child Sexuality Inventory (CSI) (Friedrich 1986); and foster carer satisfaction (quantified using a measure developed for the study (Barth 1994).

Enhanced Services and Stipends for Foster Parents: Effects on Retention Rates and Outcomes for Children (Chamberlain 1992)

The study involved the experimental evaluation of some of the reforms that the investigators themselves had hypothesised as being associated with measurable improvements in foster care. Effects of extra compensation and support/training were evaluated for both foster parents and children in their care. Seventy-two foster carers were randomly assigned to one of three groups: (1) enhanced support and training (ES & T) plus an increased payment of \$70/month (N = 31); (2) increased payment of \$70/month only (IPO) (N = 14); (3) control group involving foster care as usual (FCU) (N = 27). The investigators took care to point out that whilst the foster carers in their sample did not appear to differ at baseline, the number of 'child problem behaviours' between groups differed considerably at baseline, with the children in the ES & T group reported as exhibiting on average 7.5 'problem behaviours' per day as compared to 5.71 in the IPO group and 3.71 in the FCU group (no standard deviations were provided in the published paper, nor were they available from the investigator following extensive correspondence) (Chamberlain 2006)). The training intervention is described in detail and involved weekly two-hour group foster carer meetings aimed at increasing skills in child behaviour management and thrice-weekly telephone contact by the group leader/facilitator. Foster carers in all three groups were first assessed within three weeks of the child's placement, and then three months, six months, and nine months later. Assessments and evaluation were based on self reports from foster carers and on input from staff at the three Oregon State Children's Services Division. Outcomes included number and frequency of child 'problem behaviours' as measured by the Parent Daily Report (PDR) (Chamberlain 1987); foster carer and caseworker satisfaction ratings (as measured by a seven-point scale developed for the trial); staff members' impressions of foster carer effectiveness (discipline, social skills and 'personal strength'); effects on foster carer dropout rates were also evaluated (Chamberlain 1992).

Helping Foster Carers to Manage Challenging Behaviour: Evaluation of a Cognitive-Behavioural Programme for Foster Carers (Macdonald 2004)

This study was designed to test whether training foster carers in cognitive-behavioural methods designed to help them manage challenging behaviour would have benefits for looked-after children and foster carers. A total of 164 foster carers were initially recruited from six local authorities. The final sample comprised of 117 foster carers comprised the final sample, with 67 allocated to the intervention group and 50 to the control. All foster carers had reported having problems managing children's behaviour within the home, but no formal screening took place. Due to the geographical distribution of foster carers it was not possible to make random allocation from the whole, and randomisation to training versus control conditions happened within smaller geographical locations. The CBT-based intervention training programme was based on Webster-Stratton's model (behaviour development and social learning theory, 'ABC' analysis) (Webster-Stratton 1994; Webster-Stratton 1998). Whilst primarily concerned to test whether training would enable carers to manage difficult behaviour, researchers were also interested in whether it would enhance carers' confidence in their capacity to care for challenging children and young people, and, ultimately, whether improved skills and/or confidence would enhance placement stability. The programme was delivered initially as five weekly,

three-hour sessions plus one follow-up session for two groups, then changed to four weekly, five-hour sessions plus one follow-up session. Training groups were run separately for foster carers looking after children under or over 10 years of age. Foster carers in both groups were assessed before the start of the training, at the end of the training, and six months later. Data were collected through interviews and self report measures. Outcomes included child psychopathology (Child Behaviour Checklist (CBCL) (Achenbach 1983) number of unplanned breakdown of placements; 'time at risk' (referring to the length of time, in months, that an opportunity for unplanned ending(s) existed for each placed child/young person); skills in the management of behaviour problems (based on a list of 21 behavioural strategies); frequency and/or severity of behavioural problems (a composite measure based on a list of 25 behaviours); knowledge of behavioural principles as applied to children (KBPAC), (O'Dell 1979); confidence in carers' ability to manage difficult behaviour (measured qualitatively, based on questioning about the impact of the training); foster carer satisfaction (as measured by the Foster Carer Satisfaction Questionnaire) developed for the study.

Mental Health and Foster Carer Training (Minnis 2001)

This study was designed to evaluate whether a training programme for foster carers focusing on communication skills and attachment would have a beneficial effect on the emotional and behavioural functioning of foster children. Out of a total sample of 268 foster families recruited from 17 Scottish areas, 121 families were assigned using random permuted blocks (block size 12) to either intervention (N = 57 families, 76 children in total) and control (N = 64 families, 106 children). The training was developed based on a modified version of an internationally used training manual (Richman 1993). The theoretical assumptions underlying the rationale for the training programme's development and results from its piloting have been reported separately in another published journal article (Minnis 1999). The intervention was a three-day programme on communication and attachment delivered by an experienced social worker/trainer. Training sessions ran for six hours per day, the first two days running consecutively with a follow-up day one week later. Foster carers, children and their teachers were assessed before the start of the training, immediately after, and nine months later (not applicable to all measures employed in the study). All data were collected through self report measures. Outcome measures for children included self-esteem as measured by a modified version of the Rosenberg Self-Esteem Scale (Rosenberg 1965); child psychopathology as measured by the Strengths and Difficulties Questionnaire (SDQ) (Goodman 1998) and the Reactive Attachment Disorder Scale (RAD) (Minnis 1999). Foster carer measures included financial ones, as measured by the Costs of Foster Care Questionnaire (Netten 1997) and satisfaction, as measured by a six-item questionnaire designed for the study (Minnis 2001).

Training Foster Carers in Challenging Behaviour: A Case Study in Disappointment? (Pithouse 2002)

This study examined the impact of training foster carers in techniques to manage challenging behaviour and is described by the authors as 'semi-experimental'. 114 children specifically recruited to meet seven criteria for challenging behaviour provided the operational definition and the basis for selection by local authority social work staff. This number dropped to 103 after efforts

were made to obtain complete baseline datasets. Children were divided into treatment (N = 54) and control (N = 49). Information about the method assignment to the training intervention and to the comparison groups was obtained after personal communication with two of the authors (Pithouse 2002; Pithouse 2004; Lowe 2004). The rationale and the theoretical underpinnings of the intervention are described in detail: in summary, the training programme sought to provide carers with skill development, clear plans for coping with emergencies and a proactive strategy aimed at smoothing the 'fit' between the person and the environment (Pithouse 2002). Training was delivered by a clinical psychologist from the study team to groups of approximately 15 carers over a period of three days. Post-intervention measures include the follow-up period which was set three to four weeks after the end of the training. Outcome measures included a version of the Index of Community Integration (Raynes 1989), modified to incorporate elements relevant to young people; a version of a section of the Disability Assessment Schedule (Felce 1994; Holmes 1982), modified in an attempt to enable recording of frequency and severity of problem behaviours; carers' reactions to challenging behaviours as assessed by the Emotional Responses to Challenging Behaviour Scale (Hastings 1994); carers' beliefs about the causes of challenging behaviour (as measured by the Challenging Behaviour Attributions Scale (Hastings 1997); emotional and physical well-being of carers was measured by the Malaise Inventory Scale (Rutter 1970); carers' stress was measured by the Spielberger Self-Evaluation Questionnaire (Spielberger 1983). Finally, a short questionnaire was designed by the authors to assess whether carers had an analytic understanding of behaviour (Pithouse 2002).

Evaluation of the Application of the "Incredible Years" Programme with Foster Carers of Looked After Children in Gwynedd (Edwards 2002)

This study was designed to evaluate whether the "Incredible Years" training programme for natural parents (or step or adoptive/long-term parental figures or all of the aforementioned) could be implemented successfully with foster carers. The rationale of the study was based on the positive evaluations of the programme both the US (for example, WebsterStratton 1988) and in the UK (for example, Scott 2001a) with regards to improvements in parental attitudes and parent-child interactions, reductions in parents' use of violent discipline style and child conduct problems. Twenty-nine foster carers were randomly assigned to one of two groups: the first intervention group (N = 13) and the wait-list control group (N = 16, second intervention group). The wait-list control group (second intervention group) provided baseline comparison data for the first intervention group. This group received its training a few months after the end of the first round of training and data from both groups was then combined to increase statistical power and the reliability of findings. The training intervention is described in detail and involved 12 weekly group training sessions each lasting 2 to 2.5 hours aimed at increasing child management skills, as well as foster carer -child communication patterns and foster carers' problem-solving skills. The training also utilised 10 videotape programmes which were used throughout training by the trainers to stimulate group discussions about the usefulness/effectiveness of the techniques/methods demonstrated in the audio-visual material. Assessment and evaluation were based on self completed measures from participating foster carers and on placement information accessed through the Social Services database. Outcome measures included a) foster carers'

functioning measures (measured by the Parenting scale (PS) (Acker 1993) and the General Health Questionnaire (GHQ) (Goldberg 1972); b) child behaviour measures (measured by the Strengths and Difficulties Questionnaire (SDQ) (Goodman 1997) and the Eyberg Child Behaviour Inventory (ECBI) (Eyberg 1980) and c) foster carer satisfaction with the training received (by employing Weekly Evaluation Forms and the Parent's Satisfaction Questionnaire (PSQ) (WebsterStratton 1984) (the latter was completed at the end of each training cycle).

Excluded studies

Details and reasons for exclusion of 28 studies can be found in the table 'Characteristics of excluded studies'.

Risk of bias in included studies

Further information was acquired from almost all authors as papers varied greatly in their reporting of data. See also Table 4.

i) Concealment of allocation

This review includes six studies, of which four were randomised controlled trials (Chamberlain 1992; Edwards 2002, Macdonald 2004; Minnis 2001) and two were quasi-randomised controlled trials (Barth 1994; Pithouse 2002). Macdonald 2004 reported use of a computer-generated numbers table and Edwards 2002 used alternate 'out of a hat' technique; both studies were coded as 'A' for allocation concealment. Minnis 2001 used random permuted blocks (block size 12) (Pocock 1983) and reported stringent efforts to conceal assignment list and identifying information (Minnis 2001). Chamberlain 1992 was not explicit about method of randomisation or concealment of allocation in the published paper, but reported in personal communication that a 'coin-flip' method was used and thus rates an 'A' (adequate) (Chamberlain 2005). Of the quasi-randomised controlled trials, one study stratified participants by age prior to assignment of participants to conditions (Pithouse 2002; Pithouse 2004). As the investigator in charge of allocation used a list with names and birth dates and was acquainted with some of the participants, it was decided this trial was subject to some potential bias and it received a 'C'. Barth 1994 did not report method of randomisation in the published paper but personal communication revealed that alternate allocation had been used and the allocation given to this paper is therefore 'C' (Barth 2004).

ii) Selection bias

We planned in our protocol to report (concerning studies where allocation is not adequately concealed) the degree to which there was evidence of baseline imbalance and attempts to control for imbalance. We found that, regardless of method of assignment, where demographic and other related information on the fostering context were provided, all investigators made a point of highlighting the equivalence of foster carers assigned to conditions on the reported characteristics (Barth 1994; Chamberlain 1992; Edwards 2002; Macdonald 2004; Minnis 2001; Pithouse 2002; Table 2). The same cannot be said of differences amongst children in the five studies included in this systematic review, which varied considerably. For more information, see Table 3.

iii) Outcome assessment

As predicted in the protocol, none of the included studies attempted blinding of participants or providers of the intervention

(which was felt to be, as Minnis put it "unfeasible and unethical" (Minnis 2001). Only one of the studies reported blinding of outcome assessors (Minnis 2001) and so for this category, Barth 1994, Chamberlain 1992, Edwards 2002, Macdonald 2004 and Pithouse 2002 received a rating of 'criterion not met.'

iv) Losses to follow up

Ratings for each trial are as follows:

Barth 1994. The loss to follow up in the treatment group from pre- to post-treatment was 15 to 13, representing a 13% loss; for the control, the loss was 12 pre to 10 post, representing a 17% loss. Therefore, this trial merits a 'MET' for this criterion.

Chamberlain 1992. The dropout rate was not evenly distributed across the three groups involved in the trial (9.6% for ES & T group, 14.3% for the IPO group, and 25.9% for the control group). We rate this trial as 'NOT MET' for this criterion, because losses to follow up exceed 20% and are unequal enough to bias the results.

Edwards 2002. The loss to follow up in the first intervention group from pre- to post training was 13 to 9, representing a 31% loss; for the second intervention group (which acted as the wait-list control for the first intervention group), the loss was 16 pre to 11 post, representing a 31% loss. Therefore, this trial is given a rating of 'NOT MET' for this criterion.

Minnis 2001 began with a sample of 160 families; after randomisation the sample was reduced to 121 families (23 families withdrew from the intervention group and 16 families withdrew from the control group) with 182 children; 57 families were assigned to treatment (76 children) and 64 families (106 children) to control. While the variance in the number of children between groups is quite large, this is due to the fact that the unit of allocation during randomisation was the family. Data for completion are presented for children (loss to follow up 18% in the treatment arm and 17% in the control. Minnis 2001 is thus given a rating of 'MET' for this criterion.

Macdonald 2004 began with 67 foster carers allocated to CBT training, dropping to 55 at time 1 and 49 at time 3 (losses to follow-up of 18% and 27%); in the wait list control condition, the initial group of 50 fell to 45 at time 1 and 40 at time 3 (losses to follow-up of 10% and 20%). This trial is given a rating of 'NOT MET' for this criterion.

Pithouse 2002 began with 53 carers in each assigned group (treatment and control) and reports nothing concerning rate of dropout. This trial is thus rated as 'UNCLEAR' for the criterion 'loss to follow up'.

v) Intention-to-treat

None of the studies included in this review reported intention-to-treat analysis; therefore, all studies were given a rating of 'NOT MET' on this criterion of quality.

Effects of interventions

The results of this review are organised into two sections:

Section A: Individual results of the studies in the four general categories of outcome measures (e.g. looked-after children, foster carers, foster family, and fostering agency) and their respective sub-categories.

Section B: Meta-analyses of the data for the three outcomes for which there was a sufficient number of trials this, namely -looked-after child psychological functioning (assessed immediately after training and six to nine months after training) and foster carers' behaviour management skills and knowledge.

Section A

The following section provides the results for each of the four general outcomes and their respective sub-categories as specified in the methods of the review. If it has been possible to calculate an effect size and 95% confidence intervals, these are reported in the form of standardised mean differences (SMDs). If effect sizes have been calculated and reported, a minus sign indicates that the result favours the training group (unless stated otherwise).

An effect size of 0.15 or less has been treated as having no clinically meaningful effect, and an effect size ranging between .015 and 0.40 has been treated as a clinically meaningful but small effect (Thalheimer 2002). An effect size greater than 0.4 up to 0.75 has been treated as a clinically meaningful effect of moderate size, and an effect size greater than 0.75 has been treated as a large, clinically meaningful effect size.

The findings from studies in which it was not possible to obtain the necessary data with which to calculate an effect size have also been summarised. We are aware that effect sizes can be computed in a number of ways. Chiefly, we made strenuous efforts to obtain means and SDs when these were not reported in papers. We also paid attention to data given in other forms, but found these were insufficient to calculate further effect sizes. Briefly:

- 1) Barth 1994. In the published paper, only significance levels were reported. The investigator communicated that no other data were now available (Barth 2006);
- 2) Chamberlain 1992. Means were provided for some measures, but SDs could not be retrieved by investigator despite strenuous efforts (Chamberlain 1992); some F tests were reported in the published paper, but incomplete (no degrees of freedom were supplied).
- 3) Edwards 2002. Means and SDs were provided in the report, which were used in meta-analysis;
- 4) Macdonald 2005. Means and SDs were provided in the initial report and published paper, which were used in meta-analysis;
- 5) Minnis 2001. Means and SDs were provided in the published papers and in an unpublished doctoral thesis, which were used in meta-analysis;
- 6) Pithouse 2002. In the published papers (three), investigators described statistical analyses using 'non-parametric tests' but only to the level of whether results were 'statistically significant or not'. Investigators have been unable to respond to requests for further information (Lowe 2006); we concluded no further effect sizes could be calculated.

A. Looked-after child outcomes

Trials included in this review used a variety of measures to capture information on changes in child psychopathology, self-esteem, attachment, inappropriate sexual behaviour, and relationships with peers.

A1. Psychological functioning (including psychiatric symptoms)

All included studies evaluated the effectiveness of CBT-based foster carer training with regards to a range of measures of looked after children's psychological functioning. There was insufficient data

in three of these studies to calculate effect sizes (standardised mean differences) and confidence intervals (CI), and the results of these three studies have not been included in the graph displaying the results (Barth 1994; Chamberlain 1992; Pithouse 2002). Of the remaining three studies which provided sufficient data to calculate effect sizes, a total of 11 assessment of outcome were produced on a range of measures relating to looked-after children's psychopathology, self-esteem, and attachment disorder.

(a) Child Behaviour Checklist (CBCL)

Two studies (Barth 1994 and Macdonald 2004) used the CBCL (Achenbach 1983) to assess the extent of child psychopathology before and after training.

Macdonald 2004 examined levels of looked-after children's psychopathology as reported by the foster carers six months after training. The results were compatible with no evidence of effectiveness regarding CBCL-derived internalising (SMD -0.04; 95% CI -0.62 to 0.54), externalising (SMD -0.05; 95% CI -0.64 to 0.53), and total (SMD -0.02; 95% CI -0.60 to 0.57)] behavioural profile scores (Achenbach 1983).

Barth 1994 also assessed the effectiveness of foster carer training in improving looked-after children's psychopathology, but did not provide sufficient data to calculate an effect size. In Barth's study, scores from the treatment group on four CBCL behaviour dimensions (schizoid-obsessive, aggressive, cruel, and immature-hyperactive) were in the clinical range (that is, T equal to or greater than 70) prior to training and scores on 17 behaviour dimensions after training. For the control group, scores on two CBCL behaviour dimensions were in the clinical range (e.g., anxious-obsesity, immature-hyperactive) prior to training, and on seven CBCL behaviour dimensions after training (e.g., summary, external, delinquent, aggressive, cruel, depressed-withdrawal, immature-hyperactive). Differences between pre-test and post-test scores were significant for only two scores (Barth 1994): For the training group, CBCL ratings pertaining to Social Behaviour significantly improved from pre- to post-test (31.0 to 44.2 respectively). For the control group, CBCL ratings pertaining to Aggression significantly increased from pre- to post-test (63.7 to 78.3 respectively). Results from statistical analyses comparing training versus control group at post-intervention are not reported but as the authors state: "the treatment group was more disturbed before and after training, but both groups appeared to have worsened in equal measure from the pre-test to follow-up" (Barth 1994a).

(b) Rosenberg Self-esteem scale

One study (Minnis 2001) considered self-esteem as an outcome and used the modified Rosenberg Self-esteem scale (MRS) (Rosenberg 1965) to measure change. The results suggested a positive but not statistically significant effect on foster children's self-esteem (SMD -0.17; CI -0.58 to 0.23).

(c) Strengths and Difficulties Scale (SDQ)

Two studies evaluated the effectiveness of foster carer training in improving looked-after children's psychopathology using the Strengths and Difficulties Scale (SDQ) (Goodman 1998). In the Minnis 2001 study scores on the SDQ were obtained separately by children, foster carers and teachers. The results for foster carers suggested a negative, i.e., favouring the children in the control group, but not statistically significant effect as regards levels of psychopathology (SMD 0.25; 95% CI -0.08 to 0.57). The results

for teachers also suggested a negative and statistically significant effect (SMD 0.80; 95% CI 0.47 to 1.14). Additionally, a negative, statistically significant effect (SMD 0.40; 95% CI 0.07 to 0.73) was obtained for the results for the foster children.

Edwards 2002 study reports separate scores on the SDQ for the ProSocial and Total subscales. The results suggested positive but not statistically significant effects on levels of psychopathology for looked-after children for both subscales, ProSocial subscale (SMD 0.58; 95% CI -0.32 to 1.49), Total subscale (SMD -0.41; 95% CI -1.30 to 0.48).

(d) Reactive Attachment Disorder Scale

Additionally, Minnis 2001 employed of the Reactive Attachment Disorder Scale (RAD) (Minnis 1999) to assess extent of children's attachment disorders. Results relating to scores at post-intervention favoured the children in the control group (SMD 0.46; 95% CI 0.09 to 0.84). This result is significant. Analysis of RAD scores at nine months interval suggested a similar negative, i.e. favouring the control group, but not statistically significant effect on children's attachment (SMD 0.31; 95% CI -0.02 to 0.65).

A2. Behaviour problems (at foster home and/or at school, i.e. attendance, achievement, failure)

(a) Child Sexuality Inventory (CSI)

One study, Barth 1994, assessed the effectiveness of foster carer training in improving children's inappropriate sexual behaviour, but did not provide sufficient data to calculate an effect size. Statistical analysis of data pertaining to factor scores (i.e. boundary permeability, sexual aggression, self stimulation, and sexual inhibition) on the Child Sexuality Inventory (CSI) (Friedrich 1986) did not reveal any significant change or improvement or both between pre- and post-test for both training and control groups. No significant differences were found between pre- and post-intervention on mean child sexual abuse scores (37 dimensions) for the control group. For the training group, a significant increase in the dimension titled 'looks at people when nude' was recorded between pre- and post-test (.60 to 1.23 respectively) and a significant decrease was observed in the dimension titled 'shy about undressing' (.93 to .46 respectively).

(b) Frequency of 'problem behaviours' (PDR and modified scale designed by Pithouse)

Three studies examined the effectiveness of foster carer training on reduction in the reported frequency of 'problem behaviours'. Two of these studies did not provide sufficient data to calculate an effect size (Chamberlain 1992; Pithouse 2002) and the Macdonald 2004 study reports non-normally distributed data for this outcome and can not be used.

Both Chamberlain 1992 and Pithouse 2002 sought to measure frequency of 'problem behaviours', Chamberlain used a 36-item scale (the Parent Daily Report) of 'problem behaviours' (e.g., arguing, destructiveness, short attention span, temper tantrums, inappropriate sexual behaviour, etc) (Chamberlain 1987). Pithouse 2002, divided behaviours into 'severe' and non-severe, based on a measure designed for the study derived from a modified version of two other scales (Felce 1994; Holmes 1982).

In Chamberlain's study (Chamberlain 1992), the authors report a repeated measures analysis on the frequency of problem

behaviours which indicates a 'significant' decrease in problem behaviours for the Enhanced Support and Training (ES & T) condition relative to the other two conditions (Increased Payment Only [IPO] and Foster Care as Usual [FCU]); however, the fact that the groups differed significantly at baseline raises questions about the validity of their result. The investigators took care to point out that whilst the foster carers in their sample did not appear to differ at baseline, the number of 'child problem behaviours' between groups differed considerably, with the children in the ES & T group reported as exhibiting on average 7.5 'problem behaviours' per day as compared to 5.71 in the IPO group and 3.71 in the FCU group. The number of problems reported post-test the ES & T group fell to 3.85 per day; and those in the IPO group dropped to 3.94; whilst the control group of FCU actually worsened (increasing numbers of problem behaviours to 4.56 per day). The investigators note that the 'norm' for non-referred children would be an average of 5 'daily problems' (Chamberlain 1987, Chamberlain 1992). Mean scores of the Parent Daily Report (PDR) (Chamberlain 1987) indicated a marked drop in the number of child problem behaviours over a three-month period (with 'problem behaviours') halved in the ES & T group, substantially decreased in the IPO group, and slightly worse in the FCU (foster care only) group. Again, these findings should be treated with some caution, as the samples were small and the three groups were markedly non-equivalent at baseline (Chamberlain 1992).

In the Pithouse 2002 study, analysis of data pertaining to the number and frequency of presenting behaviours showed for both measures a slight decrease from pre- to post-intervention for both intervention and control groups and were not significant. Data pertaining to the 'severity' (undefined) of presenting behaviours did not show any significant differences between the intervention and comparison groups either at baseline or post-intervention periods.

Macdonald 2004 used a composite measure relating to carers' perception of frequency and severity of difficult behaviour(s). Non-parametric analysis did not reveal any statistically significant differences between training versus control group at any time point, although the number of reported problems was significantly reduced over time for both groups.

(c) Eyberg Child Behaviour Inventory

The inventory was employed in the study by Edwards 2002 in an attempt to examine frequency of commonly child behaviour problems and the extent to which such behaviours were perceived as problematic. The study reports separate scores for the Intensity and Problem subscales. The results suggested positive but not statistically significant effects on both subscales, Problem subscale (SMD -0.10; 95% CI -0.98 to 0.78), Intensity subscale (SMD -0.40; 95% CI -1.30 to 0.49).

A3. Interpersonal functioning of the looked-after child (e.g. relationships with peers and/or other members of foster home)

Only one study (Pithouse 2002) examined this outcome but did not provide sufficient data to calculate an effect size. The study reported analysis of data relating to children's use of community facilities, both for the number of facilities used and the number of facilities from which children were excluded (e.g. school, job, sports, shops, library, discos, etc). The study reports a statistically significant difference at baseline between the intervention group (9.6 facilities used per child) and control (8 facilities used per child).

At post-intervention this had altered only slightly (an average of 9.4 in the intervention group and 8.3 in the control). No statistical differences were reported for the analysis of data relating to the number of community facilities from which children were excluded.

B. Foster carer(s) outcomes

Trials included in this review used a variety of measures to capture information on changes in foster carers' skills, knowledge of CBT principles, attitudes and behaviour with regard to the children in their care.

B1. Measures of skills (e.g. behaviour management skills), knowledge, attitudes and behaviour change

Three of the included studies evaluated the effectiveness of CBT-based training on foster carers' behaviour management skills and knowledge (Edwards 2002; Macdonald 2004; Pithouse 2002). Pithouse 2002 did not provide sufficient data to calculate effect sizes (standardised mean differences) and confidence intervals (CI), and the results of this study have not been included in the graph displaying the results. Of the two studies (Edwards 2002; Macdonald 2004) which provided sufficient data to calculate effect sizes, two assessments of outcome were produced on knowledge of behavioural principles and child management techniques.

(a) Challenging behaviour attribution scale

One study (Pithouse 2002) assessed the effectiveness of CBT training for foster carers in establishing attribution models of a child's difficult behaviour, but did not provide sufficient data to calculate an effect size. The Challenging Behaviour Attribution Scale (Hastings 1997) contains 33 items, classed under five subscales to represent five causal models of challenging behaviour. These subscales include 'learned behaviour', 'biomedical factors', 'emotional factors', 'stimulation', and 'physical environment'. Results presented separately for the five subscales show significant differences between groups for the Emotional subscale at both pre- and post-intervention, and the Biomedical subscale at post-intervention. According to the authors, these results indicate that carers across both groups attributed challenging behaviour mostly to learned positive and learned negative behaviours and to emotional causes. No significant changes in total scores were found (Pithouse 2002).

(b) Knowledge of Behavioural Principles as Applied to Children (KBPAC)

One study assessed the effectiveness of training in improving foster carers' knowledge in behavioural principles (Macdonald 2004). The 'Knowledge of Behavioural Principles as Applied to Children' (KBPAC) is a 50-item forced-choice test designed to measure knowledge/understanding of 'good' behavioural parenting skills (O'Dell 1979) with higher scores indicating greater understanding of behavioural principles with children. The results show a marked improvement in knowledge for the participants in the training group as indicated by the KBPAC scale (SMD 0.75; 95% CI 0.31 to 1.19).

(c) The Parenting Scale (PS)

Edwards 2002 used the Parenting Scale (Acker 1993) to assess self-reported methods of child management techniques commonly used by the carer. Respondents indicate on a 7-point Likert scale the response that best describes their typical disciplining style during the last two months. Scores toward the lower end

of the 1 to 7 scale are considered to reflect more effective child management strategies. Results suggested a positive but not statistically significant effect on levels of child management strategies between training vs. control participants (SMD -0.27; 95% CI -1.15, 0.62).

(d) Use of behavioural strategies

In addition to exploring knowledge of behavioural techniques, Macdonald 2004 sought to measure their application. Results of this outcome are summarised narratively as data do not comply to normal distribution assumptions. Investigators surveyed foster carers pre- and post-intervention and analysed the range of behavioural techniques/strategies that foster carers employed in dealing with difficult behaviour. At post-intervention there was evidence that training had a significant effect (Fisher's Exact Test) on whether or not carers made use of tokens (0% in control condition versus 10% in the training condition), 'grounding' (confining to the house) (16% in the control condition versus 4% in the training condition) and ABC analysis (a CBT technique designed to encourage 'observation, description and analysis' of behaviour) (9% in the control condition versus 42% in the training condition). At six-month follow up, the difference in use of ABC by carers in the training condition remained statistically significant (Fisher's Exact Test) compared to those in the control condition. In a finding the authors reported as 'unexpected', the use of 'response cost' (the removal of privileges contingent on unwanted or inappropriate behaviours) as a behavioural strategy was more taken up by those who did not receive CBT training (i.e., only 18% in the training condition as compared to 37% in the control group) (Macdonald 2004).

B2. Psychological functioning

Psychological functioning of foster carers (thought to be important to foster carer retention) was measured by gathering data on stress and anxiety associated with their foster care duties. Four studies examined the effectiveness of CBT-based foster carer training on levels of carers' psychological functioning. There was insufficient data in three of these studies to calculate effect sizes (standardised mean differences) and confidence intervals (CI), and the results of these three studies have not been included in the graph displaying the results (Chamberlain 1992; Macdonald 2004; Pithouse 2002). Edwards 2002 study provided sufficient data to calculate effect sizes for one outcome assessment relating to foster carers psychological functioning

(a) Evaluation of programme by foster carers

In the Chamberlain 1992 study foster carers in the 'Enhanced support and training' (ES & T) group gave positive feedback about the weekly group meetings, reported that the group had helped them deal effectively with their foster child's problems, and that they would recommend the group to other foster carers. It is reported that most foster carers rated the groups at 6.5 on a seven-point scale (i.e., between 'very informative' and 'extremely informative'). Additionally, caseworkers' impressions of the ability of this group of foster carers to manage children's behaviour problems were favourable (Chamberlain 1992). In the Macdonald 2004 study qualitative data collected suggested that attendance on the course gave participants more confidence to deal with difficult situations and behaviour. The authors claim that increased confidence was probably the most significant finding from the study. Satisfaction ratings relating to the programme in general

and other related aspects of the training (e.g. teaching format, materials, and trainers) were high overall amongst those in the training condition (16 'very satisfied', 25 'satisfied', 4 'slightly satisfied' and 2 'slightly dissatisfied').

(b) Emotional Responses to Challenging Behaviour Scale

One study (Pithouse 2002) used the Emotional Responses to Challenging Behaviour Scale (Hastings 1994) but provided insufficient data to calculate an effect size. The study reported scores showing a statistically significant decrease in score for both groups at post-intervention (Pithouse 2002). While this is a positive finding, Pithouse 2002 does not report results between trained and control-group carers at post-intervention.

(c) Malaise Inventory

Additionally, Pithouse 2002 employed the Malaise Inventory (Rutter 1970) (currently used primarily to measure stress in those caring for dependents) but narrative description of findings does not permit computation of an effect size. The authors report that there were no significant differences between the two groups at either pre- or post-intervention assessment.

(d) Spielberger Self-Evaluation questionnaire

Further, in Pithouse 2002 scores on the two subscales (State and Trait) of the Spielberger Self-Evaluation questionnaire were analysed separately (Spielberger 1983). With respect to the State subscale scores no significant differences were found between comparison and intervention group and no significant changes were evident over time. With respect to scores of the Trait subscale, significant decreases in score were reported over time for both groups. Participants' satisfaction with the training overall was very positive at post-intervention and at follow up.

(e) General health questionnaire (GHQ)

Edwards 2002 used the General Health Questionnaire (Goldberg 1972) to assess foster carers' mental health. The instrument is widely used in community settings to assess fluctuations in normal psychological functioning and is sensitive to anxiety and depressive symptoms. The results suggested a positive but not statistically significant effect on general psychological health (SMD -0.40; 95% CI -1.30 to 0.49)].

C. Foster family functioning

C1. Foster family functioning (e.g. communication patterns and interpersonal relationships)

No data/measures on foster family functioning were reported by any of the studies.

C2. Foster parents(s) - looked-after child relations

No data/measures on foster carers-looked-after child relation were reported by any of the studies.

D. Fostering agency outcomes

Four studies examined the effectiveness of CBT-based foster carer training on fostering agency outcomes (Chamberlain 1992; Edwards 2002; Macdonald 2004; Minnis 2001). There was insufficient data in three of these studies to calculate effect sizes (standardised mean differences) and confidence intervals (CI), and the results of these three studies have not been included in the

graph displaying the results (Chamberlain 1992; Edwards 2002; Minnis 2001). No data relating to foster agency outcomes were reported in the studies by Barth 1994 and Pithouse 2002.

Placement stability (e.g. number of requests for removal, number or unrequested removals) and/or completion of allocated stay In the Macdonald 2004 study, data pertaining to the number of unplanned placement breakdowns were examined for group conditions and time periods. Effect size has not been computed due to skewed data. The authors report that differences in the number of unplanned placement terminations both at post-training and follow-up periods between training and control groups were not found to be significant (Mann Whitney U statistic). Additionally, the study also examined 'months at risk' data for carers in the training and control conditions; results did not show evidence of effectiveness regarding this outcome post-training (SMD 0.30; 95% CI -0.12 to 0.73)] or after a six-month period (SMD 0.33; 95% CI -0.10 to 0.75).

In the Chamberlain 1992 study, 12 out of the 72 participating foster families discontinued providing care. The dropout rates for the three groups were 9.6% for the ES & T, 14.3% for the IPO, and 25.9% for the control group. The authors note that even the control group had a substantially lower dropout rate than foster families across the state dropout rate (i.e. 40% in Oregon, USA). Data relating to the stability of the child in foster care indicated that out of the 72 study children 18 were returned home during the study (the reasons for the move were improvements in the family of origin's situation rather than factors associated with the child's adjustment in care). Analyses of the data pertaining to the number of successful days in care were concentrated on the remaining 54 children who were classified as either successful (remained in the foster home) or unsuccessful (ran away, were moved to another home, or were placed in residential care). Children in the ES& T group had significantly more successful days in care than children in the other two conditions ($F = 3.45, P < 0.04$). Caution must be applied to this finding due to the heterogeneity in the three groups described at length above.

In the Minnis 2001 study, the cost of care in terms of service use (as measured by the Cost of Foster Care Questionnaire (see Minnis 2001 and Netten 1997) increased in the intervention group, but the increase was not statistically significant in comparison to the control group.

Edwards 2002 provides a narrative description of significant incidents of placement breakdowns (one incident), complaints against foster carers (one incident) and de-registration (eight incidents) during the period of the study.

Section B: Meta-analysis

Three studies provided sufficient data with which to conduct a meta-analysis for three outcomes - looked-after child psychological functioning (assessed immediately after training and at six to nine months after training); and foster carers' skills. These analyses combine results from a range of instruments, all measuring the same outcome. Also of note is that the confidence intervals for the three outcomes are wide, indicating a great deal of uncertainty about the size of the effects.

A1. Looked-after child psychological functioning (assessed immediately after training)

Two studies (Minnis 2001, Edwards 2002) evaluated the effectiveness of training in improving child psychopathology assessed soon after the end of training using two standardised instruments - Reactive Attachment Disorder Scale (RAD) (Minnis 2001) and Strengths & Difficulties Questionnaire - (SDQ-Total subscale scores) (Edwards 2002). The two studies provided data from a total of 134 participants (61 training group and 73 control group). The combined data suggest no clinically meaningful effects, but the confidence interval was wide and included negative effects that, if real, indicate large and clinically meaningful harms and positive effects that, if real, indicate large and clinically meaningful benefits (SMD 0.13; 95% CI -0.71 to 0.96) (see Analysis 7.1).

Looked-after child psychological functioning (assessed six to nine months after training)

Minnis 2001, Macdonald 2004 assessed the effectiveness of foster carer training in improving child psychopathology 6 to 9 months following training using the Child Behavior Checklist (CBCL- Total scores, Achenbach 1983) (Macdonald 2004) and the Reactive Attachment Disorder Scale (RAD, Minnis 1999) (Minnis 2001). The two studies provide data from 188 participants (85 training group and 103 control group). The combined data suggest a clinically meaningful but small effect, but this result was not statistically significant (SMD 0.23; 95% CI -0.06 to 0.52) (Analysis 7.2).

B1. Foster carer skills

Two studies (Edwards 2002; Macdonald 2004) examined the effectiveness of training in improving foster carers' behaviour management skills and knowledge using the PS (Acker 1993) and the KBPAC (O'Dell 1979) respectively. The two studies provide data from a total of 106 participants (57 training group and 49 control group). The combined data suggest that a clinically meaningful but small effect, but the confidence interval was wide and included negative effects that, if real, indicate large negative and clinically meaningful harms and positive effects that, if real, indicate large and clinically meaningful benefits (SMD 0.32; 95% CI -0.67 to 1.31) (see Analysis 8.1).

DISCUSSION

The results reported within the six randomised trials, conducted over a 12-year period provide no evidence that training foster carers in cognitive-behavioural methods has a significant impact on psychological functioning of looked after children, their behavioural profile or their interpersonal functioning.

All studies start with the assumption, either explicit or implicit, that children's behaviour would improve as a result of enhancing their carers' knowledge about effective behaviour management and mastery of the associated skills in their use. This premise is based on the success of parent training programmes with birth parents but does not seem to be confirmed in this context.

A number of competing explanations could be offered for this finding. Studies were, for one thing, underpowered to detect small (but possibly important) effect sizes. At present, this means that we really do not have much information about the true effects of the intervention, due to the fact that in many cases, the confidence intervals in the outcomes measured are so wide that the interval encompasses negative effects that, if real, would be evidence of

clinically meaningful harms and also positive effects that, if real, would be evidence of clinically meaningful benefits. Furthermore, particular attention should be given to the baseline characteristics of the looked-after children participated in these studies. Table 3 confirms that the children in these studies have come from disadvantaged backgrounds and have suffered serious abuse or neglect, or both sometimes over many years. Such children have often experienced a wide range of emotional, psychological and behavioural traumas, resulting in problems which manifest themselves in a range of situations over which foster carers have little direct influence, and some of which may continue to act as painful stimuli e.g. ongoing contact with birth parents or other relatives. Three of the studies (e.g., Barth 1994; Macdonald 2004; Minnis 2001) used in this review make particular reference to the measurable psychopathology of these young people (on average very close to the clinical range). It is probable that in order for foster care intervention to be successful, training needs to be supported by other services and interventions designed directly to address children's traumas and to help manage their behaviour outside of the foster home. The effectiveness of other foster care arrangements, e.g., treatment foster care, needs to be explored in this context, and a systematic review of these interventions is in progress.

Researchers have offered a number of recommendations for potential improvements both to the nature of CBT training given and study design for its evaluation. In terms of study design, the employment of more sensitive outcome measures and outcome assessments over longer time periods are recommended (Minnis 2001; Pithouse 2002). Studies are often small and increases in the number of participants (Barth 1994, Macdonald 2004) have been recommended alongside attention to grouping of participants according of severity/type of challenging behaviours (Pithouse 2002). CBT programmes themselves may need to be longer and more intensive, offering carers better opportunities to develop and consolidate their skills both within and between training sessions. They may also require more resources for more specialised programme content (Barth 1994; Macdonald 2004). All these factors may need to be considered in future studies given the overall strong support for cognitive-behavioural approaches in other areas (DOH 2001; Scott 2001).

AUTHORS' CONCLUSIONS

Implications for practice

It is difficult to offer practice guidelines and recommendations based on results from these six studies. Training interventions evaluated to date appear to have very little effect on outcomes relating to looked-after children, assessed in relation to psychological functioning, extent of behavioural problems and interpersonal functioning. Results relating to foster carer(s) outcomes also show no evidence of effectiveness in measures of behavioural management skills, attitudes and psychological functioning.

Implications for research

This review has highlighted the need for further research in this area incorporating the key factors identified above. As regards study design, more sensitive outcome measures and outcome assessments over longer time periods are recommended; studies should be adequately powered to detect effects; attention

should be paid to grouping participants according of severity/type of challenging behaviours. CBT programmes themselves may need to be longer and more intensive, offering carers better opportunities to develop and consolidate their skills both within and between training sessions and /or require more resources for more specialised programme content.

In accordance with Cochrane guidelines, we plan to update this review within 24 months to incorporate any new studies or respond to cogent criticisms or both.

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* Indicates the major publication for the study

CHARACTERISTICS OF STUDIES

Characteristics of included studies [ordered by study ID]

Barth 1994

Methods	Quasi-randomised controlled trial (alternate allocation used)
Participants	27 foster carers looking after sexually abused children. Number(s) of looked after children per carer are not reported.
Interventions	Group 1: training group (N=15). Group 2: control group (n=12).
Outcomes	Child Measures1.Child psychopathology was assessed with the Child Behaviour Checklist (CBCL, Achenbach 1983). Foster carers completed the inventory at pre-intervention and approximately at a 2-month interval after the training. 2.Changes in sexual behaviour were assessed with the Child Sexuality Inventory (CSI) (Friedrich, Urquiza, & Beilke, 1986). 3. Number of placements. This outcome could not be assessed due to the small number of children in the sample).Foster Carer Measures. Foster carers satisfaction inventory
Notes	The aim of the programme was to provide foster carers with training that would enable them to care more effectively for the sexually abused children placed in their homes. The training programme utilised a psychoeducational approach which combined counselling and instruction and was delivered within a group setting. The content of the programme was woven into discussion and problem solving activities. The programme was delivered over 10 sessions. The authors do not provide details relating to sessions' duration and interval between sessions.

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	High risk	C - Inadequate

Chamberlain 1992

Methods	Randomised controlled trial (coin-tossing used)
Participants	72 carers from three Oregon counties looking after children who were placed in foster care between 1988 and 1990. Foster children were from 4 to 7 years old and were expected to have been in care for at least three months (the 3-month minimal stay was imposed to indicate a fairly stable parent cohort for each group)
Interventions	Group 1: Enhanced support and training (ES & T) plus an increased payment of \$70/month (N=31). Group 2: Increased payment of \$70/month only (IPO) (N=14). Group 3: Control group involving usual foster care, i.e. neither enhanced support/training nor increased payment (N=27).
Outcomes	Child Measures/Outcomes: 1.Stability of the child in foster care. This consisted of conducting ongoing checks to determine which of the study children had left foster homes and under what circumstances. Two classifications were used: (a) child was returned home, or to a relative, and (b) the child run away, or was moved to another foster home, residential or group care unit, juvenile detention unit, or psychiatric hospital. 2.Number of successful days in care. 3. Parent Daily Report (PDR); a brief telephone interview that measures the occurrence of child symptoms/problems during the previous 24 hours (collected from foster carers on five consecutive weekdays at baseline and at a 3-month interval (Patterson et al. 182; Weinrott et al. 1979). Foster Carer Measures: 1.Dropout/retention rates for all participating foster families. 2. Staff Impressions Measure; a 12-item questionnaire filled out by staff after visiting participating foster homes on

Chamberlain 1992 (Continued)

their impressions of foster carer's skills at discipline, personal strength, and level of social skill. 3. Foster parent and caseworkers surveys; obtained ratings of perceptions of the effectiveness of the weekly training and support groups (ES & T group only)

Notes	Foster carers assigned to the ES & T condition (Group 1) participated in two sets of activities: (1) attendance to weekly 2-hour meeting with other foster carers and a group leader/facilitator (former foster carer) trained in child behaviour management methods and group processes, (2) were contacted by telephone three times weekly (5-10 minutes) by the facilitator and they reported on the child's progress and problems within the last 24 hours; support and suggestions were offered to them. The main behaviour management methods were: (1) incentive systems for teaching and encouraging positive child behaviours, (2) non-physical discipline methods that emphasised teaching rather than punishment, and (3) problem solving strategies to child-generated problems in the home.
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Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Low risk	A - Adequate

Edwards 2002

Methods	Randomised controlled trial (using alternate 'names out of a hat' technique)
Participants	All 63 foster care providers for primary school-aged children registered with Gwynedd Social Services, Wales, UK were contacted and invited to participate in the study. Of those, 29 foster carers expressed an interest for participation and comprised the final study sample.
Interventions	Group 1: intervention group (N=13). Group 2: wait-list control (N=16).
Outcomes	<p>Foster carers functioning measures</p> <ol style="list-style-type: none"> 1. Child management techniques used by the foster carers were assessed using the Parenting Scale (PS, Acker1993). 2. Foster carers' mental health was assessed using the General Health Questionnaire (GHQ, Goldberg 1972). 3. Foster carers in the intervention group were asked to complete a) Weekly Evaluation forms (providing feedback relating to perceived usefulness of each session), and b) the Parent's Satisfaction Questionnaire (PSQ, Webster-Stratton 1984) at the end of each training cycle. <p>Child Measures</p> <ol style="list-style-type: none"> 1. Child behaviour problems (as well as personal strengths) were assessed using the Strengths and Difficulties Questionnaire (SDQ, Goodman 1977). 2. Further, intensity of child behaviour problems and extent to which foster carers found certain behaviours problematic were assessed using the Eyberg Child Behaviour Inventory (ECBI, Eyberg 1980). <p>With the exception of Weekly Evaluation forms and Parent's Satisfaction Questionnaire, all measures were completed prior the start and soon after the end of the training.</p>
Notes	The content of the training programme was based on the Incredible Years: The Parents and Children Series (BASIC), four part comprehensive course manual along with related video material and handouts (Webster-Stratton 1989). The training involved attendance to 12-weekly each lasting between 2 to 2.5 hours. The programme draws heavily on behavioural theory and addresses issues such as: communication with children, limit-setting skills with children by means of non-violent methods and foster-carers problem-solving skills.

Risk of bias

Bias	Authors' judgement	Support for judgement
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Edwards 2002 (Continued)

Allocation concealment?	Unclear risk	B - Unclear
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Macdonald 2005

Methods	Randomised controlled trial (computer generated numbers table)
Participants	164 foster carers initially recruited across 6 local authorities in the South West of England. 117 foster carers comprised the final sample.
Interventions	CBT-based intervention training programme based on Webster-Stratton's model (behaviour development and social learning theory, 'ABC' analysis). Programme delivered initially as five weekly, three-hour sessions plus one follow-up session for two groups, then changed to four weekly, five-hour sessions plus one follow-up session.
Outcomes	<p>Child Profiles/measures</p> <p>1. Child psychopathology. This was assessed with the Child Behaviour Checklist (CBCL, Achenbach 1993) relating to the young person whose behaviour foster carer(s) had identified at the outset as being particularly difficult and/or challenging. Foster carers completed the inventory at pre-intervention and at a 6-month interval.</p> <p>Foster Carer Measures. 1. Number of unplanned breakdown of placements recorded for foster carers in both groups at pre-, post-intervention and at a 6-month interval. 2. 'Time at risk' (referring to the length of time, in months, that an opportunity for unplanned ending(s) existed for each placed child/young person). 3. Skills in the management of behaviour problems (based on a list of 21 behavioural strategies assessed at pre-, post-intervention and at a 6-month interval. 4. Frequency and/or severity of behavioural problems (a composite measure based on a list of 25 behaviours assessed at pre-intervention, post-intervention and at a 6-month interval). 5. Knowledge of behavioural principles as applied to children (O'Dell, 1979). The measure was completed at pre- and post-intervention. 6. Confidence in carers' ability to manage difficult behaviour; this relied only on qualitative data pertaining to the training group, based on questioning about the impact of the training). 7. Foster Carer Satisfaction Questionnaire (completed at post-intervention by participants in the training group only).</p>
Notes	The content of the training programme developed for the study mirrors that of programmes that have proved effective when provided to groups of parents facing difficulties with their children (e.g., Webster-Stratton, 1998). The programme was initially designed to be delivered on five weekly, 3-hour sessions (total contact time 15 hours) plus a follow-up session (2 groups). For practical reasons, it was later delivered as a four weekly, 5-hour sessions plus a follow-up. The content of the programme remained unchanged.

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Low risk	A - Adequate

Minnis 2001

Methods	Randomised controlled trial (random permuted blocks of block size 12).
Participants	160 families from 17 Scottish council areas fostering children aged 5 to 16.
Interventions	Group 1: Intervention group, i.e. extra training (Initial N=80 families, after randomisation N=57 families caring for , 76 children; 23 families withdrew) Group 2: Control group, i.e. standard services (Initial N=80, after randomisation N=64 foster families caring for , 106 children, 16 families withdrew).

Minnis 2001 (Continued)

Outcomes	<p>Child Measures: 1. The modified Rosenberg Self-Esteem Scale (MRS) was completed by the children at pre-intervention and nine months after the training. 2. Strengths and Difficulties Questionnaire (SDQ) (Goodman, 1997). The measure, a 25-item questionnaire for child psychopathology, was completed at pre-intervention and at a 9-month interval by the children participating in the study, their foster carers, and their teachers. 3. The Reactive Attachment Disorder Scale (RAD) (Minnis, 1999) is a 17-item questionnaire for attachment disorders completed by foster carers at pre-, post-intervention and at a 9-month interval. Foster Carer Measures: 1. Costs of Foster Care Questionnaire. The instrument was developed for the study and asks about contact with social workers, doctors, psychologists, the criminal justice system, other foster carers and school. Costs were calculated using the Unit Costs of Health and Social Care (Netten & Dennett, 1997). 2. Evaluation of training (a 6-item questionnaire designed for the study).</p>
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Notes	<p>The intervention was a three-day programme on communication and attachment delivered by an experienced social worker/trainer. Training sessions ran for six hours per day, the first two days running consecutively with a follow-up day one week later. The training, developed on a qualitative study (Minnis, Devine, & Pelosi, 1999), was based on Communicating with children: helping children in distress, a Save the Children manual used internationally (Richman, 1993).</p>
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Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Low risk	A - Adequate

Pithouse 2002

Methods	<p>Quasi-randomised controlled trial (stratified by age).</p>
Participants	<p>106 carers looking after 103 children placed in foster care across four authorities in South Wales, England. Unit of allocation was the children. Initial selection of the children for their participation in the study was based on a checklist aimed to identify difficult/challenging behaviours.</p>
Interventions	<p>Group 1: training intervention group (N=53 carers/54 children). Group 2: non-intervention, comparison group (N=53 carers/49 children). Authors explain the discrepancies in the number of children and foster carers accounted by the fact that in some households 2 carers participated in the study and some carers fostered more than one participating child (p.204).</p>
Outcomes	<p>Child Profiles/ Measures. 1. Participation outside the home. This was measured using a modified version of the Index of Community Integration (Raynes et al. 1989); The measure included 17 types of community facilities (e.g., school, sports shops, leisure centres) and was completed at baseline and at post-intervention). 2. Behaviour problems (including 1. number and frequency of presenting behaviours, and 2. severity of presenting behaviours). These were assessed with a measure which was designed for the study based on a modified version (Felce et al., 1994) of a section in the Disability Assessment Schedule (Holmes et al. 1982); The questionnaire included 48 behaviours and was completed at baseline and post-intervention.</p> <p>Foster Carer measures: 1. Emotional responses about challenging behaviour were assessed using the Emotional Responses to Challenging Behaviour Scale (Hastings & Remington, 1994). This is a 15-item scale completed by foster carers at baseline and at post-intervention. 2. Beliefs about challenging behaviour were measured using the Challenging Behaviour Attribution Scale (Hastings, 1997). This is a 33-item list of possible causes of challenging behaviour completed at baseline and at post-intervention. 3. Emotional and physical well-being was assessed using the Malaise Inventory (Rutter et al, 1970). This is a 24-item inventory completed at pre- and post-intervention. 4. Self-evaluation was assessed with the Spielberg Self-Evaluation questionnaire (Spielberg, 1983) which is comprised by two 20-item subscales. 5. Insight into behavioural responses. This is described as a short (10-item) questionnaire designed for the study to assess the extent to which carers had an analytic understanding of behaviour; answers were noted by interviewers and later blind-rated by a clinical psychologist. The measure was</p>

Pithouse 2002 (Continued)

administered at pre-and post-intervention. 6. Foster Carer satisfaction with the training. This was assessed twice, at the end of training and at a 3-4 week interval.

Notes The training was delivered by one clinical psychologist to a group of 15 carers over a period of three days. There was a 'follow-up' day 3-4 weeks later to discuss progress.

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	High risk	C - Inadequate

Characteristics of excluded studies [ordered by study ID]

Study	Reason for exclusion
Boyd 1979	Not an RCT (no control group at all)
Burry 1999	Not an RCT (intervention and control group both self-selected)
Chamberlain 1991	RCT. Intervention not CBT, but 'treatment foster care'
Clark 1992	RCT. Intervention directed at children, not at their carers
Clark 1994	RCT. Intervention directed at children, not at their carers (see Clark 1992)
Clark 1996	RCT. Intervention directed at children, not at their carers (see Clark 1992)
Clark 1998	RCT. Intervention directed at children, not at their carers (see Clark 1992)
Clarkson 1987	Not an RCT (no control group at all)
Cobb 1982	Triallists report that a true RCT was planned, but initial pool of participants was too small. A three-arm partial' RCT comparing delivery of the same parenting skills programme by mental health professionals and experienced foster parents without professional training was undertaken. Participants were randomised into either training group, but a third group of 'no treatment' controls was created, not by random assignment, but by inability of participants to attend training in the year it was being offered.
Dutes 1985	RCT. Comparison of 'Parenting and self management curriculum' versus 'Parenting skill training curriculum' alone. No 'no treatment' or 'wait-list' control group
Evans 1996	RCT. Intervention not CBT, but 'treatment foster care' vs. 'family-based treatment' vs 'family-centred intensive case management'
Fisher 2000	A three-arm, non-randomised controlled trial. Triallists admit that non-randomisation caused one treatment group to be 'more troubled and [have] more severe maltreatment histories' than another. Comparison group were moreover drawn from non-maltreated, same-aged youths.
Guerney 1977	Not an RCT (intervention and control group both self-selected as per dates available to travel)
Hampson 1980	A three-arm 'partial' RCT comparing 'behavioural child-rearing skills' with 'reflective group training' with a no-treatment control group was undertaken. Participants were randomised into either training group, but a third group of 'no treatment' controls was created, not by random assignment, but by inability of participants to attend training at the time it was being offered.

Study	Reason for exclusion
Hampson 1983	RCT, but compared two forms of CBT with no no-treatment comparison group.
Lee 1991	Not an RCT (pre-test post-test with intervention and control group apparently selected by geographical area)
Levant 1981	Not an RCT (intervention and control group both self-selected as per times carers could attend sessions)
Linares 2006	RCT but involved multisystemic intervention (structural family systems therapy) which included biological parents receiving the intervention as well. The study is also an outlier in many of the inclusion criteria of the review (i.e., placement stability).
Myeroff 1999	Non-randomised controlled trial of a behavioural treatment (holding therapy) delivered to children, not to their adoptive parents
Pacifci 2005	RCT but media-based i.e. involved distribution of a DVD focusing on anger management to individual foster parents' households, not group-based group intervention.
Pallett 2002	Not an RCT (no control group at all)
Patterson 2005	Not an RCT- a review paper
Penn 1978	Not an RCT (no control group at all)
Puddy 2003	Non-randomised controlled trial in which two groups of prospective foster parents were assigned on the basis of currently being 'in training' through a MAPP/GPS programme (group one); or having contacted a foster care agency with an intent to foster, but not yet being able to enter MAPP/GPS training.
Simon 1982	Not an RCT (the intervention and control groups are not concurrent, but archival)
Treacy 1993	Not an RCT (intervention and control group both self-selected as per dates available to attend)
Zeanah 2001	Not an RCT (the intervention and control groups are not concurrent, but archival)
Zlotnick 1999	Not an RCT -- cross-sectional data of longitudinal study used on 'randomly selected' sample of children in foster care

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

[Brown 1980](#)

Methods	" A pre-test post-test control group design was used... Subjects were randomly assigned to one of five groups" (Brown 1980, p. 96)
Participants	59 foster parents (40 women, 19 men) in USA
Interventions	Issues and Fostering class (two groups); Foster Parent Skill Training Program (two groups); no treatment (one group)
Outcomes	Porter Parental Acceptance Scale; Sensitivity to Children Questionnaire; Foster Parent Attitude Survey

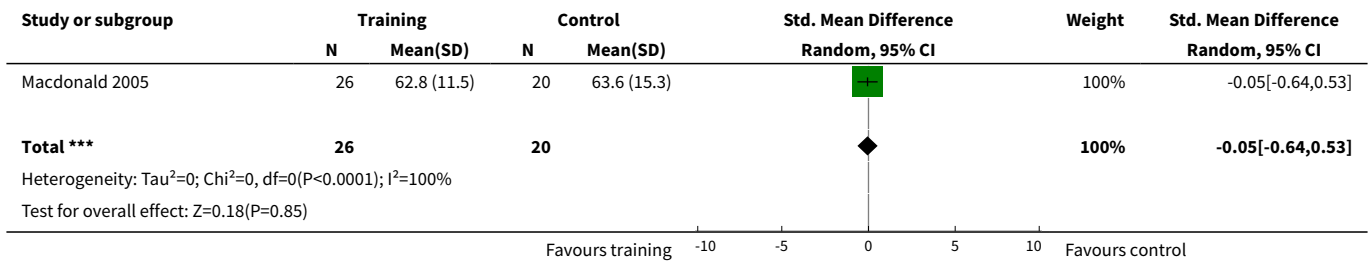
Brown 1980 (Continued)

Notes Concerns about whether 'Foster Parent Skill Training' program can be described as behavioural/cognitive behavioural

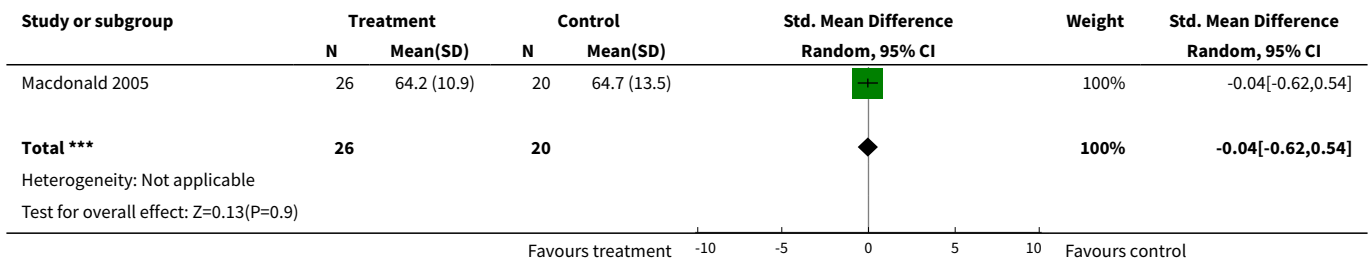
DATA AND ANALYSES
Comparison 1. Foster carer training vs. Control Group (Child psychological functioning)

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Child Behaviour Checklist (CBCL- Externalising Scores)	1	46	Std. Mean Difference (IV, Random, 95% CI)	-0.05 [-0.64, 0.53]
2 Child Behaviour Checklist (CBCL- Internalising Scores)	1	46	Std. Mean Difference (IV, Random, 95% CI)	-0.04 [-0.62, 0.54]
3 Child Behaviour Checklist (CBCL- Total Scores)	1	46	Std. Mean Difference (IV, Random, 95% CI)	-0.02 [-0.60, 0.57]
4 Self-esteem (children)	1	96	Std. Mean Difference (IV, Random, 95% CI)	-0.17 [-0.58, 0.23]
5 Strengths & Difficulties Questionnaire (SDQ- completed by foster carers)	1	150	Std. Mean Difference (IV, Random, 95% CI)	0.25 [-0.08, 0.57]
6 Strengths & Difficulties Questionnaire (SDQ-completed by teachers)	1	150	Std. Mean Difference (IV, Random, 95% CI)	0.80 [0.47, 1.14]
7 Strengths & Difficulties Questionnaire (SDQ - completed by foster children)	1	150	Std. Mean Difference (IV, Random, 95% CI)	0.40 [0.07, 0.73]
8 Strengths & Difficulties Questionnaire (ProSocial Scores)	1	20	Std. Mean Difference (IV, Random, 95% CI)	0.58 [-0.32, 1.49]
9 Strengths & Difficulties Questionnaire (Total Scores)	1	20	Std. Mean Difference (IV, Random, 95% CI)	-0.41 [-1.30, 0.48]
10 Reactive Attachment Disorder Scale (RAD-post training)	1	114	Std. Mean Difference (IV, Random, 95% CI)	0.46 [0.09, 0.84]
11 Reactive Attachment Disorder (RAD- 9 months post-training)	1	142	Std. Mean Difference (IV, Random, 95% CI)	0.31 [-0.02, 0.65]

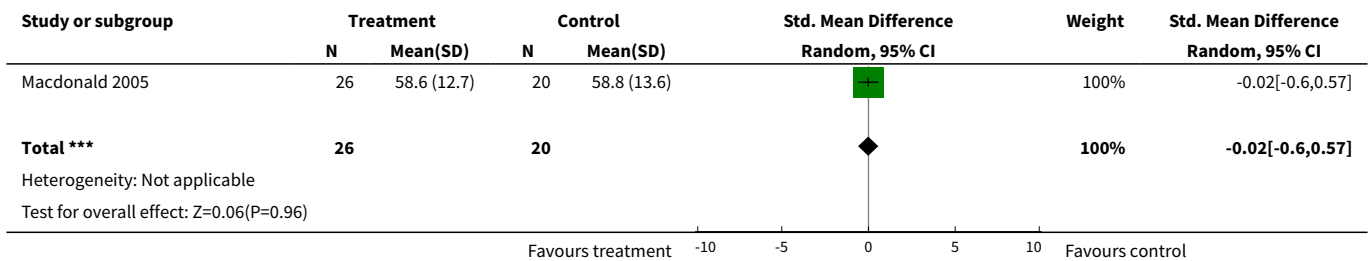
Analysis 1.1. Comparison 1 Foster carer training vs. Control Group (Child psychological functioning), Outcome 1 Child Behaviour Checklist (CBCL- Externalising Scores).



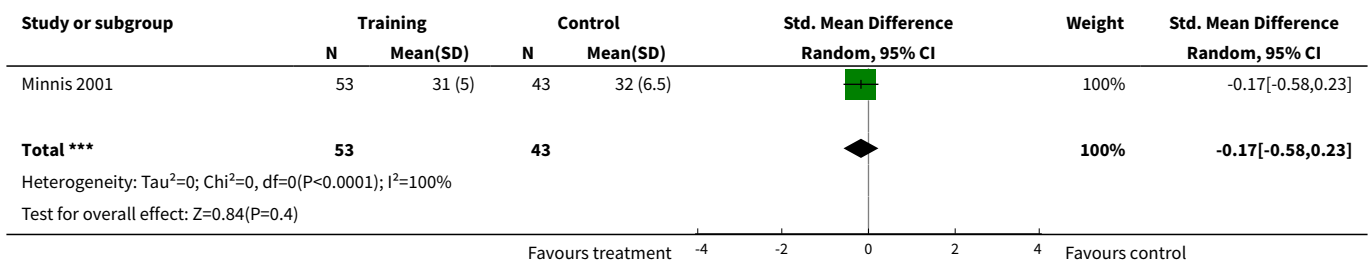
Analysis 1.2. Comparison 1 Foster carer training vs. Control Group (Child psychological functioning), Outcome 2 Child Behaviour Checklist (CBCL- Internalising Scores).



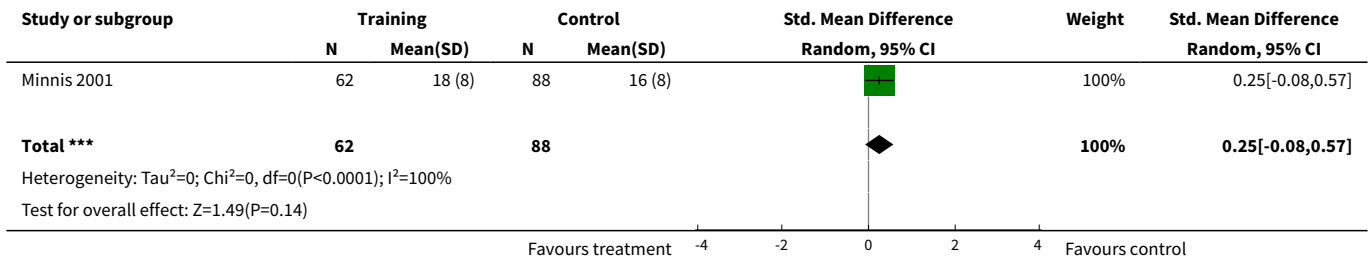
Analysis 1.3. Comparison 1 Foster carer training vs. Control Group (Child psychological functioning), Outcome 3 Child Behaviour Checklist (CBCL-Total Scores).



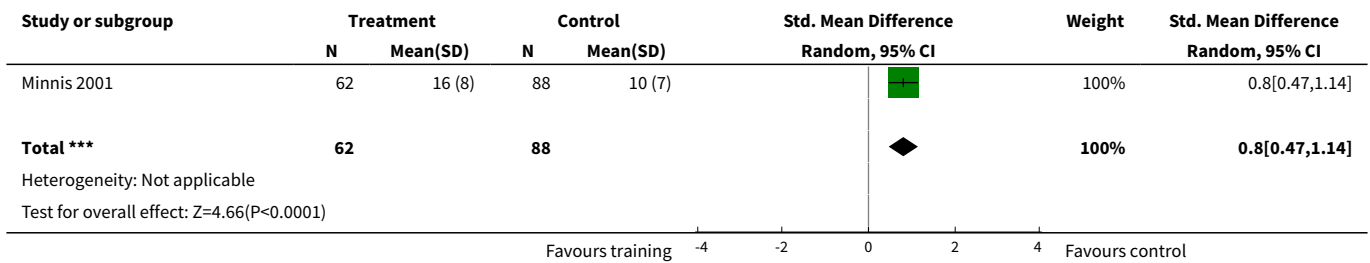
Analysis 1.4. Comparison 1 Foster carer training vs. Control Group (Child psychological functioning), Outcome 4 Self-esteem (children).



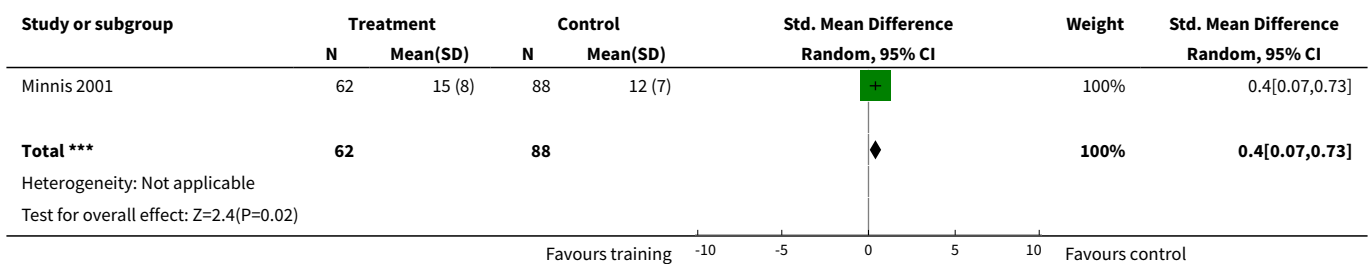
Analysis 1.5. Comparison 1 Foster carer training vs. Control Group (Child psychological functioning), Outcome 5 Strengths & Difficulties Questionnaire (SDQ- completed by foster carers).



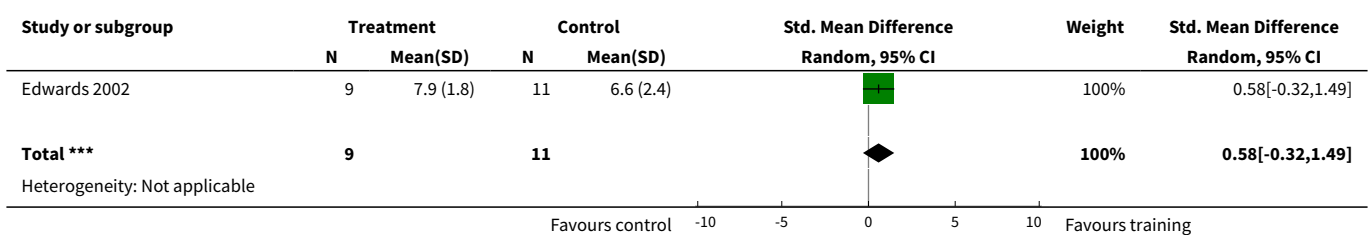
Analysis 1.6. Comparison 1 Foster carer training vs. Control Group (Child psychological functioning), Outcome 6 Strengths & Difficulties Questionnaire (SDQ-completed by teachers).

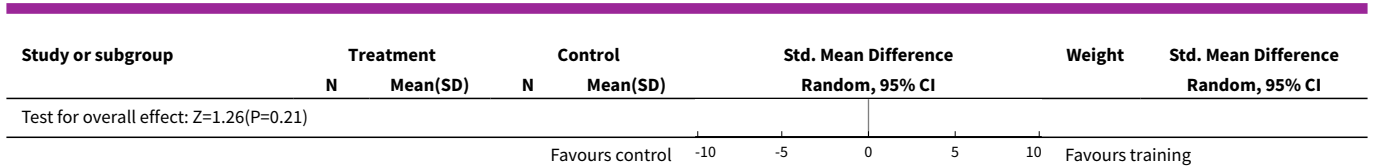


Analysis 1.7. Comparison 1 Foster carer training vs. Control Group (Child psychological functioning), Outcome 7 Strengths & Difficulties Questionnaire (SDQ - completed by foster children).

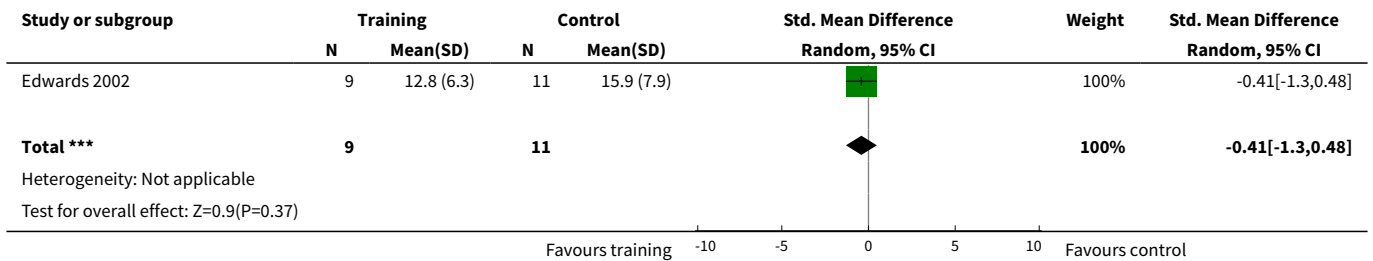


Analysis 1.8. Comparison 1 Foster carer training vs. Control Group (Child psychological functioning), Outcome 8 Strengths & Difficulties Questionnaire (ProSocial Scores).

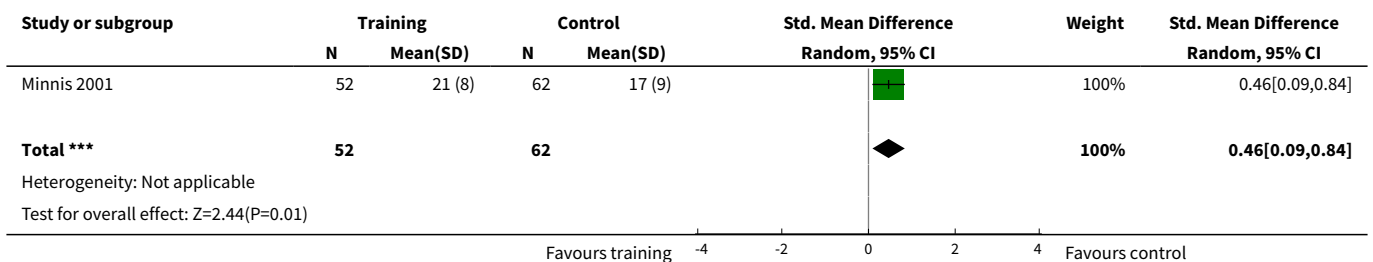




Analysis 1.9. Comparison 1 Foster carer training vs. Control Group (Child psychological functioning), Outcome 9 Strengths & Difficulties Questionnaire (Total Scores).



Analysis 1.10. Comparison 1 Foster carer training vs. Control Group (Child psychological functioning), Outcome 10 Reactive Attachment Disorder Scale (RAD-post training).



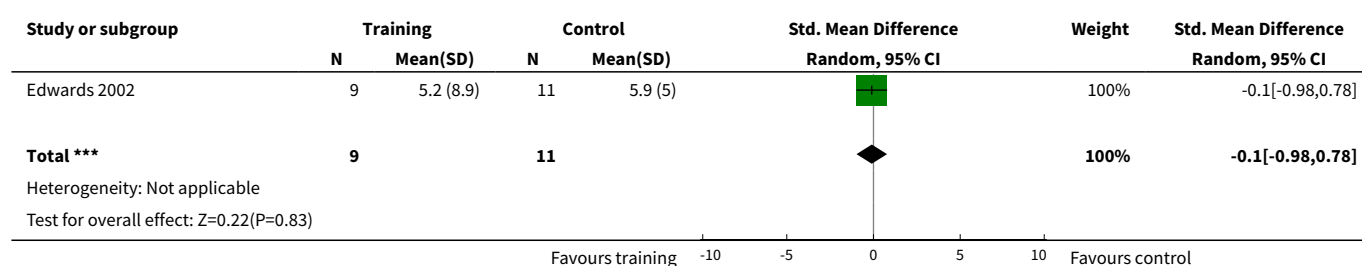
Analysis 1.11. Comparison 1 Foster carer training vs. Control Group (Child psychological functioning), Outcome 11 Reactive Attachment Disorder (RAD- 9 months post-training).



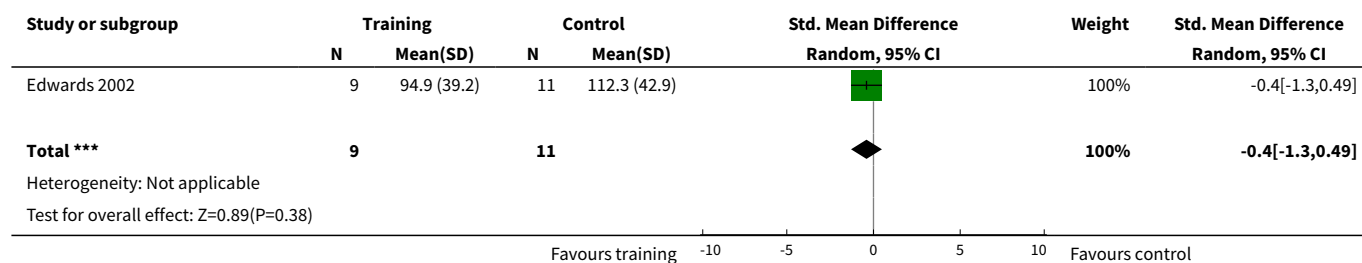
Comparison 2. Foster carer training vs. Control Group (Child behaviour)

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Eyberg Child Behavior Inventory (ECBI-Problem)	1	20	Std. Mean Difference (IV, Random, 95% CI)	-0.10 [-0.98, 0.78]
2 Eyberg Child Behaviour Inventory (ECBI-Intensity)	1	20	Std. Mean Difference (IV, Random, 95% CI)	-0.40 [-1.30, 0.49]

Analysis 2.1. Comparison 2 Foster carer training vs. Control Group (Child behaviour), Outcome 1 Eyberg Child Behavior Inventory (ECBI-Problem).



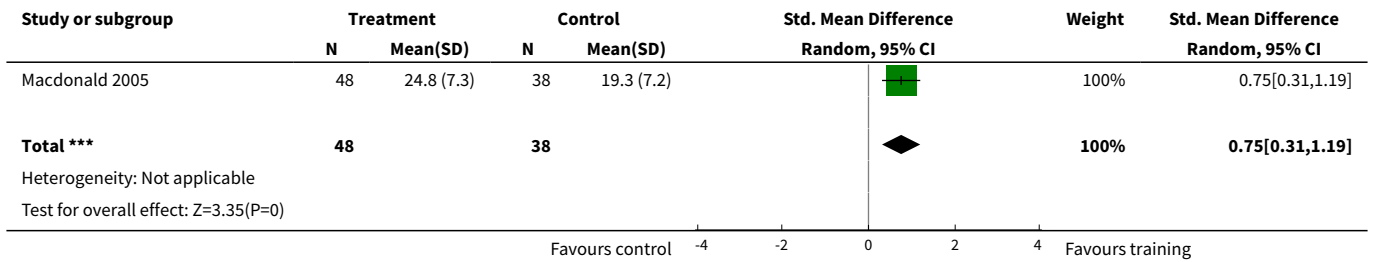
Analysis 2.2. Comparison 2 Foster carer training vs. Control Group (Child behaviour), Outcome 2 Eyberg Child Behaviour Inventory (ECBI-Intensity).



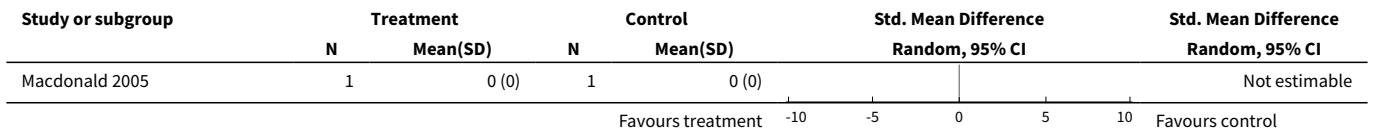
Comparison 3. Foster carer training vs. Control Group (Foster carer skills)

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Knowledge of Behavioral Principles (KBPAK)	1	86	Std. Mean Difference (IV, Random, 95% CI)	0.75 [0.31, 1.19]
2 Use of behavioural strategies	1		Std. Mean Difference (IV, Random, 95% CI)	Totals not selected
3 Parenting Scale (PS)	1	20	Std. Mean Difference (IV, Random, 95% CI)	-0.27 [-1.15, 0.62]

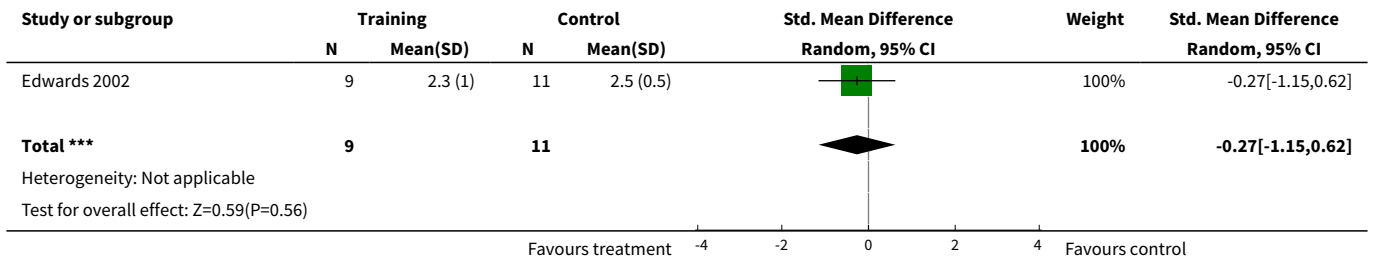
Analysis 3.1. Comparison 3 Foster carer training vs. Control Group (Foster carer skills), Outcome 1 Knowledge of Behavioral Principles (KBPAC).



Analysis 3.2. Comparison 3 Foster carer training vs. Control Group (Foster carer skills), Outcome 2 Use of behavioural strategies.



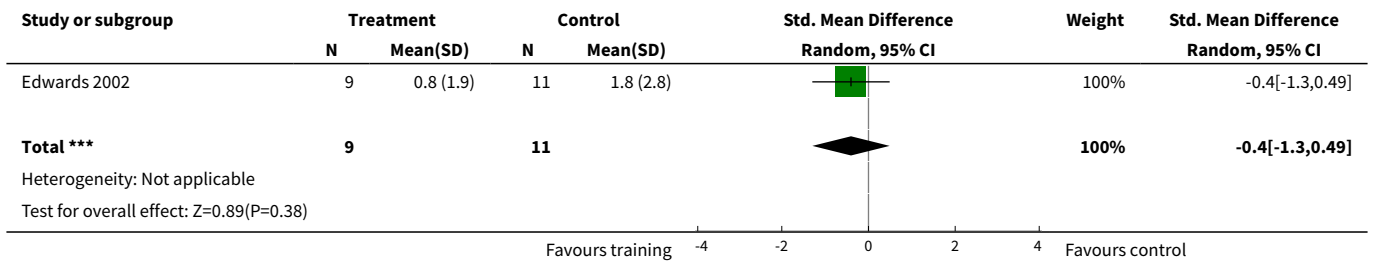
Analysis 3.3. Comparison 3 Foster carer training vs. Control Group (Foster carer skills), Outcome 3 Parenting Scale (PS).



Comparison 4. Foster carer training vs. Control Group (Foster carers' psychological functioning)

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 General Health Questionnaire (GHQ)	1	20	Std. Mean Difference (IV, Random, 95% CI)	-0.40 [-1.30, 0.49]

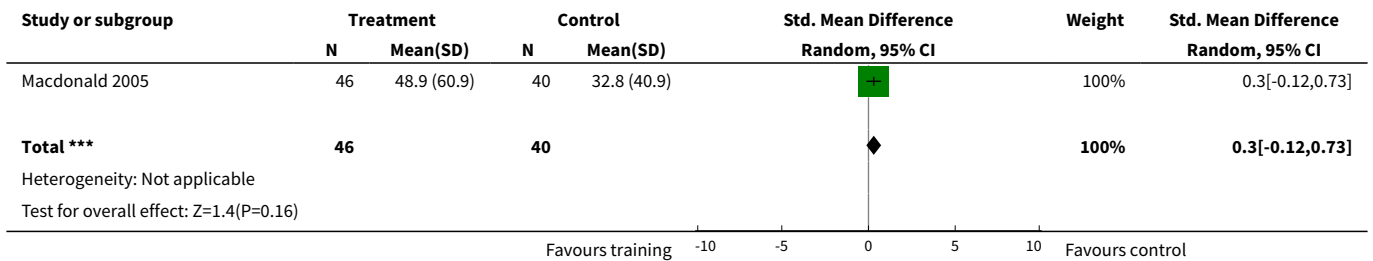
Analysis 4.1. Comparison 4 Foster carer training vs. Control Group (Foster carers' psychological functioning), Outcome 1 General Health Questionnaire (GHQ).



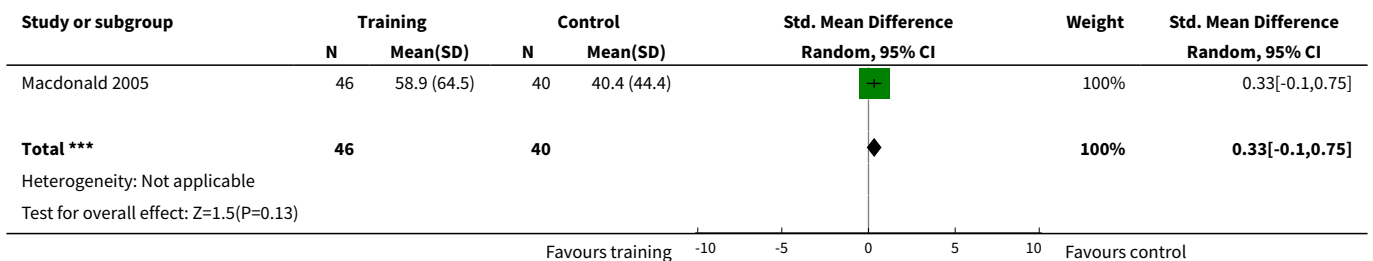
Comparison 6. Foster carer Training vs. Control Group (Fostering agency outcomes)

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Placement Stability (assessed post-training)	1	86	Std. Mean Difference (IV, Random, 95% CI)	0.30 [-0.12, 0.73]
2 Placement stability (assessed 6 months after training)	1	86	Std. Mean Difference (IV, Random, 95% CI)	0.33 [-0.10, 0.75]

Analysis 6.1. Comparison 6 Foster carer Training vs. Control Group (Fostering agency outcomes), Outcome 1 Placement Stability (assessed post-training).



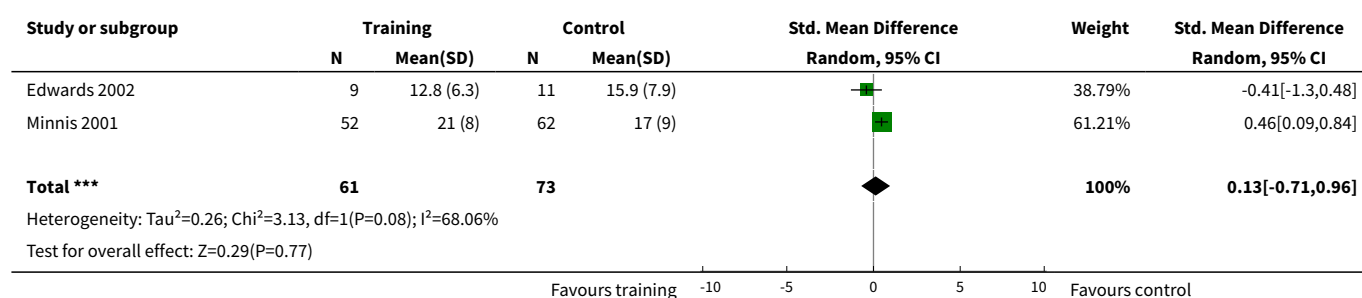
Analysis 6.2. Comparison 6 Foster carer Training vs. Control Group (Fostering agency outcomes), Outcome 2 Placement stability (assessed 6 months after training).



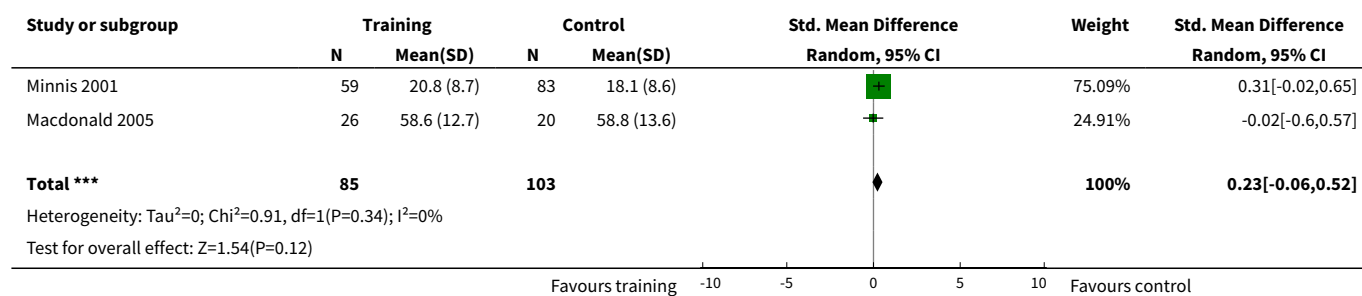
Comparison 7. Meta-analysis - looked-after child psychological functioning

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Training participants assessment (post training)	2	134	Std. Mean Difference (IV, Random, 95% CI)	0.13 [-0.71, 0.96]
2 Training participants assessment (6-9 month post training)	2	188	Std. Mean Difference (IV, Random, 95% CI)	0.23 [-0.06, 0.52]

Analysis 7.1. Comparison 7 Meta-analysis - looked-after child psychological functioning, Outcome 1 Training participants assessment (post training).



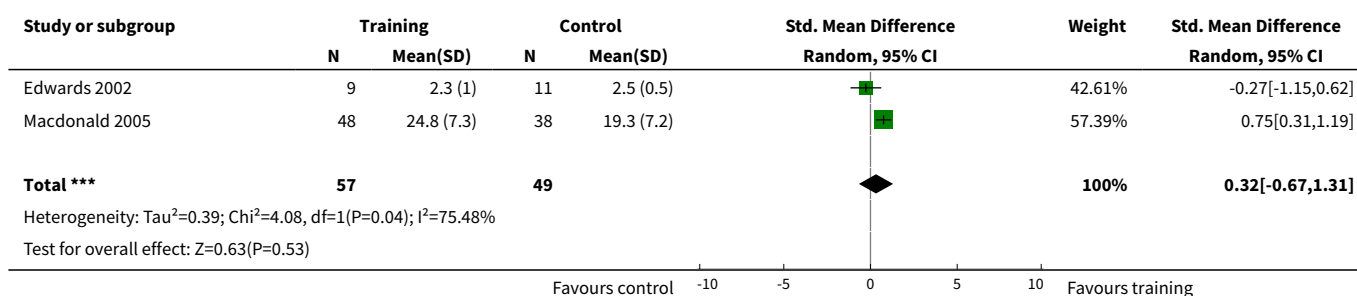
Analysis 7.2. Comparison 7 Meta-analysis - looked-after child psychological functioning, Outcome 2 Training participants assessment (6-9 month post training).



Comparison 8. Meta-analysis - foster carers skills

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Various measures of skills & knowledge	2	106	Std. Mean Difference (IV, Random, 95% CI)	0.32 [-0.67, 1.31]

Analysis 8.1. Comparison 8 Meta-analysis - foster carers skills, Outcome 1 Various measures of skills & knowledge.



ADDITIONAL TABLES

Table 1. Additional methods for future updates

Issue	Method
Measures of treatment effect: Dichotomous data	For dichotomous data, we will calculate the pooled odds ratio, because the odds ratio has statistical advantages related to its sampling distribution and its suitability for modelling.
Assessment of reporting biases	If sufficient studies are identified in future, funnel plots will be drawn to investigate any relationship between effect size and study precision (closely related to sample size). Such a relationship could be due to publication or related biases or due to systematic differences between small and large studies. If a relationship is identified, the experimental diversity of the studies will be further examined as a possible explanation. (See also Egger 1997).
Subgroup analyses and investigation of heterogeneity	Depending on the profile of included studies the following subgroup analyses will be undertaken: (i) the differential impact of group- versus individual-based versus combined training interventions in outcome; (ii) the differential impact of studies in which children are asymptomatic at the commencement of the intervention versus those in which children are symptomatic i.e. with extant psychological or behavioural problems or both, whether formally or informally diagnosed; (iii) differences in the type, intensity or length/period of the intervention. Such analyses need to be treated with caution and this will be considered in the textual discussion.
Sensitivity analyses	Primary analyses will be based on available data from all included studies relevant to the comparison and outcome of interest. In order to assess the robustness of conclusions in relation to quality of data and approaches to analysis, sensitivity analyses will be performed. These will include: a) study design. Studies with adequate allocation concealment will be synthesised separately and a comparison of the overall estimates will be undertaken; b) intention-to-treat. The authors will report whether or not studies analysed data on an intention-to-treat basis. If this is not the case studies with fewer than 80% participants at follow up will be examined separately and results compared with overall effects for all included studies. For dichotomous outcomes, such as 'did placement break down?', the authors will assume that those who were lost to follow up (i) had proportionately the same outcomes as those who completed in the control group, (ii) experienced the successful outcome, (iii) all experienced the unsuccessful outcome.

Table 2. Baseline characteristics of foster carers

Study ID	Gender	Family profile	Occupation/income	Level of education	Fostering experience	Previous training
Barth 1994	26 female; 1 male	Ethnicity reported as African-American 78%; white 15%; Latino 7%. Some of the sample were relatives.	Not reported	Not reported	Average fostering experience 8.7 years Number of sexually abused children ever cared for: 10.1.	4 had previous sexual abuse training
Chamberlain 1992	Not reported	Overall, no differences in demographics found. Average foster parents came from two-parent household (85%) with both parents averaging in their early 40s, with three biological children living at home.	Annual household incomes from 20,000-24,900 USD pa (1992).	On average, education level above high school, but without completed college degrees (tertiary education).	Mean number of previous placements was 21; range was from 6 families who had only cared for one child and one family having cared for 215 children. The most striking comment made by investigators is that all carers in study were highly experienced.	Not reported
Macdonald 2002	Overall, 83% female; 17% male (76% female; 10.25% male; 13.7% couples).	Age of carers was from 32-65, with a mean age of 45.	Not reported	Not reported	Years as a foster parent ranged from 1-50; mean 8.68 years.	Not reported
Minnis 2001	Not reported	Not reported	Median (range) deprivation category of foster carers was reported as 4 (1, 7) overall.	Not reported	Median (range) number of children previously placed in foster home reported as 18 (1, 91) in the treatment group; 14 (1, 140) in the control. Mean length of time (in months) that carers in this study knew the particular child(ren) currently in their care was 29 months (treatment) and 32 months (control).	Not reported
Pithouse 2002	'Most' were women	'The vast majority' carers were women who 'held the role of main carer in the household.' 'Most' were married and lived with their spouse. Age of carers was from 30-58, averaging in the mid-40s. None were relative or respite carers. 'The vast majority' had	Reported as 'varying' across local authorities	'Just under half' in each sample (treatment and control) had a paid job outside the home (mostly part-time work). 10% had full-time work. 40% overall are report-	Mean number of 20 children (range, 0-200) previously fostered overall. Carers also had considerable prior experience in fostering children with challenging behaviour (11.8 mean in treatment group, 14.7 in control [range for both 0-150]). Some carers were designated as 'specialist' carers but 'most' are 'mainstream carers'.	66% reported having received training specifically in challenging behaviour in the previous three years, although exposure to such training varied and

Table 2. Baseline characteristics of foster carers *(Continued)*

		experience of bringing up their own children.		ed as holding some form of academic qualifications (GCSEs or higher). Around 20% held a related professional or vocational qualification such as social work, teaching, nursing or childminding.		investigators express 'caution' in making assumptions about carers' knowledge and skills. Some carers must have had previous training in order to be designated 'specialist' carers, but no data are given concerning this.
Edwards 2002	15 females, 5 males	The mean age of foster carers participated in the research was 48 years. Most foster carers (except three) had at least one natural child and many had several (mode=4).	Not reported	Not reported	Average fostering experience was 7 years, 9 months (maximum 21 years, minimum 1.5 years).	Not reported

Table 3. Baseline characteristics of children in foster care

Study ID	Age of child	Gender	Ethnic origin	Health status	'General ability'	Natural fam. profile	Current/previous Ps	Behavioural problems	School adjustment
Barth 1994	8.8 years old on average	83% female; 17% male	67% African-American; 23 white %; 17% Latino	Not reported	Not reported	Not reported except insofar as all children were placed in care because of sexual abuse within family	Children had been in current placement an average of 17.5 months	Across 23 items of the CBCL dimension scores, children in the treatment and control groups differed in some cases. Scores were in the clinical range ($T > 70$) in the treatment group for the following dimensions: schizoid-obsessive; aggressive; cruel; immature/hyperactive. In the control group, $T > 70$ for anxious-obesity and the immature/hyperactive dimensions.	Not reported
Chamberlain 1992	10.8 on average (range 4-18)	61% female; 39% male	86% Caucasian; 6% African-American; 4% Hispanic; 4% 'others'	'Conduct disorder' reported as follows: runaways 22%; alcohol/drug abuse 6%; felony charges 5%; sexually abusive 18%; classified 'dangerous to others' 22%	N/A here	Family stress measured as: income below poverty level (76%); parents divorced 56%; three or more siblings (40%). Marital discord reported in 71% of sample; parent previously/currently hospitalised (33%); parent convicted (44%); siblings institutionalised (16%); siblings in foster care (64%); family violence (63%).	Most commonly cited reasons for current placement was neglect in 33% of cases; physical abuse in 18%; sexual abuse 16%. Average number of out-of-home placements: mean = 1.5 (range 0-9);	Attempted suicide 5%; danger to self 11%; danger to others (mild 18%; severe 3%)	Achievement deficits 44%; behavioural problems 41%; grade level 39%; ever suspended 15%; ever expelled 97%; attendance problems 24%; IEP [sic] 19%
Macdonald 2002	Not reported	Not reported	Not reported	Not reported	Not reported	Not reported	Not reported	According to two items of the CBCL (internalising and externalising scores), all children's scores averaged significantly above normal	Not reported

Table 3. Baseline characteristics of children in foster care (Continued)

Minnis 2001	10.9 mean age (sd = 3.1) in treatment group; 11.6 (sd = 3.27) control.	43% female; 57% male	Not reported	Foster carers SDQ reported 59% of children in the treatment group and 56% of children in the control group as being 'psychiatric cases'. 11% of children in the treatment group were reported as having a physical disability and 5% in the control group; 27% had a learning disability in the treatment group and 26% in the control.	Not reported	Information presented as 'negatives': ie, 24 % of children in the treatment group and 20% in the control had no contact with birth parents at all. More than 90% (overall, in both groups) had suffered one or more types of abuse or neglect.	78% of the treatment group and 69% of those in the control group had been in foster care before;	Investigators report in the text that over 60% of children had 'some degree of psychopathology'.	Not reported
Pithouse 2002	10.84 years old on average (range just under 4- just under 18)	37% female; 63% male	98% 'white British'	Not reported	'Levels of competence' were assessed at baseline on the CB-CL and 61% of treatment and 50%	Not reported	Length of current placement 'varied widely from one month to ten years' -- no means given.	To be included in the trial, children had to have either 'at some time caused more than minor injuries to themselves or others', been destructive to their environments, exhibited behaviour at least weekly which placed themselves or others in danger, required intervention by more than one adult for control, caused damage which could not be rectified by immediate carer, dis-	Academic performance was assessed at baseline on the CB-CL and only 32% of treatment and 35% of intervention

('normal' is 50; children in study scored > 60 on average).

Table 3. Baseline characteristics of children in foster care *(Continued)*

					of intervention group rated 'average' for age on sports, hobbies, clubs and chores; 29% and 40% as average in social relationships. The 'vast majority' of the remainder rated below average in all these respects.			rupted for at least an hour; and/or caused disruption for more than a few minutes on a daily basis; and/or been excluded or threatened with exclusion from a public facility by facility managers or carers; required supervision by more than one adult; and/or the child has been apprehended by the police more than once	group rated 'average' for age. Half the sample overall was in receipt of some remedial service. Over 80% of the overall sample were said to 'experience academic or other problems at school.'
Edwards 2002	9 years on average (range: 4-16 years)	Not reported	Not reported	Not reported	Not reported	Not reported	Not reported	The author reports that there were no specific criteria of which each participant was to consider; in most cases the child whose behaviour worried most the carers was chosen.	Not reported

Table 4. Methodological quality of included studies

Study ID	Randomisation	Assessor blind- ing	Attrition	ITT analyses
Barth 1994	Alternate allocation	Not reported	Treatment group: original sample of 15 lost 2 by post-treatment (13%). Control group sample was 12 at start of trial and 10 post-treatment (17%)	None reported
Chamberlain 1992	Coin tossing	Not reported	Treatment group 1 (ESNT): original sample of 31; Treatment 2 (IPO) n = 14; Control group = n= 27. Treatment group 1 lost 3 families (9.6%); treatment group 2 lost 2 families (14%); control group lost 7 (25.9%).	None reported
Edwards 2002	Alternate 'out of a hat' allocation	Not reported	Treatment group: original sample of 13 lost 9 by post-treatment (31%). Control group sample was 16 at start of trial and 11 post-treatment (31%)	None reported
Macdonald 2005	Random numbers table	Not reported	Treatment group: original sample of 67 lost 55 by post-treatment (18%). Control group sample was 50 at start of trial 45 post-treatment (10%)	None reported
Minnis 2001	Random permuted blocks	Yes	Treatment group: original sample of 76 children lost 14 by post-treatment (18%). Control group sample was 106 at start of trial and 88 post-treatment (17%)	None reported
Pithouse 2002	Quasi-randomised matched pairs (investigator was not blinded to identity of children)	Not reported	Treatment and control group: original sample of 53 in each, due to matched pairing; no information given on anyone leaving the study	None reported

APPENDICES

Appendix 1. MEDLINE search strategy

MEDLINE searched via OVID 1966 to September 2006

- 1 randomized controlled trial.pt.
- 2 controlled clinical trial.pt.
- 3 randomized controlled trials.sh.
- 4 random allocation.sh.
- 5 double blind method.sh.
- 6 single-blind method.sh.
- 7 or/1-6
- 8 (animals not humans).sh.
- 9 7 not 8
- 10 clinical trial.pt.
- 11 exp clinical trials/
- 12 (clin\$ adj25 trial\$).ti,ab.
- 13 ((singl\$ or doubl\$ or trebl\$ or tripl\$) adj25 (blind\$ or mask\$)).ti,ab.
- 14 Placebos.sh.
- 15 placebo\$.ti,ab.

16 random\$.ti,ab.
 17 research design.sh.
 18 or/10-17
 19 18 not 8
 20 19 not 9
 21 comparative study.sh.
 22 exp evaluation studies/
 23 follow up studies.sh.
 24 prospective studies.sh.
 25 (control\$ or prospectiv\$ or volunteer\$).ti,ab.
 26 or/21-25
 27 26 not 8
 28 27 not (9 or 20)
 29 9 or 20 or 28
 30 exp Foster Home Care/
 31 foster-care\$.tw.
 32 (foster adj3 care\$).tw.
 33 (foster adj3 parent\$).tw.
 34 (foster adj3 mother\$).tw.
 35 (foster adj3 father\$).tw.
 36 or/30-35
 37 exp Behavior Therapy/
 38 (cognitiv\$ adj3 (therap\$ or train\$)).tw.
 39 (behavio#r\$ adj3 (therap\$ or train\$)).tw.
 40 (parent\$ adj3 train\$).tw.
 41 (family adj3 train\$).tw.
 42 or/37-41
 43 Child/
 44 (child\$ or adolescen\$ or boy\$ or girl\$ or teen\$ or schoolchild\$ or preschool\$ or pre-school\$ or infant\$ or baby or babies).tw.
 45 or/43-44
 46 (substitute adj3 care\$).tw.
 47 36 or 46
 48 29 and 47 and 42 and 45

Appendix 2. CENTRAL search strategy

CENTRAL searched via the Cochrane Library 2006 (Issue 3)

foster-home-care*:ME
 (foster-care*)
 (foster near care*)
 (foster near parent*)
 (foster near mother*)
 (foster near father*)
 ((substitute near (care or carer*)))
 (((#1 or #2) or #3) or #4) or #5) or #6) or #7)
 behavior-therapy*:ME
 (cognitiv* near (therap* or train*))
 ((behavior* or behaviour*) near (therap* or train*))
 (parent* near train*)
 (family near therap*)
 (((#9 or #10) or #11) or #12) or #13)
 child*:ME
 (((((((child* or adolescen*) or boy*) or girl*) or teen*) or schoolchild*) or preschool*) or pre-school*) or infant*) or baby) or babies)
 (#15 or #16)
 (#8 and #14 and #17)

Appendix 3. EMBASE search strategy

EMBASE searched via OVID 1980 to September 2006

1 clin\$.tw.
 2 trial\$.tw.

3 (clin\$ adj3 trial\$).tw.
 4 singl\$.tw.
 5 doubl\$.tw.
 6 trebl\$.tw.
 7 tripl\$.tw.
 8 blind\$.tw.
 9 mask\$.tw.
 10 ((singl\$ or doubl\$ or trebl\$ or tripl\$) adj3 (blind\$ or mask\$)).tw.
 11 randomi\$.tw.
 12 random\$.tw.
 13 allocat\$.tw.
 14 assign\$.tw.
 15 (random\$ adj3 (allocat\$ or assign\$)).tw.
 16 crossover.tw.
 17 16 or 15 or 11 or 10 or 3
 18 exp Randomized Controlled Trial/
 19 exp Double Blind Procedure/
 20 exp Crossover Procedure/
 21 exp Single Blind Procedure/
 22 exp RANDOMIZATION/
 23 18 or 19 or 20 or 21 or 22 or 17
 24 exp Foster Care/
 25 foster-care\$.tw.
 26 (foster adj3 care\$).tw.
 27 (foster adj3 parent\$).tw.
 28 (foster adj3 mother\$).tw.
 29 (foster adj3 father\$).tw.
 30 or/24-29
 31 exp Behavior Therapy/
 32 (cognitiv\$ adj3 (therap\$ or train\$)).tw.
 33 (behavio#r adj3 (therap\$ or train\$)).tw.
 34 (parent\$ adj3 train\$).tw.
 35 (family adj3 therap\$).tw.
 36 or/31-35
 37 Child/
 38 (child\$ or adolescen\$ or boy\$ or girl\$ teen\$ or schoolchild\$ or preschool\$ or pre-school\$ or infant\$ or baby or babies).tw.
 39 or/37-38
 40 (substitute adj3 care\$).tw.
 41 looked-after.tw.
 42 30 or 40 or 41
 43 23 and 36 and 39 and 42

Appendix 4. CINAHL search strategy

CINAHL searched via OVID 1982 to September 2006

1 randomi\$.mp. [mp=title, subject heading word, abstract, instrumentation]
 2 clin\$.mp. [mp=title, subject heading word, abstract, instrumentation]
 3 trial\$.mp. [mp=title, subject heading word, abstract, instrumentation]
 4 (clin\$ adj3 trial\$).mp. [mp=title, subject heading word, abstract, instrumentation]
 5 singl\$.mp. [mp=title, subject heading word, abstract, instrumentation]
 6 doubl\$.mp. [mp=title, subject heading word, abstract, instrumentation]
 7 tripl\$.mp. [mp=title, subject heading word, abstract, instrumentation]
 8 trebl\$.mp. [mp=title, subject heading word, abstract, instrumentation]
 9 mask\$.mp. [mp=title, subject heading word, abstract, instrumentation]
 10 blind\$.mp. [mp=title, subject heading word, abstract, instrumentation]
 11 (5 or 6 or 7 or 8) and (9 or 10)
 12 crossover.mp. [mp=title, subject heading word, abstract, instrumentation]
 13 random\$.mp. [mp=title, subject heading word, abstract, instrumentation]
 14 allocate\$.mp. [mp=title, subject heading word, abstract, instrumentation]
 15 assign\$.mp. [mp=title, subject heading word, abstract, instrumentation]
 16 (random\$ adj3 (allocate\$ or assign\$)).mp.

17 Random Assignment/
 18 exp Clinical Trials/
 19 exp Meta Analysis/
 20 16 or 12 or 11 or 4 or 1 or 17 or 18 or 19
 21 exp Foster Home Care/
 22 foster-care\$.tw.
 23 (foster adj3 care\$).tw.
 24 (foster adj3 parent\$).tw.
 25 (foster adj3 mother\$).tw.
 26 (foster adj3 father\$).tw.
 27 or/21-26
 28 exp Behavior Therapy/
 29 (cognitiv\$ adj3 (therap\$ or train\$)).tw.
 30 (behavio#r\$ adj3 (therap\$ or train\$)).tw.
 31 (parent\$ adj3 train\$).tw.
 32 (family adj3 therap\$).tw.
 33 or/28-32
 34 Child/
 35 (child\$ or adolescen\$ or boy\$ or girl\$ or teen\$ or schoolchild\$ or preschool\$ or pre-school\$ or infant\$ or baby or babies).tw.
 36 or/34-35
 37 (substitute adj3 care\$).tw.
 38 27 or 37
 39 20 and 38 and 33 and 36

Appendix 5. PsycINFO search strategy

PsycINFO searched via SilverPlatter 1872 to September 2006

((((foster-care*) or (foster near care*)) or ((foster near parent*) or (foster near mother*) or (foster near father*)) or (substitute near care*) or (looked-after))) or (explode "Foster-Parents" in DE) or (explode "Foster-Care" in DE)) and (((child* or adolescen* or boy* or girl* or teen* or youth* or schoolchild* or preschool* or pre-school* or infant* or baby or babies) or (explode "Foster-Children" in DE)) and ((clinical-trial* or (clinical trial*) or (random*) or ((double-blind*) or (double blind*)) or ("Placebo-" in DE) or (placebo*) or (clinical* stud*) or ((single-blind*) or (single blind)) or ((triple-blind) or (triple blind)) or ((control* stud*) or (comparative stud*))) and ((explode "Behavior-Therapy" in DE) or ((therapeutic or medical or speciali?ed) near (foster care)) or ((cognitiv* near therap*) or (cognitiv* near train*) or (behavio?r* neat therap*) or (behavio?r* near train*) or (parent* near train*) or (family near therap*))))

Appendix 6. ASSIA search strategy

ASSIA searched via CSA 1987 to September 2006

((DE="children" or "infants" or "adolescents")) or (child* or adolescen* or boy* or girl* or teen* or schoolchild* or preschool* or pre-school* or infant* or baby or babies) and ((DE="behavior modification") or (((cognitiv* within 3 therap*) or (cognitiv* within 3 train*)) or ((behavi*r within 3 therap*) or (behavi*r within 3 train*)) or ((parent* within 3 train*) or (family within 3 therap*))) and ((DE="foster care") or ((foster-care* or (foster within 3 care*) or (foster within 3 parent*) or ((foster within 3 mother*) or (foster within 3 father*) or (substitute within 3 care)) or (substitute within 3 carer*))) and (randomi* or (clin* near trial*) or ((singl* or doubl* or tripl* or trebl*) and (mask* or blind*)) or crossover or (random* near (allocat* or assign*)))

Appendix 7. ERIC search strategy

ERIC searched via DataStar 1966 to September 2006

1. FOSTER-CARE\$
2. FOSTER NEAR CARE\$
3. FOSTER NEAR PARENT\$1
4. FOSTER NEAR MOTHER\$
5. FOSTER NEAR FATHER\$
6. SUBSTITUTE NEAR (CARE OR CARER\$)
7. 1 OR 2 OR 3 OR 4 OR 5 OR 6

8. COGNITIV\$ NEAR THERAP\$
9. COGNITIV\$ NEAR (TRAIN OR TRAINING OR TRAINER\$1)
10. PARENT\$ ADJ TRAIN\$
11. FAMILY NEAR THERAP\$
12. (BEHAVIOUR OR BEHAVIOR) NEAR THERAP\$
13. (BEHAVIOUR OR BEHAVIOR) NEAR TRAIN\$
14. 8 OR 9 OR 10 OR 11 OR 12 OR 13
15. 7 AND 14
16. CHILD\$ OR ADOLESCEN\$ OR BOY\$ OR GIRL\$ OR TEEN\$ OR SCHOOLCHILD\$ OR PRESCHOOL\$ OR PRE-SCHOOL\$ OR INFANT\$ OR BABY OR BABIES
17. 15 AND 16
18. CLINICAL ADJ TRIAL\$ OR RANDOMIZED OR RANDOMISED OR PLACEBO OR RANDOMLY OR TRIAL\$
19. 17 AND 18

Appendix 8. Sociological Abstracts search strategy

Sociological Abstracts searched via CSA 1963 to September 2006

- #1 randomi*
- #2 clin* near trial*
- #3 (singl* or doubl* or tripl* or trebl*) and (mask* or blind*)
- #4 crossover
- #5 random* near (allocate* or assign*)
- #6 (randomi*) or (clin* near trial*) or ((singl* or doubl* or tripl* or trebl*) and (mask* or blind*)) or (crossover) or (random* near (allocate* or assign*))
- #7 explode 'Foster-Care' in DE
- #8 foster-care*
- #9 foster near (care* or mother* or father* or parent*)
- #10 substitute near care*
- #11 looked-after
- #12 #7 or #8 or #9 or #10 or #11
- #13 'Behavior-Modification' in DE
- #14 cognitiv* near (therap* or train*)
- #15 behavior?r* near (therap* or train*)
- #16 parent* near train*
- #17 family near therap*
- #18 (therapeutic or speciali?ed or medical) near foster
- #19 #13 or #14 or #15 or #16 or #17 or #18
- #20 explode 'Children-' in DE
- #21 child* or adolescen* or boy* or girl* or teen* or youth* or schoolchild* or preschool* or pre-school* or infant* or baby or babies
- #22 #20 or #21
- #23 #6 and #12 and #19 and #22

Appendix 9. National Research Register search strategy

National Research Register 2006 (Issue 3)

- foster-home-care*:ME
 (foster-care*)
 (foster near care*)
 (foster near parent*)
 (foster near mother*)
 (foster near father*)
 ((substitute near (care or carer*))
 (((#1 or #2) or #3) or #4) or #5) or #6) or #7)
- behavior-therapy*:ME
 (cognitiv* near (therap* or train*))
 ((behavior* or behaviour*) near (therap* or train*))
 (parent* near train*)
 (family near therap*)
 (((#9 or #10) or #11) or #12) or #13)
- child*:ME
 (((((((((child* or adolescen*) or boy*) or girl*) or teen*) or schoolchild*) or preschool*) or pre-school*) or infant*) or baby) or babies)

(#15 or #16)

Appendix 10. LILACS search strategy

LILACS searched 1982 to September 2006

((Pt randomized controlled trial OR Pt controlled clinical trial OR Mh randomized controlled trials OR Mh random allocation OR Mh double-blind method OR Mh single-blind method) AND NOT (Ct animal AND NOT (Ct human and Ct animal)) OR (Pt clinical trial OR Ex E05.318.760.535\$ OR (Tw clin\$ AND (Tw trial\$ OR Tw ensa\$ OR Tw estud\$ OR Tw experim\$ OR Tw investiga\$)) OR ((Tw singl\$ OR Tw simple\$ OR Tw doubl\$ OR Tw doble\$ OR Tw duplo\$ OR Tw trebl\$ OR Tw trip\$) AND (Tw blind\$ OR Tw cego\$ OR Tw ciego\$ OR Tw mask\$ OR Tw mascar\$)) OR Mh placebos OR Tw placebo\$ OR (Tw random\$ OR Tw randon\$ OR Tw casual\$ OR Tw acaso\$ OR Tw azar OR Tw aleator\$) OR Mh research design) AND NOT (Ct animal AND NOT (Ct human and Ct animal)) OR (Ct comparative study OR Ex E05.337\$ OR Mh follow-up studies OR Mh prospective studies OR Tw control\$ OR Tw prospectiv\$ OR Tw volunt\$ OR Tw volunteer\$) AND NOT (Ct animal AND NOT (Ct human and Ct animal))) [Palavras] and (Tw foster care\$ OR Tw foster parent\$ or Tw foster mother\$ OR Tw foster father\$ OR Tw substitute care\$) [Palavras] and (Tw cognitive therap\$ OR Tw cognitive train\$ OR Tw behaviour therap\$ OR Tw behavior therap\$ OR Tw behaviour train\$ OR Tw behavior train\$ OR Tw parent train\$ OR Tw family therap\$)

WHAT'S NEW

Date	Event	Description
16 April 2008	Amended	Converted to new review format.

HISTORY

Protocol first published: Issue 3, 2002

Review first published: Issue 2, 2005

Date	Event	Description
7 November 2007	Amended	Minor errors concerning significance of results have been corrected in the following areas for re-publication at Issue 1, 2008: A1. (c) Strengths and difficulties scale (both teacher and child reports) (d) Reactive attachment disorder scale
19 September 2007	Amended	Minor update
14 November 2006	New citation required and conclusions have changed	Substantive amendment
16 October 2006	Amended	New studies found and included or excluded

CONTRIBUTIONS OF AUTHORS

William Turner (WT) and Geraldine Macdonald (GM) both contributed to the writing of the protocol and the development of a search strategy. Searches were run by Jo Abbott and Eileen Brunt, trials search coordinators of the Cochrane Developmental, Psychosocial and Learning Problems Group (CDPLPG). WT, Jane Dennis (JD) and GM independently reviewed titles and abstracts of potential trials and selected trials to include within the review. WT extracted data (double-checked by JD).

WT, JD and GM analysed results and wrote up the final text of the review and share responsibility for the current update of this review.

DECLARATIONS OF INTEREST

Two of the review authors (WT and GM) have undertaken a randomised controlled trial in the area of CBT for foster carers in the southwest of England (UK) (Macdonald 2004; Macdonald 2005).

SOURCES OF SUPPORT

Internal sources

- University of Bristol, UK.

External sources

- Centre for Evidence-Based Social Services, UK.
- Nordic Campbell Center, Denmark.

NOTES

This review is co-registered within the Campbell Collaboration.

Following editorial comments received by the authors in April 2007, this review's title has been changed from 'Cognitive behavioural training interventions for assisting foster carers in the management of difficult behaviour' to 'Behavioural and cognitive behavioural training interventions for assisting foster carers in the management of difficult behaviour'.

INDEX TERMS

Medical Subject Headings (MeSH)

Aggression; Behavior Therapy [*education] [methods]; Child Development; Cognitive Behavioral Therapy [education] [methods]; Foster Home Care [methods] [*psychology]; Randomized Controlled Trials as Topic; Social Behavior Disorders [*therapy]

MeSH check words

Child; Humans