Cochrane
Library

Cochrane Database of Systematic Reviews

Family and parenting interventions in children and adolescents with conduct disorder and delinquency aged 10-17 (Review)

Woolfenden S, Williams KJ, Peat J

Woolfenden S, Williams KJ, Peat J.

Family and parenting interventions in children and adolescents with conduct disorder and delinquency aged 10-17.

Cochrane Database of Systematic Reviews 2001, Issue 2. Art. No.: CD003015.

DOI: [10.1002/14651858.CD003015](https://doi.org/10.1002/14651858.CD003015).

www.cochranelibrary.com

Family and parenting interventions in children and adolescents with conduct disorder and delinquency aged 10-17 (Review)

Copyright © 2010 The Cochrane Collaboration. Published by John Wiley & Sons, Ltd.

WILEY

TABLE OF CONTENTS

HEADER	1
ABSTRACT	1
PLAIN LANGUAGE SUMMARY	2
BACKGROUND	3
OBJECTIVES	3
METHODS	4
RESULTS	5
DISCUSSION	7
AUTHORS' CONCLUSIONS	8
ACKNOWLEDGEMENTS	9
REFERENCES	10
CHARACTERISTICS OF STUDIES	11
DATA AND ANALYSES	18
Analysis 1.1. Comparison 1 Family and Parenting Intervention v usual treatment, Outcome 1 Family cohesion (FACES/FRI) at 1-4 years.	19
Analysis 1.2. Comparison 1 Family and Parenting Intervention v usual treatment, Outcome 2 FACES-family adaptability at 1-4 years.	19
Analysis 1.3. Comparison 1 Family and Parenting Intervention v usual treatment, Outcome 3 MPRI - peer bonding.	20
Analysis 1.4. Comparison 1 Family and Parenting Intervention v usual treatment, Outcome 4 MPRI - peer aggression.	20
Analysis 1.5. Comparison 1 Family and Parenting Intervention v usual treatment, Outcome 5 MPRI - peer maturity.	20
Analysis 1.6. Comparison 1 Family and Parenting Intervention v usual treatment, Outcome 6 RBPC - child behaviour.	20
Analysis 1.7. Comparison 1 Family and Parenting Intervention v usual treatment, Outcome 7 Self Reported Delinquency.	21
Analysis 1.8. Comparison 1 Family and Parenting Intervention v usual treatment, Outcome 8 Arrest rate at 1-3 years.	21
Analysis 1.9. Comparison 1 Family and Parenting Intervention v usual treatment, Outcome 9 Risk of Incarceration.	21
Analysis 1.10. Comparison 1 Family and Parenting Intervention v usual treatment, Outcome 10 Risk of Re-arrest.	22
Analysis 1.11. Comparison 1 Family and Parenting Intervention v usual treatment, Outcome 11 Mean Length of Time in Institutions(days).	22
Analysis 1.12. Comparison 1 Family and Parenting Intervention v usual treatment, Outcome 12 Parental Mental Health - SCL-90-R.	23
Analysis 2.1. Comparison 2 Sensitivity Analysis, Outcome 1 Risk of Re-arrest - Sensitivity Analysis (quality).	23
Analysis 2.2. Comparison 2 Sensitivity Analysis, Outcome 2 Arrest rate at 1-3 years - Sensitivity Analysis (quality).	24
Analysis 2.3. Comparison 2 Sensitivity Analysis, Outcome 3 Mean Length of Time in Institutions(days) - Sensitivity Analysis (quality).	24
Analysis 2.4. Comparison 2 Sensitivity Analysis, Outcome 4 Family cohesion (FACES/FRI) at 1-4 years - Sensitivity Analysis (quality).	24
Analysis 2.5. Comparison 2 Sensitivity Analysis, Outcome 5 RBPC - child behaviour - Sensitivity Analysis (quality).	25
WHAT'S NEW	25
HISTORY	25
DECLARATIONS OF INTEREST	25
SOURCES OF SUPPORT	25
INDEX TERMS	25

[Intervention Review]

Family and parenting interventions in children and adolescents with conduct disorder and delinquency aged 10-17

Susan Woolfenden¹, Katrina J Williams², Jennifer Peat³¹B Wing, Liverpool Hospital, Liverpool, Australia. ²School of Women's and Children's Health, University of New South Wales & Sydney Children's Hospital, Sydney, Australia. ³Child Protection Unit, New Children's Hospital, Paramatta, Australia**Contact address:** Susan Woolfenden, B Wing, Liverpool Hospital, PO Box 7103, Liverpool, NSW, BC 1871, Australia.
susan.woolfenden@sswahs.nsw.gov.au.**Editorial group:** Cochrane Developmental, Psychosocial and Learning Problems Group**Publication status and date:** Edited (no change to conclusions), published in Issue 1, 2010.**Citation:** Woolfenden S, Williams KJ, Peat J. Family and parenting interventions in children and adolescents with conduct disorder and delinquency aged 10-17. *Cochrane Database of Systematic Reviews* 2001, Issue 2. Art. No.: CD003015. DOI: [10.1002/14651858.CD003015](https://doi.org/10.1002/14651858.CD003015).

Copyright © 2010 The Cochrane Collaboration. Published by John Wiley & Sons, Ltd.

ABSTRACT

Background

Conduct disorder and delinquency are significant problems for children and adolescents and their families, with the potential to consume much of the resources of the health, social care and juvenile justice systems. A number of family and parenting interventions have been recommended and are used for these conditions. The aim of this review was to determine if these interventions are effective in the management of conduct disorder and delinquency in children and adolescents, aged 10-17.

Objectives

To determine if family and parenting interventions improve the child/adolescent's behaviour; parenting and parental mental health; family functioning and relations; and have an effect on the long term psychosocial outcomes for the child/adolescent.

Search methods

Randomised controlled trials were identified in September 1999 through searching the Cochrane Controlled Trial Register (CCTR), databases (MEDLINE, EMBASE, PsycINFO, CINAHL, Sociofile, ERIC, Healthstar), reference lists of articles and contact with authors.

Selection criteria

Randomised controlled trials with a major focus on parenting and/or family functioning were eligible for inclusion in the review. Trials needed to include at least one objective outcome measure (e.g. arrest rates) or have used a measure that had been published in peer review publications and validated for the relevant purpose. Studies were required to have a control group, which could be a no intervention group, a wait list group or a usual intervention group (e.g. probation).

Trials in children and adolescents aged 10 to 17 years with conduct disorder and/or delinquency and their families were considered. Conduct disorder was defined by a standardised psychological assessment (for example, using a child behaviour checklist), or a psychiatric diagnosis. Delinquency was defined by a referral from a juvenile justice or another legal system for a child/adolescent who has committed a serious crime e.g. assault and/or offended on at least two occasions.

Data collection and analysis

Two reviewers independently reviewed all eligible studies for inclusion, assessed study quality (allocation concealment, blinding, follow up, clinically important outcomes) and extracted data. Heterogeneity was assessed using the Chi squared test of heterogeneity along with visual inspection of the data. A significance level less than 0.1 was interpreted as evidence of statistically significant heterogeneity. For data where heterogeneity was found the reviewers looked for an explanation. If studies with heterogeneous results were thought to be

comparable the statistical synthesis of the results was done using a random effects model. This model takes into account within-study sampling error and between-studies variation in the assessment of uncertainty and will give wider confidence intervals to the effect size and hence a more conservative result.

Sensitivity analysis was performed to explore the effects of the varying quality of the studies included on the results.

Main results

Of the nine hundred and seventy titles initially identified through the search strategy, eight trials met the inclusion criteria. A total of 749 children and their families were randomised to receive a family and parenting intervention or to be in a control group. In seven of these studies the participants were juvenile delinquents and their families and in only one the participants were children/adolescents with conduct disorder who had not yet had contact with the juvenile justice system.

At follow up, family and parenting interventions significantly reduced the time spent by juvenile delinquents in institutions (WMD 51.34 days, 95%CI 72.52 to 30.16). There was also a significant reduction in the risk of a juvenile delinquent being re arrested (RR 0.66, 95%CI 0.44 to 0.98) and in their rate of subsequent arrests at 1-3 years (SMD -0.56, 95% CI -1.100 to - 0.03). For both of these outcomes there was substantial heterogeneity in the results suggesting a need for caution in interpretation. At present there is insufficient evidence that family and parenting interventions reduce the risk of being incarcerated (RR=0.50, 95% CI 0.20 to 1.21). No significant difference was found for psychosocial outcomes such as family functioning, and child/adolescent behaviour.

Authors' conclusions

The evidence suggests that family and parenting interventions for juvenile delinquents and their families have beneficial effects on reducing time spent in institutions. This has an obvious benefit to the participant and their family and may result in a cost saving for society. These interventions may also reduce rates of subsequent arrest but at present these results need to be interpreted with caution due to the heterogeneity of the results.

PLAIN LANGUAGE SUMMARY

Family and parenting interventions in children and adolescents with conduct disorder and delinquency aged 10-17

Conduct disorder and delinquency are significant problems for children and adolescents and their families, with the potential to consume much of the resources of the health, social care and juvenile justice systems. A number of family and parenting interventions have been recommended and are used for these conditions. The aim of this review was to determine if these interventions are effective in the management of conduct disorder and delinquency in children and adolescents, aged 10-17. Current evidence suggests that family and parenting interventions for juvenile delinquents and their families have beneficial effects on reducing time spent in institutions. This has an obvious benefit to the participant and their family and may result in a cost saving for society. These interventions may also reduce rates of later arrest, but at present these results need to be interpreted with caution, because of diversity in the results of studies.

BACKGROUND

Conduct disorder is a psychiatric category that is defined as a repetitive and persistent pattern of aggressive, defiant or antisocial behaviour. It is one of the commonest forms of psychiatric disorder in children and adolescents with an estimated prevalence of between 1.5% and 3.4% in this age group. It affects three times as many boys as girls. (AACAP 1997; Scott 1998)

In contrast delinquency is a sociolegal category, that refers to children and adolescents who break the law. Delinquency rates are highest in the middle teen years. Approximately 2% of children and adolescents aged 10 to 17 years come in contact with the juvenile justice system each year. Of these, there is a minority who persist in offending (recurrent juvenile delinquents) and who account for a disproportionately large percentage of court appearances (Freeman 1996). It is widely accepted that the best predictors for future recurrent delinquency are early conduct problems (AACAP 1997; Sheldrick 1995).

It appears that conduct disorder is stable over time. The vast majority of affected children and adolescents go on to lead lives in which many domains of functioning are adversely affected (Rey et al 1995). Conduct problems may escalate in adolescence when there is an increased demand on an ability to function outside the family, to respond to the demands of society, the legal system, peers and school. This behaviour may become increasingly severe and complex and may be labelled as "delinquent" (AACAP 1997). In addition, adult manifestations of conduct disorder and delinquency include psychiatric disorders such as Antisocial Personality Disorder, and non-psychiatric antisocial behaviours such as theft and violence. (AACAP 1997; Scott 1998).

Conduct disorder and delinquency may be present in association with Attention Deficit Hyperactivity Disorder and internalising disorders such as depression. These co-morbidities will negatively influence the clinical picture and prognosis. Differentiating among these conditions may be complicated. The persistent pattern of aggressive, defiant or antisocial behaviour with accumulating legal ramifications, however, is unique to conduct disorder (AACAP 1997).

Conduct disorder and delinquency appear to have a number of associated risk factors, which include genetic, biological and environmental causes. Environmental causes include family factors such as parenting style and attachment, parental mental illness, antisocial parents, harsh and erratic discipline, child abuse and neglect, poor parental supervision, parental substance abuse, parental rejection of the child, parental disharmony, single parenthood and large family size. Poverty is also associated with an increased risk of conduct disorder and delinquency, probably because it exacerbates family dysfunction (AACAP 1997; Sheldrick 1995).

Family and parenting interventions hold that family interaction may cause, maintain or worsen conduct disorder and delinquency and that if family relationships are appropriately mobilised they can be a potent therapeutic agent for reducing unwanted behaviours and preventing relapse (Diamond et al 1996). There are a number of family and parenting interventions that have been recommended for the intervention of conduct disorder and delinquency (Sheldrick 1995). These range from parent training, which attempts to alter specific family interactions by improving parenting skills, to Multi-systemic therapy (MST), a broad-based

intervention that targets family and extra-familial factors such as parenting, school and peer relationships (Henggeler et al 1992). This may occur in the context of out of home placement eg Multi-dimensional intervention Foster Care (MTFC) (Chamberlain 1998).

Although there is extensive literature on the predictors and risk factors associated with conduct disorder and delinquency, there is little on the effectiveness of prevention and intervention (Sheldrick 1995). Recently Barlow (1997) conducted a systematic review to examine the effectiveness of 'group based' parent training programs in improving behaviour problems in 3-10 year old children (Barlow J 1997). The authors found that group based parent training programs have a positive impact on the behaviour of children between the ages of 3-10 years. However, these findings may not be applicable to the over 10 year old age group with severe conduct disorder and delinquency.

Chamberlain 1995 conducted a descriptive review to determine the effectiveness of family therapy in the intervention of adolescents with conduct disorder and delinquency. Seven studies fulfilled the following criteria: they had a control or comparison group; they involved a specific method of family intervention; and they measured the effectiveness of intervention of adolescents referred for conduct disorder and/or delinquency. The authors found that the studies focussed on participants with conduct problems of varying severity, used a range of measurement strategies and used different service delivery models. They concluded that the studies indicated that family therapy interventions appear to decrease adolescent conduct problems and delinquent behaviour when compared to individual therapy, intervention as usual or no therapy. However this review had a number of methodological weaknesses in that the studies analysed were not limited to randomised controlled trials and only one database (PsycLIT) was searched.

There is a potential for significant adverse short and long term outcomes from conduct disorder and delinquency. It is important that the effects of family and parenting interventions recommended for these conditions is evaluated and, in particular, their effectiveness in preventing or minimising these adverse long term outcomes. This is vital as older children and adolescents who have conduct disorder or delinquency have the potential to consume much of the resources of the health and juvenile justice with considerable cost to society (Borduin 1999; AACAP 1997).

OBJECTIVES

The aim of this systematic review was to determine if family and parenting interventions are effective in the management of conduct disorder or delinquency in children and adolescents aged 10-17 years.

Objectives are:

- To determine if family and parenting interventions improve the child/adolescent's behaviour.
- To determine if family and parenting interventions improve parenting and parental mental health.
- To determine if family and parenting interventions improve family functioning and relations.
- To determine if family and parenting interventions have an effect on the long-term psychosocial outcomes for the child e.g

academic performance, criminality, sibling delinquency, peer relations.

METHODS

Criteria for considering studies for this review

Types of studies

Trials were eligible for inclusion in the review if:

- The assignment of study participants to the intervention or control group was random
- The study intervention had its major focus on parenting and/or family functioning
- There was at least one objective outcome measure eg arrest rates or psychosocial outcomes, e.g., family functioning used a measure that had been published in peer review publications and validated for the relevant purpose (these outcomes were required to be measured in the intervention and control group, pre- and post- intervention)
- The data were either reported in a useable form or useable data could be obtained from the trial authors

Types of participants

Children and adolescents aged 10 to 17 years, with conduct disorder and/or delinquency, and their families, were considered. Conduct disorder was defined by a standardised psychological assessment (for example, using a child behaviour checklist), or a psychiatric diagnosis. Delinquency was defined by a referral from a juvenile justice or another legal system for a child/adolescent who has committed a serious crime (e.g assault) or offended on at least two occasions.

Studies with participants who had committed only sex or drug offences were excluded as it was felt by the reviewers that these offenders may be less likely to have underlying conduct disorder ([AACAP 1997](#)).

Types of interventions

Studies with interventions with a major focus on parenting and family functioning were included. The types of interventions considered were:

- Parent training which attempts to alter specific family interactions by improving parenting skills through teaching parents to monitor, discipline and manage child behaviour more effectively.
- Family therapy which may target the entire family, where the aim is to restructure family relationships so that the parents and child's needs can be met in more constructive ways.
- Multi-systemic therapy (MST) which is a broad-based intervention that targets many family and extra-familial factors such as parenting, school and peer relationships ([Henggeler et al 1992](#)).
- Multi-dimensional intervention Foster Care (MTFC) which is a broad-based intervention that targets many family and extra-familial factors such as parenting, school and peer relationships while the young person is in out of home placement ([Chamberlain 1998](#)).

Studies were required to have a control group, which could be a no intervention group, a wait list group or a usual intervention group (e.g. probation).

Types of outcome measures

The following child outcomes were considered important in this review:

Behaviour problems, psychiatric symptoms, peer relations, school failure, criminal activity, future employment.

The following parent and family outcomes were considered important in this review:

parenting skills, family functioning, parent-child relations, parental mental health, sibling delinquency

Instruments used to measure these outcomes could include:

A measure that had been published in peer review publications and validated for the measurement of conduct disorder/delinquency e.g the Child Behaviour Checklist ([Achenbach 1991](#)); Objective measures, e.g. archival juvenile justice data.

Search methods for identification of studies

Relevant trials were identified through searching the Cochrane Controlled Trials Register (CCTR) and the following databases:

Biomedical Sciences Databases:

MEDLINE (Sept 1999)

EMBASE (Sept 1999)

PsycINFO (Sept 1999)

CINAHL (Sept 1999)

Social Sciences and general references databases:

Sociofile (Sept 1999)

ERIC (Sept 1999)

Healthstar (Sept 1999)

All terms necessary to the intervention (family therapy, multisystemic therapy and parent training), and the participant groups (individuals aged 10 to 17, conduct disorder, aggressive behaviour, juvenile delinquency, child behaviour disorder, social behaviour disorder) were used. Filters appropriate to each database, designed to locate potential quasi-randomised controlled trials and randomised controlled trials, were used. Search terms were modified to meet the requirements of individual databases as regards to differences in fields and trial filters. No language restrictions were employed.

Other sources of information examined included the bibliographies of systematic and non-systematic reviews and reference lists of articles identified through the search strategy. Experts in the field were contacted by letter in order to identify unpublished studies.

Data collection and analysis

The titles and abstracts from the search were screened by SW. Articles that clearly did not fulfil inclusion criteria as judged by titles and abstracts were rejected by SW. "Hopeful looking" articles were retrieved. Studies under consideration were evaluated for methodological quality and appropriateness as per The Cochrane Handbook (Clarke & Oxman 1999). This method provides an assessment of the extent to which bias may have affected the study results ie high, moderate or low risk of bias. Assessments were based on two validity criteria:

- Adequacy of allocation concealment. This was classified as "adequate" (e.g. centralised randomisation process), "unclear" (i.e. randomisation not described), "inadequate" (i.e. sequential or consecutive), "not used"
- Blinding. This was determined by the study being tested with the following questions: "were the recipients of care unaware of their assigned intervention?", "were those providing care unaware of assigned therapy?", "were persons responsible for outcome assessment unaware of assigned therapy?"

Reporting of clinically important outcomes and completeness of follow up were also assessed. Articles were judged independently by two reviewers (SW, KW) and any differences were negotiated with a third reviewer (JP).

A data extraction form was developed based on these assessment criteria. Data extraction was performed by SW and KW. The information extracted included study location, methods, participant details, type of intervention, duration of intervention and outcome.

Data synthesis was performed using RevMan 4.1, the latest version of Cochrane analysis software. For continuous outcome data, such as family functioning, the mean score for each outcome between the two groups was compared at follow up using a standardised mean difference (SMD) where outcome measures differed between studies or a weighted mean difference (WMD) where studies used the same measure. For dichotomous outcome data, such as number of re-arrests, a risk ratio and its 95 percent confidence interval (95%CI) was calculated to compare the groups at follow up.

Heterogeneity (within and between study variation) was assessed using the Chi squared test of heterogeneity along with visual inspection of the data. A significance level less than 0.1 was interpreted as evidence of important heterogeneity. For data where heterogeneity was found the reviewers looked for an explanation, such as differences in study quality. If studies with heterogeneous results were thought to be comparable the statistical synthesis of the results was done using a random effects model. This model takes into account within-study sampling error and between-studies variation in the assessment of uncertainty and will give wider confidence intervals to the effect size and hence a more conservative result.

Sensitivity analysis was performed to explore the effects of the varying quality of the studies included on the results. Studies with concealment allocation was "unclear", "inadequate" or "not used" were excluded in this sensitivity analysis.

RESULTS

Description of studies

See: Tables of studies

A total of 970 titles were identified through the search strategy, all of these were published. Articles were rejected at title, abstract and text review if they did not fulfil inclusion criteria as outlined above. Thirteen "hopeful studies" were identified that went on to be critically appraised. 8 studies (Alexander 1973; Bank et al 1990; Borduin et al 1995; Chamberlain 1998; Emshoff 1983; Henggeler et al 1992; Henggeler et al 1997; Raue & Spence 1985) met the inclusion criteria outlined above. Of the 5 studies excluded, 3 had data that were not reported in a useable form or useable data could

not be obtained from the trial authors (Hughes & Wilson 1988; Land 1990; Szapocznik 1986), one had an unclear case definition and data also not in useable form (Lee and Haynes 1978), and one had no randomised control group (Dishion 1995).

A total of 749 children and adolescents and their families were randomised to receive a family/parenting intervention or be in a control group. Two studies had more than 100 participants (Borduin et al 1995; Henggeler et al 1997), five studies had 50 to 100 participants (Alexander 1973; Bank et al 1990; Chamberlain 1998; Emshoff 1983; Henggeler et al 1992) and one had under 50 participants (Raue & Spence 1985).

In seven of the studies, the participants and their families were referred to the intervention programs by juvenile justice systems from six states from the United States of America (Alexander 1973; Bank et al 1990; Borduin et al 1995; Chamberlain 1998; Emshoff 1983; Henggeler et al 1992; Henggeler et al 1997). These participants were all chronic and/or serious offenders. Their ages ranged from 11 to 17 years. Two studies had only male participants and four had participants from both sexes. The other study was conducted in Australia (Raue & Spence 1985). This was the only study where the participants had been assessed as having conduct disorder but had not had contact with the juvenile justice system. The participants in this study were aged 10 to 16 years and included both sexes.

There was a wide range of family and parenting interventions. They included Short Term Family Intervention (Alexander 1973), parent training (Bank et al 1990; Raue & Spence 1985), Multi-systemic therapy (MST) (Borduin et al 1995; Henggeler et al 1992; Henggeler et al 1997), Multi-dimensional Treatment foster care (MTFC) (Chamberlain 1998), and an Adolescent Diversion Project with a family condition and a multi-focus condition (Emshoff 1983). There was a wide range of control groups, which included "usual intervention" controls, "wait list controls" and "no intervention controls". The interventions for the "usual intervention" group were heterogeneous and varied from probation, court, out of home placement to individual, and "non experimental" forms of family therapy.

The duration of intervention was expressed in different time units in different studies. Duration varied from 23.9 hours of contact time to 6 months with assessment periods every two months. The follow up periods for the studies ranged from 6 months to 3 years.

Risk of bias in included studies

See: Table of included studies

All studies were randomised controlled trials. While all 8 stated that random allocation was used to allocate participants to the intervention and control group, only 4 studies had adequate concealment of allocation (Chamberlain 1998; Henggeler et al 1992; Henggeler et al 1997; Borduin et al 1995). In three studies concealment allocation was unclear and further information on randomisation was unable to be obtained by the reviewers from the trial authors (Raue & Spence 1985; Bank et al 1990; Emshoff 1983). In one study it was stated that although the aim was that subjects be randomly allocated (method of allocation concealment not described) there were "minor exceptions caused by program availability" and therefore allocation concealment was deemed to be inadequate by the reviewers (Alexander 1973).

In 7 of the studies blinding of the assessors to the intervention was deemed adequate as follow up data on objective outcomes was archival (Alexander 1973; Bank et al 1990; Borduin et al 1995; Chamberlain 1998; Emshoff 1983; Henggeler et al 1992; Henggeler et al 1997). These studies relied on juvenile justice records for their objective outcomes such as re-arrest data. In five of these seven studies there was also psychosocial data (eg behaviour checklist data) that were collected in an unblinded fashion introducing a potential source of bias (Chamberlain 1998; Emshoff 1983; Borduin et al 1995; Henggeler et al 1992; Henggeler et al 1997). In one study there was no blinding of the assessors for any of the outcomes again introducing a potential source of bias (Raue & Spence 1985).

For the included studies, attrition ranged from 0% to 14% and in one study attrition data were not given (Emshoff 1983).

Overall, the included studies' internal validity was rated in terms of "risk of bias". Four studies were rated as having a low risk of bias (Chamberlain 1998; Henggeler et al 1992; Henggeler et al 1997; Borduin et al 1995), two studies were rated as having a moderate risk of bias (Bank et al 1990; Emshoff 1983) and one study was rated as having a high risk of bias (Alexander 1973). (See: Table of included studies).

Effects of interventions

See: Lists of comparisons

Effect of family and parenting interventions on the child/adolescent's behaviour

Three studies reported on the effect of family and parenting interventions on the child/adolescent's behaviour. (Borduin et al 1995; Henggeler et al 1997; Raue & Spence 1985). When pooled, the data revealed no significant difference between family and parenting interventions and the usual intervention group (SMD -0.651, 95%CI -1.444 to 0.142; Analysis 1.6). When Raue & Spence 1985 was excluded for sensitivity analysis based on quality, the data revealed no significant difference between Multisystemic Therapy (MST) and the usual intervention groups (individual therapy or probation), SMD -0.50 (95%CI -1.42 to 0.42; Analysis 2.5). Of note, psychosocial data were assessed in an unblinded fashion and therefore the usefulness of these findings in informing practice is limited.

Effect of family and parenting interventions on parenting and parental mental health

Only two studies had data on parental mental health (Borduin et al 1995; Henggeler et al 1992). Multisystemic Therapy (MST) with families of juvenile delinquents was the intervention for both studies compared with usual interventions of individual therapy (Borduin et al 1995) and probation (Henggeler et al 1992). Pooled data revealed no significant difference between family and parenting interventions and the usual intervention groups (SMD -0.053, 95%CI -0.63 to 0.524; Analysis 1.12). There were no studies that specifically focussed on parenting as an outcome. Of note, these psychosocial data were assessed in an unblinded fashion and therefore the usefulness of these findings in informing practice is limited.

Effect of family and parenting interventions on family functioning and relations

Four studies had comparable data for family cohesion (Borduin et al 1995; Henggeler et al 1992; Henggeler et al 1997; Raue & Spence 1985). Pooled data revealed no significant difference between family and parenting interventions (MST and parent training) and the usual interventions (individual therapy, probation or wait list control), SMD 0.346, (95%CI -0.082 to 0.774; Analysis 1.1). When Raue & Spence 1985 was excluded in the sensitivity analysis based on study quality, the data revealed no significant difference between MST and the usual intervention groups (individual therapy or probation), SMD 0.18 (95%CI -0.14 to 0.49; Analysis 2.4). Of note, these psychosocial data were assessed in an unblinded fashion and therefore the usefulness of these findings in informing practice is limited.

Three studies, all with Multisystemic Therapy as their intervention, had comparable data for family adaptability (Borduin et al 1995; Henggeler et al 1992; Henggeler et al 1997). Pooled data revealed no significant difference between MST and probation or individual therapy (SMD 0.105, 95%CI -0.287 to 0.496; Analysis 1.2). These data were assessed in an unblinded fashion and therefore the usefulness of these findings in informing practice is limited.

Running away and reunification with family

One study (Chamberlain 1998) compared chronic juvenile offenders in 'out of home' placement who received Multi-dimensional Treatment Foster Care (MTFC), which had a major family and parenting intervention component, to those who received the usual intervention of "Group Care". The study found that offenders in the intervention group ran away less than those in usual intervention group (30.5% v 57.8%). In addition, offenders in the intervention group spent twice as much time living with parents and relatives during the 12 month follow up.

Effect of family and parenting interventions on the long-term outcomes for the child/adolescent, in terms of:

Academic performance

Only one study (Emshoff 1983) reported school outcome data. The study compared juvenile delinquents who received the "Adolescent Diversion Project Multi-focus Condition" to the "Adolescent Diversion Project Family Condition" to the Usual intervention (Court Control). The study found a trend towards decreasing school attendance over the six-month follow up. Attendance was measured as "percentage of participants not enrolled". The Multi-focus Condition did not experience as much of a decrease in this outcome as the other two groups (MF 9% v FC 23% v UT 23%).

Criminality

Seven of the included studies had objective outcomes in the form of archival data on criminal behaviour (Alexander 1973; Bank et al 1990; Borduin et al 1995; Chamberlain 1998; Emshoff 1983; Henggeler et al 1992; Henggeler et al 1997). Objective data on rate of re-arrests, mean institution time and incarceration was compared at one to two years follow up. Continuous outcome data in terms of the rate of subsequent arrests was compare at 1-3 year's follow up. One study (Emshoff 1983) gave archival criminal activity data at 6 months but this could not be used in comparison with other trials as a only a mean value was provided without a standard deviation.

Risk of re-arrest

Seven studies described a decrease in the number of re-arrests in the juvenile delinquents receiving the family or parenting intervention. Five of the seven studies gave dichotomous outcome data at one to two-year follow up (Bank et al 1990; Borduin et al 1995; Henggeler et al 1992; Chamberlain 1998; Alexander 1973). When the data from these studies was pooled, family and parenting interventions significantly reduced the risk of a juvenile delinquent being re-arrested after the intervention, compared to those having usual interventions (RR 0.66, 95%CI 0.44 to 0.98; Analysis 1.10). When Bank et al 1990 and Alexander 1973 were excluded in the sensitivity analysis based on study quality, the data revealed that MST/MTFC significantly reduced the risk of a juvenile delinquent being re-arrested after these interventions, compared to those having usual interventions (probation, individual therapy or group care) by a greater effect size (RR 0.55, 95%CI 0.37 to 0.81; Analysis 2.1).

Five studies (Bank et al 1990; Borduin et al 1995; Chamberlain 1998; Henggeler et al 1992; Henggeler et al 1992) gave continuous outcome data in terms of the rate of subsequent arrests. Family and parenting interventions significantly reduced the rate of subsequent arrests for a juvenile delinquent at 1-3 years (SMD -0.56, 95%CI -1.100 to -0.03; Analysis 1.8). When Bank et al 1990 was excluded in the sensitivity analysis based on study quality, the data revealed that MST/MTFC significantly reduced the rate of subsequent arrests for a juvenile delinquent at 1-3 years after these interventions compared to those having usual interventions (probation, individual therapy or group care), SMD -0.68 (95%CI -1.29 to -0.07; Analysis 2.2).

It is important to note that for both of these outcomes there was a significant amount of heterogeneity in the pooled data even after sensitivity analysis for quality so this result needs to be interpreted with caution. This indicates that although MST/MTFC are similar interventions for similar populations (chronic serious delinquents) there are still enough differences between the studies to bring into question the appropriateness of pooling the data.

Mean length of time in institutions

Five of the studies reported a decrease in time spent in institutions (eg prison, detention) for juvenile delinquents receiving family and parenting interventions. Four of the studies reported data as "institution time in days" (Bank et al 1990; Chamberlain 1998; Henggeler et al 1992; Henggeler et al 1997). A weighted mean difference (WMD) was used in data synthesis. Family and parenting interventions significantly decreased the amount of time spent by juvenile delinquents in institutions at follow up compared to those who received usual interventions (WMD: -51.34 days, 95%CI -72.52 to -30.16; Analysis 1.11). When Bank et al 1990 was excluded in the sensitivity analysis based on study quality, the data revealed that MST/MTFC significantly decreased the amount of time spent by juvenile delinquents in institutions at follow up compared to those who received group care or probation (WMD: -56.52, 95%CI -83.83, -29.20; Analysis 2.3).

Risk of incarceration

Only two studies reported outcome data on the number of juvenile delinquents who had been incarcerated during the one to two year follow up (Henggeler et al 1992; Henggeler et al 1997). These were both studies using MST in chronic serious juvenile delinquents.

The pooled relative risk of incarceration was 0.50 (95%CI 0.20 to 1.21; Analysis 1.9). There was substantial heterogeneity between the results of these two studies. The source of this heterogeneity is unclear given the apparent similarity in the participants and interventions.

Self-reported delinquency

Three studies used self-report delinquency scales, Self-Report Delinquency Scale and Elliot Behavioural Checklist, to measure criminal activity (Chamberlain 1998; Henggeler et al 1992; Henggeler et al 1997). As the outcome data had been collected using different instruments it was necessary to use a standardised mean difference to combine the three sets. Pooled data revealed a significant difference between the intervention group (MST and MTFC) and the usual intervention group (Group Care or probation), SMD: -0.41 (95%CI -0.65 to -0.17; Analysis 1.7).

Future employment

There was no objective data on future employment in any of the studies.

Sibling delinquency

One study (Alexander 1973; Klein 1977) reported a significant reduction in sibling delinquency at 2.5 to 3.5 years follow up after a Short Term Behavioural Family Intervention. It found that the percentage of siblings of delinquents whose families had this intervention who offended was 20% compared to 59% in the Client Centered Group (usual intervention control), 63% in the Psychodynamic Family Program (usual intervention control) and 40% in the no intervention control group.

Peer relations

Three studies reported on peer aggression, realtions and bonding (Henggeler et al 1992; Borduin et al 1995; Henggeler et al 1997). Pooled data revealed no significant difference for peer aggression (SMD -0.154, 95%CI -0.374 to 0.066; Analysis 1.4), bonding (SMD -0.018, 95%CI -0.238 to 0.202; Analysis 1.3) and peer maturity (SMD 0.031, 95%CI -0.189 to 0.25; Analysis 1.5) between MST and the usual intervention group (probation and individual therapy). These data were assessed in an unblinded fashion and therefore the usefulness of these findings in informing practice is limited.

DISCUSSION

Conduct disorder and delinquency are significant problems for children and adolescents and their families with adverse short and long-term outcomes. In addition these problems have the potential to consume much of the resources of the health and juvenile justice systems with considerable cost to society.

Meta-analysis showed a significant reduction in time spent in institutions by juvenile delinquents who had received family and parenting interventions. It is not clear from the studies if judges were blind to the intervention allocation when adjudicating over a young person who had been re-arrested. It is therefore possible that their decisions about incarceration may have been affected by their knowledge of a juvenile delinquent's intervention allocation. For example if a juvenile delinquent had re-offended but had committed a relatively minor crime, the judge may have been more lenient if he was aware that the offender was allocated to a family and parenting intervention. On the other hand the judge might

have been more punitive thus biasing the study against finding an effect of the interventions.

We found that this intervention was associated with a significant reduction in the risk of a juvenile delinquent being re-arrested (RR 0.66, 95%CI 0.44 to 0.98) and in their rate of subsequent arrests at 1-3 years (SMD -0.56, 95% CI -1.100 to -0.03). However it is important to note that for both of these outcomes there was a significant amount of heterogeneity in the pooled data even after exclusion of the poorer quality studies so this result needs to be interpreted with caution. Meta-analysis of two trials (Henggeler et al 1992; Henggeler et al 1997) found that at present there is insufficient evidence that family and parenting interventions reduce the risk of being incarcerated (RR=0.50, 95% CI 0.20 to 1.21).

These reductions in mean length of time spent in institutions and the possible reduction in rearrest rate indicate that family and parenting interventions may benefit for the children and adolescents and their family and result in a considerable cost saving for society. For example, Bank et al 1990 costed the savings of such family and parenting interventions as \$US 100 000 over a 3 year period.

There was a significant reduction in self-reported delinquency in three studies (Chamberlain 1998; Henggeler et al 1992; Henggeler et al 1997). This adds further support to the archival data and is important because it reflects the young person's own report of their criminal activity, rather than relying on them being caught. However it is also possible a family and parenting intervention may affect the amount that children and adolescents report on their true level of criminal activity. This would introduce bias that would lead to either an over or under estimation of the intervention effect.

In three of the trials (Emshoff 1983; Henggeler et al 1997; Bank et al 1990) a significant time effect was reported with a decrease in criminal activity for both the intervention and usual intervention groups at follow-up (6 months, 1.7 and 3 years respectively). This indicates that there are factors other than the intervention that play a role in reducing criminal activity. Possible explanations may be the fact that juvenile delinquents in the usual intervention groups were also receiving therapy or that criminal activity improves with increasing age due perhaps to increasing maturity of the participant (AACAP 1997).

Only one trial had school attendance as an outcome (Emshoff 1983). There was a concerning trend toward decreasing school enrolment in juvenile delinquents which was less marked in the broad-based intervention groups but was not reversed by this therapy. There are a number of factors that influence school attendance, such as learning disabilities, ADHD, peer group support, student-teacher relationships, lower socioeconomic status that were not the major focus of the family and parenting interventions. Of note, none of the trials gave an indication of academic performance in the children and adolescents involved which is an important indicator for future opportunities, and employment. In addition, this review did not have outcome data on long term outcomes such as employment, mental health and criminality as an adult.

This review reflects the findings of other reviews carried out in the field of psychosocial interventions, where a large number of potential studies are reduced to a small number due to methodological flaws. Despite a rigorous approach to selection

in this review, there were still a number of methodological weaknesses in the included trials, as described.

The findings of this review persisted and were strengthened with sensitivity analysis that took quality of the studies into account. This sensitivity analysis was in effect a post-hoc subgroup analysis because it excluded non MST/MTFC studies. Nevertheless, significant statistical heterogeneity persisted for the re-arrest data in this analysis even using a random effects model. This persistence may reflect the wide range of usual interventions, including probation, group care and individual therapy used in different juvenile justice systems and to a lesser extent variability between the family and parenting interventions. As a result this statistically significant heterogeneity limits the interpretation and usefulness of the finding of significant reductions in the risk of rearrest.

By including all eligible trials systematic reviews aim to avoid biased ascertainment. However bias may arise if published or unpublished studies are missed. All the included studies in this review were published, the majority in peer review journals. No unpublished studies were identified by the search strategy or contact with experts in the field therefore this review has the potential for publication bias.

AUTHORS' CONCLUSIONS

Implications for practice

The evidence suggests that family and parenting interventions for juvenile delinquents and their families, particularly Multi-systemic Therapy and Multi-dimensional Treatment Foster Care, have beneficial effects in reducing the length of time spent by juvenile delinquents in institutions subsequent to these interventions. In addition to the obvious benefit to the participant and their family, such interventions may also result in a cost saving for society. These interventions may also reduce rates of subsequent arrest but at present these results need to be interpreted with caution due to the heterogeneity of the results. There is preliminary evidence that may suggest that these interventions have a "spill over" effect of reducing future sibling delinquency (Alexander 1973; Klein 1977).

At present there is insufficient evidence that family and parenting interventions reduce the risk of a juvenile delinquent being incarcerated or have a beneficial effect on parenting, parental mental health, family functioning, academic performance, future employment, and peer relations. Although there is no evidence that family and parenting interventions such as Multi-systemic Therapy cause harm, such therapies are labour intensive. This has practical implication for making decisions about the implementation of these programs when prioritising resource allocation.

In all but one of these studies included in this review the participants were juvenile delinquents and their families residing in the USA. Therefore, it can be argued that the applicability of such studies is limited to children and adolescents in the juvenile justice system in the USA.

Implications for research

A methodological issue with pooling these studies was the wide range of family and parenting interventions and "usual intervention" controls. The substantial heterogeneity of results for most outcomes may reflect the fact that all of the participants and their families were referred by different juvenile justice systems in

different States. This heterogeneity limits the interpretation and usefulness of pooled data. Future studies of family and parenting interventions, particularly MST/MTFC should, where practically possible, try to minimise this within and between study variability in their study design. This will hopefully allow for more useful meta-analyses to be performed. In addition, the authors of this review will consider performing subgroup analysis of trials by intervention type, as these trials become available.

Of concern, only one randomised controlled trial was able to be included in this review where the participants had been assessed as having conduct disorder but had not yet had contact with the juvenile justice system. In addition, studies that had a focus on parent training, non-MST/MTFC family interventions and children with conduct disorder without delinquency tended to be of poor quality. It is therefore difficult to make any clear comment about the efficacy of these interventions. Well designed, randomised controlled trials of family and parenting interventions for conduct

disordered children over 10 who have not yet been in contact with the legal system are required.

There is an increasing focus in the literature on the role of early intervention (the first three years) to prevent conduct disorder and delinquency. However, there will always be children, who, for various reasons do not access early intervention services or who have conduct problems despite early intervention. To help these children and adolescents effective interventions need to be identified that will minimise the future negative impact of conduct disorder and delinquency, and can be used when problems arise.

ACKNOWLEDGEMENTS

We would like to thank Jane Dennis, and all the reviewers for the Cochrane Developmental, Psychosocial and Learning Problems Group for their improvements to this review.

REFERENCES

References to studies included in this review

Alexander 1973 {published data only}

* Alexander JF, Parsons BVJ. Short-Term Behavioural Intervention with Delinquent Families- Impact on Family Process and Recidivism.. *Journal of Abnormal Psychology* 1973;**81**(3):219-225.

Klein NC, Alexander JF, Parsons BVJ. Impact of Family Systems Intervention on Recidivism and Sibling Delinquency: A Model of Primary Prevention and Program Evaluation;. *Journal of Consulting and Clinical Psychology* 1977;**45**(3):469-474.

Parsons BVJ, Alexander JF. Short-Term Family Intervention: A Therapy Outcome Study.. *Journal of Consulting & Clinical Psychology* 1973;**41**(2):195-200.

Bank et al 1990 {published data only}

Bank L, Marlowe JH, Reid JB, Patterson GR, Weinrott MR. A comparative evaluation of parent -training interventions for families of chronic delinquents. *Journal of Abnormal Child Psychology* 1991;**19**:15-33.

Borduin et al 1995 {published data only}

Borduin CM, Mann BJ, Cone LT, Henggeler SW, Fucci BR, Blaske DM, et al. Multisystemic treatment of serious juvenile offenders: long - term prevention of criminality and violence. *Journal of Consulting & Clinical Psychology* 1995;**63**:569-578.

Chamberlain 1998 {published data only}

Chamberlain P, Reid JB. Comparison of two community alternatives to incarceration for chronic juvenile offenders. *Journal of Consulting & Clinical Psychology* 1998;**66**:624-633..

Emshoff 1983 {published data only}

Emshoff JG. The diversion of delinquent youth: family-focused intervention. *Children & Youth Services Review* 1983;**5**(4):343-356.

Henggeler et al 1992 {published data only}

Henggeler SW, Melton GB, Smith LA. Family preservation using multisystemic therapy: an effective alternative to incarcerating serious juvenile offenders. *Journal of Consulting & Clinical Psychology* 1992;**60**:953-961.

Henggeler et al 1997 {published data only}

* Henggeler SW, Melton GB, Brondino MJ, Scherer DG, Hanley JH. Multisystemic therapy with violent and chronic juvenile offenders and their families: the role of treatment fidelity in successful dissemination.. *Journal of Consulting & Clinical Psychology* 1997;**65**:821-833.

Scherer DG. Multisystemic Family Preservation Therapy: Preliminary findings from a study of rural and minority serious adolescent offenders.. *Journal of Emotional & Behavioral Disorders* 1994;**2**(4):198-206.

Raue & Spence 1985 {published data only}

Raue J, Spence SH. Group versus individual applications of reciprocity training for parent-youth conflict. *Behaviour Research & Therapy* 1985;**23**:177-186.

References to studies excluded from this review

Dishion 1995 {published data only}

Dishion TJ, Andrews DW. Preventing escalation in problem behaviors with high-risk young adolescents: immediate and 1-year outcomes.. *Journal of Consulting & Clinical Psychology* 1995;**63**:538-548.

Hughes & Wilson 1988 {published data only}

Hughes RC, Wilson PH. Behavioral Parent Training: Contingency Management versus Communication Skills Training with or without the Participation of the Child.. *Child & Family Behavior Therapy* 1988;**10**(4):11-23.

Land 1990 {published data only}

Land KC. Something That Works in Juvenile Justice: An Evaluation of the North Carolina Court Counselors' Intensive Protective Supervision Randomized Experimental Project, 1987-1989.. *Evaluation Review* 1990;**14**(6):574-606.

Lee and Haynes 1978 {published data only}

Lee R, Haynes NM. Counseling juvenile offenders: an experimental evaluation of Project Crest. *Community Mental Health Journal* 1978;**14**:267-271.

Szapocznik 1986 {published data only}

Szapocznik J. Bicultural Effectiveness Training (BET): An Experimental Test of an Intervention Modality for Families Experiencing Intergenerational/Intercultural Conflict.. *Hispanic Journal of Behavioral Sciences* 1986;**8**(4):303-30.

Additional references

AACAP 1997

American Academy of Child, Adolescent Psychiatry. Practice parameters for the assessment and treatment of children and adolescents with conduct disorder. *Journal of the American Academy of Child and Adolescent Psychiatry* 1997;**36**(10 supplement):122S-139S.

Achenbach 1991

Achenbach TM, Edelbrock CS. Manual for the Child Behaviour Checklist and Revised Child Behaviour Profile. Burlington, Vermont, USA: University Associates in Psychiatry, 1991.

Barlow J 1997

Barlow J. Systematic Review of the Effectiveness of Parent-Training Programmes in Improving Behaviour Problems in Children Aged 3-10 Years.. (Report) Health Services Research Unit, Department of Public Health, Oxford University 1997.

Borduin 1999

Borduin CM. Multisystemic treatment of criminality and violence in adolescents. *Journal of the American Academy of Child and Adolescent Psychiatry* 1999;**38**(3):242-9.

Chamberlain 1995

Chamberlain P, Rosicky JG. The effectiveness of family therapy in the treatment of adolescents with conduct disorder and delinquency. *Journal of Marital and Family Therapy* 1995;**21**(4):441-459.

Clarke & Oxman 1999 [Computer program]

Clarke M, Oxman AD, eds. Cochrane Reviewers' Handbook 4.0 [updated July 1999]. Review Manager (RevMan). Version 4.0. Oxford, England: The Cochrane Collaboration, 1999.

Diamond et al 1996

Diamond GS, Serrano AC, Dickey M, Sonis WA. Current status of family-based outcome and process research. *Journal of the American Academy of Child and Adolescent Psychiatry* 1996;**35**(1):6-16.

DSM-IV 1994

American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders, 4th Edition, (DSM-IV). Washington, DC: APA, 1994.

Freeman 1996

Freeman K. Young People and Crime. Crime and Justice Bulletin, NSW Bureau of Crime Statistics and Research, Sydney 1996, issue 32.

Kingston&Prior 1995

Kingston L, Prior M. The Development of Patterns of Stable, Transient and School-Age Onset Aggressive Behaviour in Young Children.. *Journal of the American Academy of Child and Adolescent Psychiatry* 1995;**34**(3):348-58.

Klein 1977

Klein NC, Alexander JF, Parsons, BV. Impact of family systems intervention on recidivism and sibling delinquency: a model of primary prevention and program evaluation. *Journal of Consulting and Clinical Psychology* 1977;**45**(3):469-74.

Loeber et al 1995

Loeber R, Green KK, Lahey BB. Which boys will fare worse? Early predictors of the onset of conduct disorder in a six -year longitudinal study. *Journal of the American Academy of Child and Adolescent Psychiatry* 1995;**34**(4):499-509.

Rey et al 1995

Rey JM, Morris-Yates A, Singh M, et al. Continuities between Psychiatric Disorders in Adolescents and Personality Disorders in Young Adults. *American Journal of Psychiatry* 1995;**152**:895-900.

Scott 1998

Scott S. Aggressive behaviour in childhood. *BMJ* 1998;**316**:202-6. [MEDLINE: 98129941]

Sheldrick 1995

Sheldrick CE. Delinquency: risk factors and treatment interventions. *Current Opinion in Psychiatry* 1995;**8**(6):362-5.

* Indicates the major publication for the study

CHARACTERISTICS OF STUDIES

Characteristics of included studies [ordered by study ID]

Alexander 1973

Methods	Randomised controlled trial (some subjects not randomised) Adequate blinding for objective outcome assessments - Archival data used, 86% follow up Overall validity rating - High risk of bias
Participants	86 Juvenile Delinquents and their families - recurrent "soft offences" eg shoplifting, ungovernable 13 - 16 years, 44% male, 56% female Referred by Juvenile Court
Interventions	Short Term Family Intervention Duration 5-6 weeks Control groups - No treatment - Usual treatment (client centered family groups program, psychodynamic family program)
Outcomes	Objective outcomes

Alexander 1973 (Continued)

Official Offence Reports
Sibling Court Involvement
Follow up - 2.5 to 3.5 years

Notes
Reduction in number of youths reoffending with behavioural offense in the STFI group (26%) compared with no treatment control (50%) and usual treatment control (CCFG 47%, PFT 73%)

Reduction in number of youths reoffending with criminal offense in the STFI group (17%) vs control groups (21 to 27%)
6- 18 month follow up
STFI sibling court involvement in 20% compared to 40% in no treatment control group and 59% in CCFG and 63% in PFT.

Risk of bias

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

Bank et al 1990

Methods
Randomised controlled trial

Adequate blinding for objective outcome assessments - Archival data used, 88% follow up

Overall validity rating - Moderate risk of bias

Participants
60 Chronically offending delinquents and their families, mean age 14, all male

Referred by Juvenile Court

Interventions
Parent Training

Duration
Mean 44.8 hours

Usual Treatment - Community Control (includes family therapy)

Duration >50 hours

Outcomes
Objective outcomes

Official Offence Reports, Institution time

Follow up - 3 years

Notes
Offence Rates-Reduced over time for both groups. PT group had a faster decline. During the treatment year it was statistically different

Institution Time-PT statistically significant difference in first year of follow up. PT group spent 1287 less days than UT with a shorter duration 96.7 vs 152.4.Saved \$100 000 over 3 year period.

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Unclear risk	B - Unclear

Borduin et al 1995

Methods	Randomised controlled trial Adequate blinding for objective outcome assessments - Archival data used, 94.5% follow up Psychosocial outcomes not blinded Overall validity rating - Low risk of bias
Participants	176 Serious Juvenile Offenders and their families 12-17 years, 67.5% male Referred by Juvenile Court
Interventions	Multisystemic Therapy Duration Mean of 23.9 hours (SD 8.2) Usual Treatment (Individual Therapy) Duration Mean 28.6 hours (SD 9.8)
Outcomes	Objective outcomes Arrests - number and type of crime Psychosocial outcomes* FACES, MPRI, RBPC, SCL-90-R, UDQ Follow up - 4 years
Notes	71.4% of youths in UT group arrested at least once v 26.1% of youths in MST group. MST more effective than UT in reducing number and seriousness of crimes among those youths arrested. MST youths less likely to be arrested for violent crimes following treatment than UT youths. MST mothers and fathers decreased in psychiatric symptoms whereas UT group increased for mothers or no change for fathers. MST - decrease in adolescent behaviour problems, vs UT group increase. Family cohesion and adaptability increased for MST and decreased in UT Dyadic interactions more positive changes for MST than UT group. Peer relations no change

Risk of bias

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

Chamberlain 1998

Methods	Randomised controlled trial
---------	-----------------------------

Chamberlain 1998 (Continued)

Adequate blinding for objective outcome assessments - Archival data used, 87% follow up
Psychosocial outcomes not blinded

Overall validity rating - Low risk of bias

Participants	85 Chronic Juvenile Offenders and their families, out of home placement, 12-17 years, all boys Referred by Juvenile Justice System
Interventions	Multidimensional Treatment Foster care Duration - 6 months assessed for placement every 2 months Usual Treatment (Group Care)
Outcomes	Objective outcomes Running away, Reunited with family, Rate of criminal referrals Psychosocial outcomes * EBC Follow up - 1 year
Notes	30.5% MTFC v 57.8% UT ran away. ·MTFC spent significantly less time in the lock up than UT. MTFC spent 60% fewer days incarcerated during the year after referral than UT. MTFC spent twice as much time living with parents and relatives during 12 month FU. MTFC was significantly more effective than UT in reducing officially recorded delinquent activity. ·MTFC boys showed significantly fewer criminal activities on EBC

Risk of bias

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

Emshoff 1983

Methods	Randomised controlled trial Adequate blinding for objective outcome assessments - Archival data used, Attrition data not given Psychosocial outcomes not blinded Overall validity rating - Moderate risk of bias
Participants	73 Juvenile Delinquents and their families - serious misdemeanours or non-serious felonies mean age 14.5, 66% male Referred by Juvenile Court
Interventions	Adolescent Diversion Project - Family Condition and Multifocus Condition Duration 18 weeks Usual Treatment - Court Control
Outcomes	Objective Outcomes

Emshoff 1983 (Continued)

Police and Court Contacts,
Incarceration, School Data

Psychosocial outcomes

*SRD

Follow up - 6 months

Notes

All 3 conditions - Youth decreased the frequency and seriousness of their contacts with the police and courts over time (average annual number of police contacts). The decrease over time was most apparent in experimental conditions. FC (1.54 v 1.08), MF (1.69 v 0.86), UT (1.11 v 0.98). Youth involved in the experimental conditions were incarcerated significantly less frequently than the control ($F=3.83$, $p<0.05$). No effect for school data except a time effect. Overall trend of decreasing school attendance over time, MF group did not experience as much decrease as other groups. Percentage not enrolled MF 5% v 9%, FC 8% v 23%, UT 8% v 23%.

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Unclear risk	B - Unclear

Henggeler et al 1992

Methods

Randomised controlled trial

Adequate blinding for objective outcome assessments - Archival data used, 100% follow up

Psychosocial outcomes not blinded

Overall validity rating - Low risk of bias

Participants

84 Serious Juvenile Offenders and their families, mean age 15.2, 77% male

Referred by Juvenile Justice

Interventions

Multisystemic Therapy

Duration
13.4 weeks

Usual Treatment - probation, if violated then institution

Outcomes

Objective outcomes

Arrests, Incarceration

Psychosocial outcomes

*SRD, FACES, MPRI, RBPC, SCL-90-R, SCS-CBC

Follow up - 59 weeks

Notes

MST cases had slightly more than half as many arrests as UT (0.87 v 1.52). Re-arrests- MST 42% vs Control 62%. MST spent 73 fewer days incarcerated than UT. MST incarceration 20% vs 68% UT

SRD supports archival data

Henggeler et al 1992 (Continued)

MST increase family cohesion, UT decrease
MST decrease in peer aggression, UT peer aggression the same.

Risk of bias

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

Henggeler et al 1997

Methods	Randomised controlled trial Adequate blinding for objective outcome assessments - Archival data used, 90% follow up Psychosocial outcomes not blinded Overall validity rating - Low risk of bias
Participants	155 Violent and Chronic Juvenile Offenders and their families, 11-17 years, 81.9% male Referred by Department Juvenile Justice
Interventions	Multisystemic Therapy (S1 and S2) Duration S1- Mean 122.6 days (SD 32.6 days) S2 - Mean 116.6 days (SD 39.8 days) Usual Treatment - probation, social services, out of home placement, Probation for 6 months
Outcomes	Objective Outcomes Arrests rates, Incarceration rate Psychosocial Outcomes *GSI & BSI, FACES & FA, MMPRI & PPCI, RBPC, SRD, Monitoring 1.7 years follow up
Notes	Annualised rate of incarceration 57% lower in MST (33.2 days per year per youth) than UT (70.4 days per year per youth) at 1.7 years ·Annualised rate of re arrest 26% lower in MST youths, not significant. No difference in seriousness of arrests. ·Significant time effects for all· SRD - Significant treatment effects did not emerge Family relations - No treatment effects. · MST Youths reduced psychiatric symptomatology, UT slightly increased Peer relations - no treatment effects

Risk of bias

Henggeler et al 1997 (Continued)

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

Raue & Spence 1985

Methods	Randomised controlled trial No blinding of subjects, assessor 87% follow up (no intention to treat analysis) Overall validity rating - High risk of bias
Participants	30 families of children rated by parents as at least 1.5 SD above the age norm on the Aggressiveness factor of the Child Behaviour Problem Checklist, 10 - 16 years . 4 dropped out during intervention leaving 26 (27% females, 73% males) Referred by schools, government agencies, parents, medical practitioners
Interventions	Group parent reciprocity training program Duration - 4 weeks Individual - family based reciprocity training program Duration - 4 weeks Wait list control
Outcomes	No objective outcomes Psychosocial outcomes PAS CBPC CPPBQ
Notes	Minimal change for any group for the parent attitude survey Decrease in problem behaviour for all over time. Group and Individual significantly more than wait list. No difference between group and individual FRI and CPPBQ scores improved over time for all over time. No significant differences between conditions Follow up 2 months

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Unclear risk	B - Unclear

·Revised Behaviour Problem Checklist (RBPC), Global Severity Index (GSI) of the Brief Symptom Inventory (BSI), Social Competence Scale of the Child Behaviour Checklist (SCS-CBC) used to measure individualised emotional adjustment, adolescent behavioural problems and adolescent social competence

·Symptom Checklist-90-revised (SCL-90-R) used to measure parental psychiatric symptomatology.

·Family Adaptability and Cohesion Evaluation Scales (FACES -III), Family Assessment Measure (FAM - III), and/or Unrevealed Differences Questionnaire - Revised (UDQ-R) used to measure perceived and observed family functioning -

·Monitoring Index used to measure parental monitoring

·Missouri Peer Relations Inventory (MPRI), Parent Peer Conformity Inventory (PPCI) used to measure peer relations

Family and parenting interventions in children and adolescents with conduct disorder and delinquency aged 10-17 (Review)

17

·Self Report Delinquency Scale (SRD) ; EBC - Elliot Behavioural Checklist used to measure delinquency

PAS - Parent attitude survey

CBPC - Parent completed Child Behaviour Problem Checklist

FES - Family Environment Scale

CPPBQ - Child Perception of Parent Behaviour Questionnaire

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

Study	Reason for exclusion
Dishion 1995	Control group not randomised ("39 families and young adults were recruited as a quasi-experimental control)
Hughes & Wilson 1988	Data not in useable form and could not be obtained (original numbers randomised not given, attrition data not given and age group 6-15 and unable to get subset of 10-15 year olds)
Land 1990	Attrition not accounted for, data not in useable form and could not be obtained(ie no raw data - n's, means or sd)
Lee and Haynes 1978	Unclear Case Definition - adjudicated delinquent (not the definition we required for inclusion, ie not necessarily broken law on at least two occasions), data also not in useable form
Szapocznik 1986	Data not in useable form and could not be obtained (ie no raw data - n's, means or sd)

DATA AND ANALYSES

Comparison 1. Family and Parenting Intervention v usual treatment

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Family cohesion (FACES/FRI) at 1-4 years	4	342	Std. Mean Difference (IV, Random, 95% CI)	0.35 [-0.08, 0.77]
2 FACES-family adaptability at 1-4 years	3	322	Std. Mean Difference (IV, Random, 95% CI)	0.10 [-0.29, 0.50]
3 MPRI - peer bonding	3	322	Std. Mean Difference (IV, Random, 95% CI)	-0.02 [-0.24, 0.20]
4 MPRI - peer aggression	3	322	Std. Mean Difference (IV, Random, 95% CI)	-0.15 [-0.37, 0.07]
5 MPRI - peer maturity	3	322	Std. Mean Difference (IV, Random, 95% CI)	0.03 [-0.19, 0.25]
6 RBPC - child behaviour	4	342	Std. Mean Difference (IV, Random, 95% CI)	-0.65 [-1.44, 0.14]
7 Self Reported Delinquency	3	275	Std. Mean Difference (IV, Random, 95% CI)	-0.41 [-0.65, -0.17]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
8 Arrest rate at 1-3 years	5	555	Std. Mean Difference (IV, Random, 95% CI)	-0.56 [-1.10, -0.03]
9 Risk of Incarceration	2	239	Risk Ratio (M-H, Random, 95% CI)	0.50 [0.20, 1.21]
10 Risk of Re-arrest	5	486	Risk Ratio (M-H, Random, 95% CI)	0.66 [0.44, 0.98]
11 Mean Length of Time in Institutions(days)	4	379	Mean Difference (IV, Random, 95% CI)	-51.34 [-72.52, -30.16]
12 Parental Mental Health - SCL-90-R	2	182	Std. Mean Difference (IV, Random, 95% CI)	-0.05 [-0.63, 0.52]

Analysis 1.1. Comparison 1 Family and Parenting Intervention v usual treatment, Outcome 1 Family cohesion (FACES/FRI) at 1-4 years.

Analysis 1.2. Comparison 1 Family and Parenting Intervention v usual treatment, Outcome 2 FACES-family adaptability at 1-4 years.

Analysis 1.3. Comparison 1 Family and Parenting Intervention v usual treatment, Outcome 3 MPRI - peer bonding.

Analysis 1.4. Comparison 1 Family and Parenting Intervention v usual treatment, Outcome 4 MPRI - peer aggression.

Analysis 1.5. Comparison 1 Family and Parenting Intervention v usual treatment, Outcome 5 MPRI - peer maturity.

Analysis 1.6. Comparison 1 Family and Parenting Intervention v usual treatment, Outcome 6 RBPC - child behaviour.

Analysis 1.7. Comparison 1 Family and Parenting Intervention v usual treatment, Outcome 7 Self Reported Delinquency.

Analysis 1.8. Comparison 1 Family and Parenting Intervention v usual treatment, Outcome 8 Arrest rate at 1-3 years.

Analysis 1.9. Comparison 1 Family and Parenting Intervention v usual treatment, Outcome 9 Risk of Incarceration.

Analysis 1.10. Comparison 1 Family and Parenting Intervention v usual treatment, Outcome 10 Risk of Re-arrest.

Analysis 1.11. Comparison 1 Family and Parenting Intervention v usual treatment, Outcome 11 Mean Length of Time in Institutions(days).

Analysis 1.12. Comparison 1 Family and Parenting Intervention v usual treatment, Outcome 12 Parental Mental Health - SCL-90-R. **Comparison 2. Sensitivity Analysis**

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Risk of Re-arrest - Sensitivity Analysis (quality)	3	345	Risk Ratio (M-H, Random, 95% CI)	0.55 [0.37, 0.81]
2 Arrest rate at 1-3 years - Sensitivity Analysis (quality)	4	500	Std. Mean Difference (IV, Random, 95% CI)	-0.68 [-1.29, -0.07]
3 Mean Length of Time in Institutions(days) - Sensitivity Analysis (quality)	3	324	Mean Difference (IV, Random, 95% CI)	-56.52 [-83.83, -29.20]
4 Family cohesion (FACES/FRI) at 1-4 years - Sensitivity Analysis (quality)	3	322	Std. Mean Difference (IV, Random, 95% CI)	0.18 [-0.14, 0.49]
5 RBPC - child behaviour - Sensitivity Analysis (quality)	3	322	Std. Mean Difference (IV, Random, 95% CI)	-0.50 [-1.42, 0.42]

Analysis 2.1. Comparison 2 Sensitivity Analysis, Outcome 1 Risk of Re-arrest - Sensitivity Analysis (quality).

Analysis 2.2. Comparison 2 Sensitivity Analysis, Outcome 2 Arrest rate at 1-3 years - Sensitivity Analysis (quality).

Analysis 2.3. Comparison 2 Sensitivity Analysis, Outcome 3 Mean Length of Time in Institutions(days) - Sensitivity Analysis (quality).

Analysis 2.4. Comparison 2 Sensitivity Analysis, Outcome 4 Family cohesion (FACES/FRI) at 1-4 years - Sensitivity Analysis (quality).

Analysis 2.5. Comparison 2 Sensitivity Analysis, Outcome 5 RBPC - child behaviour - Sensitivity Analysis (quality).

WHAT'S NEW

Date	Event	Description
12 November 2008	Amended	Converted to new review format.

HISTORY

Protocol first published: Issue 1, 2000

Review first published: Issue 2, 2001

Date	Event	Description
28 February 2001	New citation required and conclusions have changed	Substantive amendment

DECLARATIONS OF INTEREST

None.

SOURCES OF SUPPORT

Internal sources

- Children's Hospital at Westmead, Sydney, Australia.

External sources

- No sources of support supplied

INDEX TERMS

Medical Subject Headings (MeSH)

*Family Therapy; *Parenting; Adolescent Behavior; Child Behavior Disorders [*therapy]; Juvenile Delinquency [*prevention & control]; Randomized Controlled Trials as Topic; Social Behavior Disorders [*therapy]

MeSH check words

Adolescent; Child; Humans