

PARENT EDUCATION PROGRAMMES FOR CHILDREN'S BEHAVIOUR PROBLEMS. MEDIUM TO LONG TERM EFFECTIVENESS

A West Midlands Development and Evaluation Service Report

Authors: Caroline Dimond & Chris Hyde

Department of Public Health & Epidemiology
University of Birmingham
Edgbaston
Birmingham
B15 2TT

Correspondence to: Caroline Dimond
Dorset Health Authority
Victoria House
Princes Road
Ferndown
Dorset
BH22 9JR

ISBN No. 0704421410

© Copyright, Development and Evaluation Service
Department of Public Health and Epidemiology
University of Birmingham 2000.

Questions addressed by this review:

- What is the evidence that parenting education is effective in the medium to long term?
- What are the likely costs and benefits from an expansion of service provision in this area?

Conclusion

In relating the results of this systematic review and cost analysis to the original problem of whether health care commissioners should support teaching parenting skills, it is immediately acknowledged that existing research does not provide a complete answer. However it does provide encouragement to those contemplating such activity provided they stick to the population groups, settings, and interventions which have been evaluated. For those sceptical about the value of such activities, it is unlikely that the results of this review will be wholly convincing. In this case the report identifies where uncertainty exists, namely better estimation of effect sizes, particularly the global impact. The onus in this case is on rigorous research.

Expiry date: 2005

West Midlands Development & Evaluation Service

The West Midlands Development and Evaluation Service (DES) produce rapid systematic reviews about the effectiveness of healthcare interventions and technologies, in response to requests from West Midlands Health Authorities or the HTA programme. Reviews usually take 3-6 months and aim to give a timely and accurate analysis of the quality, strength and direction of the available evidence, generating an economic analysis (where possible a cost-utility analysis) of the intervention.

About InterTASC

West Midlands DES is a member of InterTASC which is a national collaboration with three other units who do rapid reviews: the Trent Working Group on Acute Purchasing; the Wessex Institute for Health Research and Development; York Centre for Reviews and Dissemination. The aim of InterTASC is to share the work on reviewing the effectiveness and cost-effectiveness of health care interventions in order to avoid unnecessary duplication and improve the peer reviewing and quality control of reports.

Contribution of Authors

Caroline Dimond undertook the collection and collation of evidence for this review. Chris Hyde gave advice on the formulation of the question and overall process of the review, helped with some of the writing and structuring of the report and read and commented on the draft report.

Conflicts of Interest

This work has been undertaken by people funded by the NHS. The authors have received no funding from any sponsor in this work.

West Midlands Regional Evaluation Panel Recommendation:

The recommendation for parent education programmes for children's behaviour problems – medium to long term effectiveness was:

Supported

For routine use and it was strongly recommend that further evaluation of current services needs to be carried out.

Anticipated expiry date: 2005

- This report was completed in December 1999
- The searches were completed in January 1999
- The majority of the studies reviewed showed a good result and costs were small. However better research is needed and the programmes need more evaluation before making them more available.

1	Introduction.....	2
2	Background.....	2
	2.1 Nature of behavioural problems in children.....	2
	2.2 Outcomes of behavioural problems.....	2
	2.3 The intervention - importance of parent education.....	3
3	Problem.....	3
	3.1 Prevalence/incidence.....	3
	3.2 Current service.....	4
	3.3 Proposed service.....	4
	3.4 Problem in summary.....	5
4	Aims of the review.....	5
	4.1 General.....	5
	4.2 Specific questions.....	5
	4.3 Decision tree.....	5
	4.4 Conclusions from existing reviews.....	7
5	Methods.....	7
	5.1 Criteria for included studies.....	8
	5.2 Search strategy.....	8
	5.3 6.3 Data extraction strategy.....	8
	5.4 Quality assessment strategy.....	8
	5.5 Review analysis.....	9
	5.6 Economic analysis.....	9
6	Results.....	9
	6.1 Effects and effectiveness.....	9
	6.1.1 Volume of material.....	9
	6.1.2 Nature of intervention.....	10
	6.1.3 Nature of population examined.....	10
	6.1.4 Nature of outcome measured.....	10
	6.1.5 Study quality and design.....	10
	6.2 Effects on child behavioural changes.....	10
	6.2.1 Characteristics.....	10
	6.2.2 Measures of child behavioural change used.....	11
	6.2.3 Results.....	11
	6.3 Effects on parental well-being.....	14
	6.3.1 Characteristics.....	14
	6.3.2 Measures of parental well-being used.....	14
	6.3.3 Results.....	14
	6.4 Societal and health service outcomes.....	15
	6.4.1 Characteristics.....	15
	6.4.2 Measures used.....	15
	6.4.3 Results.....	15
	6.5 Effects in summary and overall effectiveness.....	17
	6.6 Costs and health economic analysis.....	18

6.6.1	Review of the literature.....	18
6.6.2	Estimating programme costs.....	19
6.6.3	Health economics analysis.....	20
6.7	Quantification of cost utility.....	22
7	Conclusions.....	23
8	Appendices.....	25
9	References.....	3

Tables

Table 1	- Prevalence of behavioural problems in children.....	3
Table 2	- Group parent education programmes based in the UK for children at risk of or with behavioural problems.....	4
Table 3	- Inclusion and exclusion criteria.....	8
Table 4	- Summary result table of effect of parent education on child behaviour.....	12
Table 5	- Summary results table of effect of parent education on parental well-being.....	14
Table 6	- Summary result table of the effect of parent education on societal and health service outcomes.....	16
Table 7	- Overall costs.....	19
Table 8	- A summary of available information relating to cost savings and potential benefits of parent education.....	21

Figures

Figure 1	- Decision tree for the main options and outcomes from parent education.....	6
----------	------------------------------------------------------------------------------	---

Summary

- **Description of proposed service**
Co-ordinated education on parenting, consisting of 10-15 sessions delivered by existing staff, using a variety of models.
- **Epidemiology**
Children with behavioural problems place a heavy burden on current and future health services. The estimated prevalence of such problems is 10-15% in those under 16 years. This occupies a considerable amount of primary care contact time, and many paediatric community health and child and adolescent clinic referrals, as well as an unquantified amount of inappropriate use of health services and casualty departments. Associated parental stress also increases the burden on primary and secondary health services. Costs to bodies outside the NHS are likewise high especially in the social services and education sectors. Costs to society in terms of later criminality, delinquency and drug use have further been demonstrated. Behavioural problems in children are linked to poor parenting practices.
- **Number and quality of studies and direction of evidence**
19 RCTs and pre-post studies addressing medium and long term outcomes (>1 year) were identified following an extensive search, which initially identified 4000 potentially relevant articles. Despite targeting those study designs with least susceptibility to bias, some important general threats to validity were identified, particularly unblinded assessment of outcomes. Results were positive for the effectiveness of parent education on child behaviour and parental well being and equivocal for the effect on social outcomes.
- **Summary of benefits**
It was impossible to summarise the general benefit identified.
- **Cost**
The likely cost of the service was on average of £353 per client per course with a Range of £154 to £1121.
- **Costs/QALY**
A cost consequences analysis noted the low cost and low disbenefits of parent education and the potentially large benefits and cost savings. Thus, although cost-utility could not be precisely calculated, it seems likely that the cost per QALY of parent education falls below the £20,000 cost/QALY threshold.

1 Introduction

The importance of parent education is being increasingly highlighted by the government through initiatives such as "Family Support", "Surestart" and "On Track". Health visitors have been identified as key service providers in this context and health authorities are being asked to become involved in multi-agency strategies to deliver packages of care to support parents. Before they commit resources, health authorities need information on the effectiveness of such services and some idea of the likely balance of costs and benefits.

In order to inform health authorities, this report aims to assess the evidence for the effectiveness of parent education on vulnerable children or those children with behavioural problems. It focuses on medium to long term effectiveness i.e. that greater than one year post intervention. The report also details the likely costs involved and discusses the overall balance of costs and benefits.

2 Background

2.1 Nature of behavioural problems in children

Behavioural problems as referred to here are those behaviours, either mild or severe which lead to inappropriate reactions, to conduct disorders or aggression. Excluded are more specific conditions such as hyperactivity and autism. One of the major determinants of problem behaviour in children is poor parenting, as characterised by harsh and inconsistent discipline, lack of positive parental involvement with the child, and poor monitoring and supervision¹. This may account for as much as 30-40% of the variance in child antisocial behaviour². Scott identified three main factors influencing aggressive behaviour: parental rearing style, parent-child interaction pattern, and parental influence on children's emotions and attitudes³. According to the social learning theory model, family members develop and sustain antisocial and aggressive patterns of behaviour in children through the use of 'faulty contingencies', or actions which are not contingent on the child behaviour. For example they may give 'positive reinforcement' of bad behaviour or more potently 'negative reinforcement' of good behaviour. The child learns that aversive reactions produce pay-off and escalation into a more severe coercive interchange occurs as the child learns to respond to aversive acts through aversive counterattacks. Aggressive and antisocial children are more likely to interpret the intentions and actions of others as hostile and are more likely to use physical force and aggression as a solution to interpersonal problems⁴.

2.2 Outcomes of behavioural problems

Child behavioural problems, if not tackled early enough, often lead to persistent behavioural problems later in life. For example, antisocial behaviour at age 13 has been predicted by externalising behaviour at age 3 and behaviour problems at age 5⁵. The number of convictions at age 30, as well as the seriousness of the crime has been predicted by peer-rated aggression at age 7⁶.

2.3 The intervention – importance of parent education

Parent education is a systematically and conceptually based programme, intended to impart information, awareness or skills to the participants on aspects of parenting. It aims to be both a solution to child behavioural problems and a means to prevent progression to more serious illness.

Informal parent support is currently provided by a variety of people such as lay mothers, health visitors, social workers, teachers, and nursery nurses. They either provide help and advice on an ad hoc, demand led basis or facilitate informal support programmes. Both give tremendous support to parents and have been found to have positive health and social outcomes⁷. There are also however more formal forms of parent support programmes, which aim to give parents the skills to identify, define, and respond to problem behaviour. These programmes often use a group work approach and are relatively structured and replicable. This report concerns itself in particular with the latter.

3 Problem

3.1 Prevalence/incidence

Behavioural problems are the most important cause of disability in childhood⁸ with an estimated prevalence of 10-15%⁹. Data from the United States notes that aggression, conduct problems and antisocial behaviours make up to 35% of primary care child contact time, 45% of community child referrals and are also the most frequent cause of child and adolescent clinical referral encompassing between one third and one half of all child and adolescent clinic referrals¹⁰. Although such direct information is not available in the UK, discussions with primary care staff confirm the heavy burden that such families bring, especially to Health Visitor time.

Wallace et al give the following breakdown of prevalence of behavioural problems and demand for services¹¹:

Table 1 - Prevalence of behavioural problems in children.

Prevalence of relevant child and adolescent mental Health Disorders	
Emotional disorders with onset in childhood	4.5-9.9% of 10 year olds 25-33% among clinic attendees
Conduct disorders	0.5-2.5% among children 2-8% among adolescents

District level surveys further demonstrate this heavy burden on government services and society. For example, according to the mental health needs assessment carried out in 1995 in one health authority area, Shropshire, of the 84,000 children under 16, 1 in 5 will develop emotional behavioural disorders¹².

3.2 Current service

To date, the service has been poorly co-ordinated and often piecemeal, split between health, social services and the voluntary sector. Smith in 1996¹³ undertook an overview of parent education provision in the UK. She made contact with known service providers and analysed data from 38 programmes. She found most were based in only one location, and were small in scale, making provision patchy and often based on the particular interest of certain individuals or groups. She classified the programmes according to approach and client group served. Table 2 gives examples of formalised parent education training programmes. Most of these programmes fall under two broad headings; those that focus primarily on changing children's behaviour (the behavioural approach) and those that address interpersonal relationships within the family (the relationship approach).

Table 2 - Group parent education programmes based in the UK for children at risk of or with behavioural problems.

Behavioural approach	Relationship approach
ABC of behaviour Coping with kids Effective parenting Handling children's behaviour Managing difficult children Positive parenting Promoting positive parenting Working with parents for change Parent and child series	Newpin Parents against crime Family nurturing network Mellow parenting

3.3 Proposed service

The proposed service is that of co-ordinated parent education for children with or at high risk of developing behavioural problems. The service will not cover those children with severe problems requiring in-patient treatment or with a diagnosis of learning difficulties, hyperactivity or autism. Nor will it address parents who are mentally ill or who are known to be abusing their children. The interventions will be mainly group based parent education classes though specific home based interventions will also be considered, as will multidisciplinary programmes where parent education plays a prominent part. Personnel involved may be health visitors but equally could be generic workers, volunteers, social workers, nursery nurses, community development workers, or child psychologists. Most programmes will involve the use of existing staff who will be appropriately trained. The costs include training and subsequent resource packs for staff as well as costs related to accommodation for the parent education sessions. Training sessions for parents normally take place over a series of weeks and range from 10-15 sessions.

3.4 Problem in summary

Behavioural problems in children are widespread and can lead to extensive problems in later life. At national level, parent education is being advocated within new government initiatives as part of the means to addressing the increasing numbers of children with behavioural problems and criminality in later life. At the local level health authorities are being asked to consider parent education within the work of Health Visitors, and as part of multi-agency strategies. In order to decide whether to commit resources, both local and national decision makers need evidence for the effectiveness of parent education and an idea of the likely costs and benefits of investing in it.

4 Aims of the review

4.1 General

The aim of this review is to inform the decisions of purchaser organisations as to whether to commit resources to the provision of parent education programmes. Though there have been reviews on the effectiveness of parent education in children with behavioural and conduct disorders in the short term, there has been no systematic review of the evidence that parent education works in the medium to long term. This review will look therefore only at those studies where follow-up has taken place at least one year post intervention.

4.2 Specific questions

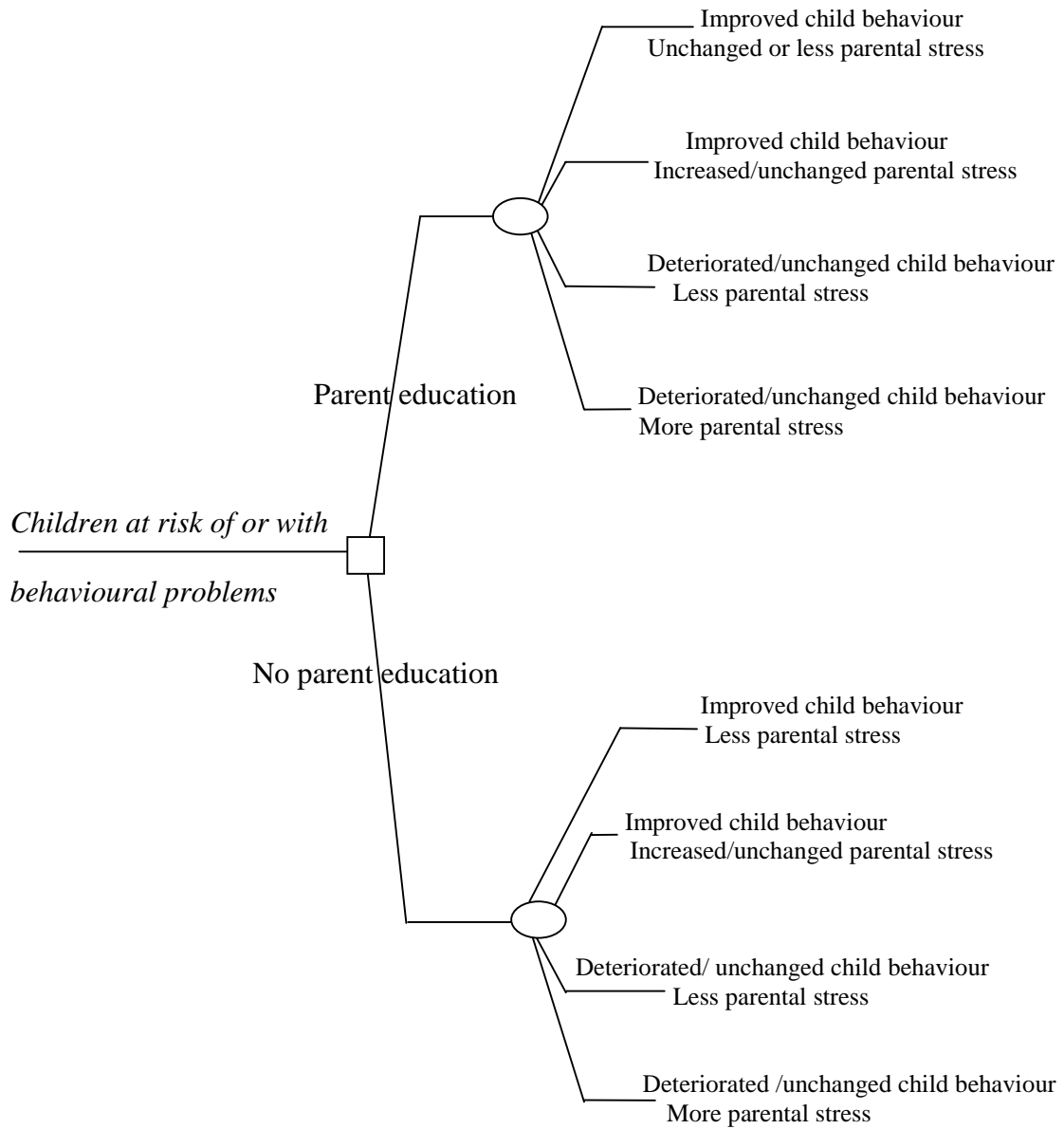
Specifically the following questions will be addressed

- What is the evidence that parenting education is effective in the medium to long term?
- What are the likely costs and benefits from an expansion of service provision in this area?

4.3 Decision tree

A statement of the intervention and outcomes from parent education can be illustrated in a decision tree format (figure 1). As the above illustrates there are many important outcomes that can be considered. Here, the two main outcomes; child behaviour and parental mental health are considered as it was thought *a priori* that these were more easily measured and were best used to judge if overall parent education was effective.

Figure 1 - Decision tree for the main options and outcomes from parent education.



4.4 Conclusions from existing reviews

There have been a number of previous reviews on the outcomes of parent education. Most found that differences in program philosophies, goals and evaluation designs made it difficult to compare parent education programs and that, when methodological rigor and outcome validity are taken into account, few studies met specified quality criteria. Despite this however, the majority of reviews drew positive conclusions, with a few finding that results were either mixed or not statistically significant¹⁴.

Two papers attempted a meta-analysis; Cedar & Levant¹⁵ and Serketich & Dumas¹⁶. Both found that the effect of parent education was positive on parent's knowledge, attitudes and behaviour and on children's self esteem and behaviour. Both sets of papers however only related to the short-term and the authors felt that an analysis of long-term effectiveness would be important. The methodologies used in both meta-analyses were also complicated. Serketich & Dumas for example averaged effect sizes, corrected for bias and sample size and then analysed according to a number of contextual variables. Such complex analysis with the associated assumptions, though aiming to clarify the result, is misleading.

More recently, Jane Barlow, in conjunction with Sarah Stewart-Brown of the Health Services Research Unit in Oxford, completed a systematic review of the short-term effectiveness of parent training programmes in improving behaviour problems in children aged 3-10 years^{17 18}. This concentrated primarily on the identification of meta-analyses and secondarily on the identification of first order evidence in the form of randomised controlled trials. Validity was assessed using the Journal of American Medical Association criteria¹⁹. Here, no attempt was made to combine the results as it was felt that the small number of effect sizes calculated and the heterogeneity of the individual studies identified precluded such analysis. The conclusion of this review was that in the short term parent-training programmes are effective in improving behaviour problems. Appendix I appraises and outlines the main results from this review.

The present review will complement Barlow's work by looking specifically at medium to long term outcomes, defined here as outcomes 1 year or more post intervention. Further, these studies will also be reviewed to look at the effects of parent education on parental well-being and on societal and health services related outcomes.

5 Methods

The methods undertaken in this review are those as outlined in the DES handbook. These are based on the guidelines set out in NHS CRD report 4. A protocol was developed and subjected to external review.

5.1 Criteria for included studies

Inclusion and exclusion criteria were defined in reference to the review question as summarised in table 3. These criteria include those on study design & quality.

Table 3 - Inclusion and exclusion criteria.

	Inclusion	Exclusion
Population	Children 0-16 years with behavioural, anti-social or conduct disorders. At risk children from low income families or families with teen or single parents.	Children with diagnosed psychiatric disorders such as autism and attention deficit disorder or with problems severe enough to be in-patients. Low risk mothers. Child abusers.
Intervention	Formal parent education or training. Could be in groups, at home or part of a programme where parent education a major part.	Where parent education is only one part of an extensive programme. Where the emphasis is on informal support rather than education.
Outcome	Any outcome related to child behaviour, parental self-esteem and stress and social outcomes. Outcome measure validated. Losses to follow-up under 30% unless demonstrated not to alter results.	Those outcomes that are not directly measurable e.g. telephone enquiries only. Outcome measure not validated Losses to follow-up > 30%.
Study design & quality	Study design must include a comparison group. Sample size must be > 10.	No comparison group over time or control group. Sample size < 10.

5.2 Search strategy

A comprehensive search involved fourteen databases, and an internet search. Full details are in Appendix II. Citations were also checked from all articles received. Government publications of relevance were reviewed, and other organisations involved in co-ordination and research in parent education were contacted for unpublished evaluation material. The breadth of the search enabled cost data papers to be captured. Sources were searched from 1960 onward as before this time formal parent education had not been introduced .

5.3 Data extraction strategy

Data was extracted from the databases onto an Excel spreadsheet to prevent duplication of retrieval and to classify papers by the pre-determined inclusion criteria. On retrieval, data was recorded in a further Excel database to include quality assessment criteria.

5.4 Quality assessment strategy

5 measures of validity on aspects of general design, selection, and detection bias were addressed as detailed in Appendix III. Every variable achieving the "high quality

standard" was awarded 1 point and thus lower scores indicate lower validity. The validity scores are summarised in the results table.

5.5 Review analysis

Data extraction forms recorded the details of the included studies which were then tabulated in terms of their characteristics, quality, outcome measurement and significance of result. For the analysis however the heterogeneity of the studies in terms of intervention, population and outcome measured, indicated that a formal meta-analysis was inappropriate. It was however possible to comment on the overall direction of effect and where data on means and standard deviations was available, to calculate the magnitude of the effect either within groups or between groups using the following formulae.

$$\text{Effect size} = \frac{\text{Mean experimental group} - \text{Mean control group}}{\text{Standard deviation control group}}$$

$$\text{Effect size} = \frac{\text{Mean t 1} - \text{Mean t 2}}{\text{Standard deviation t 1}}$$

The outcome measures used unfortunately were numerous and mainly scales, making it difficult to draw conclusions with regard to the practical effect of change on the individuals involved or with regard to the magnitude of this effect. Thus the conclusions drawn are primarily based on the direction of effect and on the statistical significance of this change.

5.6 Economic analysis

A review was undertaken of research literature on costs and previous economic evaluations. Unfortunately, there was insufficient data to undertake economic modelling or to calculate costs per Quality Adjusted Life Years (QALYs) gained. However it was possible to identify the costs involved of introducing parent education in Shropshire and to identify outcomes which maybe of relevance to assessing the balance between costs and benefits in a cost consequences analysis.

6 Results

6.1 Effects and effectiveness

6.1.1 Volume of material

4,000 references were identified from the formal search and 170 of these considered in detail. After application of inclusion criteria 19 studies were finally included. Details of these studies can be found in Appendix IV. The included studies provided information on three groups of outcomes; child behavioural changes, parental well-being, and societal and health service outcomes which will be considered separately in sections 6.2 to 6.4 below. Details of the characteristics and results will be considered under these sections though here we present some general points. 8 articles retrieved related to costs but only 3 contained any cost and outcome data. In none had an economic evaluation been carried out. Because of this, information on costs was also

obtained from other sources such as from groups carrying out parent education programmes in this country. This is detailed in section 6.6.2.

6.1.2 Nature of intervention

Superficially, the nature of the parent education in the studies differed in the number of sessions held, the teaching methodologies, if the education was individual or group based and the experience, training and background of the facilitator. However at a practical level the studies included all had a similar format in that they were sessional and used standardised parent education packages. One important distinction however is where parent education formed part of a multisystem intervention where social skills for example were also taught. These interventions were considered separately to ascertain if excluding or including them affected the overall result.

6.1.3 Nature of population examined

The age range of children involved differed between studies, but all were either exhibiting behavioural problems or were at risk of developing them.

6.1.4 Nature of outcome measured

There was a wide range of outcomes reported in the studies. However for the analysis, only those most frequently used and best validated outcome measures were recorded. These are listed in the appendices under each outcome area. There was unfortunately very little replication of outcome measures used which precluded direct summation of effect changes across studies.

6.1.5 Study quality and design

Randomisation of groups occurred in most studies or if absent, analysis of the groups demonstrated similarity of treatment and control groups at the start of the study. All studies had either a parallel or historical control group. Control groups were often added into the experimental group after the initial sessions had been carried out so could not be directly used for comparison at long term follow-up. Instead a pre-intervention and follow-up comparison was made. In only five studies of child behaviour and parental well-being were blinded observations carried out raising the possibility of observer bias. The overall validity of included studies will be discussed in relation to the main effects seen under each outcome below. Each study has been quality coded, though this is intended to give a crude ranking of the strengths and weaknesses of each study only.

6.2 Effects on child behavioural changes

6.2.1 Characteristics

15 of the 19 studies provided information on the effect of parent education on child behaviour. Details are given in Appendix V. As can be seen there is a high degree of heterogeneity amongst the interventions, populations and outcomes measured in these studies as well as variability in their quality and hence their validity. However there

were 10 randomised controlled trials (RCTs) and 9 were classified as having a quality of 4 or above so the quality of studies was high. The majority of studies had a follow-up time of 1 year, but four were of 2- 3 years, two 3-10 years and one had a follow-up time of greater than 10 years.

6.2.2 Measures of child behavioural change used

There is a large range of outcome measures used across the studies and only three common measures. Furthermore the analysis of these outcome measures varies. Appendix VI outlines the different outcome measures used, and includes an explanation of the meaning of the result. 8 of the 12 measures used were subject to observer bias.

6.2.3 Results

Details of the results are given in Appendix VII but the key findings are summarised in table 4.

Table 4 - Summary result table of effect of parent education on child behaviour.

Study	Study design	Quality code	Intervention	Direction of effect	General Significance of result
Webster Stratton '84	RCT ⁱ	5	Video parent education	Positive	P<0.001
Strayhorn Weidman '90	RCT	5	Parent education	Positive	2 of 4 measures P<0.05
Webster Stratton & Hammond '97	RCT	4	Parent education	Positive	P<0.001
Sutton '92	RCT	4	Parent education	Positive	P<0.001
Van den Boom '95	RCT	4	Parent skills training	Positive	<0.01
Tucker & Gross '98	RCT	3	Parent training	Positive	3 of 7 measures P<0.05
Walker & Kavanagh '98	RCT	5	Parent education Plus - School based work	Positive	P<0.05
Trembley & Massi '95	RCT	4	Parent education Plus - social skills training	No change	Non significant
Mullin & Quigley	RCT	2	Parent education Plus - self management skills	Positive	P<0.001
O'Donnel & Hawkins '95	RCT	3	3 interventions: Classroom Child Parent	Positive	3 of 7 P <0.05
Kadzin & Seigel '92	Comp with control	3	Parent education, problem solving skills, a combination	Positive	P< 0.01 or < 0.001
Webster Stratton '90	PPS ⁱⁱ	4	Group, individual and video based parent education	Positive in all groups	P< 0.01 or < 0.001
Routh & Hill '95	PPS	4	Parent education	Positive	<0.001
Mullin & Proudfoot '90	PPS	2	Parent education	Positive	P<0.001
Wahler '80	PPS	2	Parent education	Positive	Levels return to baseline

ⁱ. Randomised controlled trial

ⁱⁱ. Pre-post intervention trial

As can be seen, 14 of the 15 studies had a positive result, 11 significantly so. In the study with a mixed result, Tremblay & Massi²⁰, self rated disruptiveness was positively reduced in comparison to control but not teacher rated disruptiveness, though neither showed a significant change. In one of the positive but non-significant studies, Wahler et al²¹, effects were positive in the short term but returned to baseline in the longer term. Here there were differences between groups at the start of the study, the study was low in quality with a validity score of 2 and mothers social contact status was a major confounder. In another, Strayhorn and Wiedman²² the independently assessed results where observer bias was less likely, were in fact positive, mainly significantly so, while parent assessments were non-significantly changed. The final non-significant study, Tucker and Gross²³ was lower in quality with a sample size of only 23.

It was possible to extract or calculate an effect size for the majority of studies and this varied between 0.03 and 2.2 across the different measures, though with so many different outcome measures it was difficult to determine a magnitude of effect from this. However, 6 of the 15 studies used the Eyberg Child Behaviour Inventory (ECBI) designed to assess parental reports of behavioural problems in children. 5 of these 6 showed improvements in behaviour at the 1% level. The one study which showed a positive but non significant change was Tucker & Gross which had quality flaws as explained above. The effect size was positive from 0.4 to 1.9 for the intensity scale and 0.17 to 2 for the frequency scale of ECBI. Another common outcome measure was the Child Behaviour Checklist (CBCL) used in four studies. Here the effect size was 0.5 to 2.2, and all results were positive at the 1% level. The Dyadic Parent-child Interaction Scale (DPICS) was measured in 3 studies, was positive in all 3 and significantly so in 2 ($P < 0.05$). The effect size was between 0.03 and 1.9. In the study with a non-significant change (Van den Boom²⁴) it was found that attachment status in the mother was a major confounder. The DPICS is an independently assessed measure and therefore less open to bias.

Though the report does not set out to directly compare interventions, it is worth noting that the results were in general more significantly positive where group parent education was the main intervention rather than individual work or work within a larger programme. The length of follow-up did not affect the general direction of effect nor did the quality of the study as assessed by the validity score. When only those results were considered where there was independent observation of behaviour the results remained significantly positive.

Overall therefore the results appear to be significantly positive for child behaviour improvements lasting at least beyond one year of follow-up and possibly longer.

6.3 Effects on parental well-being

6.3.1 Characteristics

Appendix VIII summarises the characteristics of studies looking at parental well-being. 8 studies measure parental stress, mental state or attitude. 6 used a group based intervention, 1 a multisystem intervention for teenage mothers and 1 individual parent training. Quality ranged from 2-5 with the majority coded 3 or 4.

6.3.2 Measures of parental well-being used

Again a wide range of measures had been used and again those best validated have been included here. Appendix IX gives details of these measures. All are self assessed scales.

6.3.3 Results

Details are given in Appendix X and the following table summarises the key findings.

Table 5 - Summary results table of effect of parent education on parental well-being.

Study	Study design	Quality code	Intervention	Direction of effect	Significance of result
Tucker & Gross	RCT	3	Parent education.	Positive	P 0.01
Mullin & Quigley '94	RCT	5	Parent education plus self management skills.	Positive	P<0.01
Sutton '92	RCT	4	Parent education.	Positive	P<0.001
Webster-Stratton & Hammond '97	RCT	4	Parent training.	Positive	P<0.001
Kazdin & Siegel '92	Comp	3	Parent management, problem solving, combined and control.	Positive	4 of 6 P<0.05
Fuscaldo & Kaye '98	PPS	4	Teenage support programme with parenting classes.	Positive	1 of 3 P<0.001
Mullin & Proudfoot '90	PPS	2	Parent education.	Positive	P<0.001
Baum & Forehand '81	PPS	2	Parent education.	Positive	P<0.01

All of the 8 studies had a positive effect, 6 significantly so. The variation in scales makes interpretation difficult but there were two common parental well-being outcome measures used; the Parental Stress Index (PSI) which measures the amount of stress a parent feels (a higher score reflects a *decrease* in stress) and the General Health Questionnaire (GHQ). Only two of the four studies which measured PSI were

significantly positive, the other two demonstrating a non-significant change. However, in one of the latter, Fuscaldò & Kaye²⁵, the result was in fact significantly improved for the parent domain and in the other, Kazdin & Seigel²⁶, PSI was significantly improved when a combination of problem solving skills training and parent management training was applied. Effect sizes for PSI varied from 0.003 to 1.4. Both the studies which measured GHQ were significantly positive but it was not possible to calculate an effect size. Other outcome measures were also positive at the 5% level. The only exception was the Coopersmith self-esteem score in Fuscaldò & Kaye's study. The intervention in this study however involved a number of programmes making it difficult to assess the impact of parent education alone. Overall, the result was significantly positive for most studies and did not differ according to intervention, quality score or length of follow-up.

6.4 Societal and health service outcomes

6.4.1 Characteristics

5 studies looked at societal and health service outcomes. The outcomes measures were police contacts, delinquency, drug use, college attendance, a delayed next pregnancy, child abuse, and health service use. Only 1-2 studies looked at each outcome and there was a mix of different populations and interventions in the studies. Full details are given in Appendix XI.

6.4.2 Measures used

There were a number of different outcome measures used. Some were independently assessed using hospital, education or police records but others were based on self reporting or unblinded observer rating. Details are given in Appendix XII.

6.4.3 Results

The following is a summary of the key findings, which are detailed further in Appendix XIII.

Table 6 - Summary result table of the effect of parent education on societal and health service outcomes.

Outcome area	Study	Intervention	Outcome measure	Direction of effect	Significance of result
Police contact	Bank & Marlowe	Parent training	Offence rate Time in institution Police contacts	Positive	NS
	Tremblay & Massi	Parent training plus social skills training	Court records	Positive	NS
Delinquency	O'Donnel & Hawkins	3 intervention: Classroom Child - Parent	Delinquency Girls Boys	Positive	NS for girls P<0.01 for boys
	Tremblay & Massi	Parent training plus social skills training	Delinquency	Positive	NS
Drug use	O'Donnel and Hawkins	3 intervention: Classroom Child - Parent	Drug use Girls Boys	Positive for girls	P<0.05 for girls NS for boys
Delayed pregnancy	Britner & Reppucci	Parent education	Delayed second child	Positive	P<0.01
	Fuscaldo & Kaye	Teen parenting programme	Delayed second child	Positive	P<0.05
Further education	Fuscaldo & Kaye	Teen parenting programme	Completed education	Positive	P<0.05
	Britner & Reppucci	Parent education	Completed education	Positive	NS
Child abuse	Britner & Reppucci	Parent education	Reported rates of child abuse	Positive	NS
Use of health services	Fuscaldo & Kaye	Teen parenting programme	Regular use of health care	Positive	P>0.05

Although all studies demonstrated a positive direction of effect, for many the change was not significant. There were also a number of methodological flaws which preclude definite conclusions. There were firstly problems in the way that some outcome data was recorded. The crime rate figures for example only note those incidents recorded by the police (1-10% of total) and the child abuse figures are only those recorded by social services. Further, though some outcome measures such as delay of subsequent pregnancy, completion of further education and appropriate use of health services, were based on independent records, many, such as delinquency and drug use, depend on the records of the children or adolescents themselves or of their teachers.

There are also large variations in the ages of the children in the studies though, as Ruma notes, age may effect the degree of improvement in behavioural problems, which are more severe in older children, but should not effect the direction of effect²⁷. The varied interventions however may affect outcomes, though there were not enough studies of any one type to draw conclusions. Most of these studies however involved a long follow-up, highlighting the possibility of very long-term effects, conceivably up to 10-15 years.

Thus, overall, it is difficult to draw definite conclusions from the studies in this section due to the variable populations studied, the variety of interventions and the lack of independently assessed outcomes. However results are promising for more appropriate use of health services, for delay in subsequent pregnancy, and for uptake of further education. Less clear are the effects on crime, delinquency, drug use and child abuse.

6.5 Effects in summary and overall effectiveness

Although it has not been possible to draw the results together in a meta-analysis it is possible to look at the general trend of the results and comment on them. Overall the effects of parent education seem to be positive with the majority of the included studies demonstrating significant benefits and no disbenefits.

The nature and quality of the included studies however highlight a number of criticisms. Firstly, it has been noted that many of the included studies have methodological flaws, for example, few of the outcome measures are based on blind independently observed measures. Secondly, the varied nature of the interventions makes it difficult to define what part of the intervention is effective and to generalise across the different studies. For example in the multisystem interventions it is impossible to define which component of the intervention is related to which outcome. The varied nature of the populations of children in the studies is also a problem. Thirdly, there are few common outcome measures to allow direct comparisons across studies and to quantify an overall effect size. Finally, the majority of studies were based on programmes in the United States, though some were based in Europe, Ireland and the UK. This raises the question of the generalisability of findings.

Despite the above however it is still possible to draw conclusions. The inclusion criteria ensured that those study designs highly susceptible to bias were eliminated. Also, when only those studies with a validity score of 5 out of 5 were included, and when only those outcomes that are based on blinded observations were considered the results are still positive. Also, though interventions vary, they are still based on training of parents vis a vis their interactions with their children and even the multisystem interventions contain parent education as a major component. All have positive results though we have not been able to demonstrate which particular component of the interventions is most effective. Finally, though outcome measures differ, when common measures were considered together a positive effect was demonstrated.

Thus, though there are a large number of criticisms that need to be considered, in drawing together the overall conclusions, it is possible to do so as long as the nature of the question is clear. Here one is looking for the overall direction of effect of formal training based interaction with parents of 'at risk' children of different ages and backgrounds in a number of different settings on a number of different outcomes. When this is considered, there is clearly a beneficial direction of effect on child behaviour, and parental well-being, the positive effect on child behaviour also being confirmed by Barlow's previous report on the short term benefits of parent education. Less clear is the direction of effect on societal and health service outcomes due to the low numbers of included studies, the quality of these studies and their heterogeneity. There does appear to be benefits in terms of more appropriate use of health services, a delay in subsequent pregnancies, greater uptake of further education and less subsequent child abuse. Least clear is the direction of effect on criminality, delinquency and drug use.

6.6 Costs and health economic analysis

6.6.1 Review of the literature

The literature search successfully identified three studies where cost data had been collected. However, none of these studies carried out an economic evaluation but simply collected costings, and all were carried out in the United States. Each of the three studies assessed programme costs and proceeded to erroneously make claims of cost-effectiveness, without carrying out an assessment of benefit costs. The findings of these studies therefore, can only be interpreted as showing relative programme cost and are not an assessment of cost-effectiveness. The three studies drew varying conclusions. Cunningham²⁸, for example found that community group-based programmes were 6 times more expensive than individual clinic based programmes, yet, Seigert and Yates²⁹ found that individual home based training was the least expensive approach. This may have been because of the different nature of the interventions. In Seigert's model, the number of clients in each group was small, there was more than one therapist in each group, and the travel times to individuals was low. Generally however it seems sensible to agree with Webster-Stratton³⁰ who found that the group-based programme was less expensive as it involved less of the therapist's time.

These studies all come from the United States. Despite differences to the UK health care system, some information could still be important to an analysis of parent education programmes in the NHS. However, whilst some of the studies report resource use data separately from unit cost data, the resources used in the delivery of parent education programmes in the United States are very different to those involved in any current or proposed service in the NHS. For example the travel costs and training costs are different. It is proposed therefore to base the cost section of the cost consequences analysis on cost data available locally within the UK. This will consider both programme costs and costs to other parties.

6.6.2 Estimating programme costs

In reality there are five ways in which parent education programmes are provided in the UK. These have been used to develop five models which can be applied when thinking of the costs of setting up a parent education service. These do not necessarily relate to the models in the included studies.

In this case statutory refers to a government provided and run service and non-statutory to one provided by a voluntary or charitable organisation.

1. Statutory centre based – run by government personnel in a government building.
2. Statutory non-centre based – run by government staff but in a private building.
3. Non-statutory (voluntary) – run by a charity in charity buildings.
4. Statutory home based – run by government staff but in the client home.
5. Non-statutory home based – run by non-statutory staff in the client home.

The models are based on a course run in 10 sessions over 20 hours. Allowances are made for training and subsequent support of the group facilitators, paper and accommodation resource costs, travel costs for facilitators, and the accommodation and staffing of a creche for the clients children. After discussions with facilitators in Shropshire and with national programmes, it is assumed that the programme would ideally be for approximately 15 parents though in reality only about 8 would attend. The costs are taken as costs in 1998/99 and relate to costs needed to set up parent education in a non-London district. Details of how the costs were calculated can be found in Appendix XIV, together with a breakdown for each model. Table 7 gives a summary.

Table 7 - Overall costs.

Programme	Start up costs (Training and initial follow-up)	Programme costs per client per course (based on 8 clients)
Model 1 – Statutory centre based	£245	£154
Model 2 – Statutory private centre based	£245	£230
Model 3 – Non-statutory centre based	£225	£166
Model 4 – Statutory home based	£245	£1121
Model 5 – Non-Statutory home based	£225	£261
Range	£225- £245	£154 – £1121
Average		£353

As the above table shows, there is a range of costs related to the provision of parent education training, though all are relatively low. The start-up costs for training and initial follow-up are very similar across programme structures but ongoing costs vary. Cheapest is group based parent education with Health Visitors working out of statutory buildings, followed by group parent education carried out by non-statutory

(voluntary) staff in their own premises. However if there is an opportunity cost to the use of accommodation, group-based programmes run by Health Visitors are likely to be similar in cost to a programme involving volunteers visiting clients at home. Which of the above five programme cost estimates is appropriate will depend on the exact nature of the programme proposed, in particular whether the programme will be group-based or home-based, run by Health Visitors or voluntary sector staff, and whether accommodation will be charged for.

A similar cost analysis has been carried out by researchers at the Centre for the Economics of mental health looked at family centres³¹. They looked in detail at 7 centres, some managed by statutory and some by non-statutory organisations and calculated a cost for parenting support of £6.37 - £13.95 per hour. The cost here of £7.70 - £11.54 per hour for 8 clients is comparable. This also supports the expectations of facilitators in Shropshire, that eight clients per group is a more realistic estimate of attendance on which to assess cost per client of group-based parent education programmes.

6.6.3 Health economics analysis

This report began with a description of the links between parental practices and behaviour in childhood and adolescence, the links with parental self-esteem and with criminality. Also described were the potential benefits of parent education with respect of these outcomes and the beneficial effects in terms of both short and long term health for the individual. Moreover the burden that children's behavioural problems place on the health services were described. The report then went on, by critically reviewing the literature, to explore the medium to long term effectiveness of parent education in these areas i.e. child behaviour, parental well-being, health service use and societal outcomes. Finally, the costs of running a parent education programme in the UK were calculated. Thus, though we are not able to carry out a cost benefit analysis, we are able, by using the information from the studies reviewed, to speculate on the potential costs savings and benefits which a parent education programme may bring.

The inability to precisely quantify the effect size means it is inappropriate to perform a cost-utility analysis to derive a cost per QALY, the usual aim of a DES report. In lieu of this a cost consequences analysis outlines the costs likely to be incurred in setting up a service, the proven benefits, the cost savings likely to arise from these benefits, the proven disbenefits and the additional costs likely to arise from these disbenefits.

There are a number of additional costs to clients. There are the opportunity costs associated with loss of earnings, loss of leisure time or loss of non-paid work time such as child care incurred as a result of attending sessions. The centre-based programmes also incur travel costs. In terms of psychological costs there are probably gains from group meetings but home visits may be made to those clients unable for self-esteem reasons to come to a group.

The following table summarises these potential costs and benefits. The table looks at the effect on costings for the NHS, for other statutory bodies and for society. Row 1

notes the costs involved in providing the service, row 2, the potential savings by looking at the burden of costs that children's behaviour brings, row 3, the potential benefits that introducing a programme of parent education may bring and row 4 the potential disbenefits from the service.

Table 8 - A summary of available information relating to cost savings and potential benefits of parent education.

	NHS	Other statutory bodies	Society
Costs of providing service. (average of £353 per client per course)	Health Visitor time. Accommodation.	Staff time. Accommodation.	For clients; Travel time; Leisure time; Loss of earnings.
Potential cost savings By looking at burden of costs of children's behavioural problems can determine potential cost savings	35% of GP consultations; 45% of community health referrals; 50-65% mental health service referrals ¹ ; Inappropriate use of health services and casualty departments e.g. high numbers of accidents and poisoning frequently seen in such children ³² .	High social services case load. Large number of children in care. Need for specialist education provision. High use of government funded voluntary bodies.	Delinquency. Crime. Drug use.
Potential benefits of introducing PET	Improved child behaviour and hence less need for secondary referral. More appropriate use of general health services. Delayed subsequent pregnancy. Improved parental well-being.	Higher rates of further education uptake. Less child abuse and a lowering of social services caseload.	Less delinquency. Less crime. Less drug use.
Disbenefits	Opportunity cost of staff involved and accommodation costs.	Opportunity cost of involved staff and accommodation.	Stigma of attending classes.

¹ Data from USA

It is not possible to say from the literature exactly what percentage of such children will be helped by parent education but it is possible to say that behaviour is improved. To assume this translates to costs savings to the NHS, to other statutory bodies and to society as a whole would be speculative, but the potential for such savings should not be ignored. Although parent education involves an additional cost to the NHS, it is likely that the use of other services by both the child and the parent will decrease if the parent education is effective. Table 8 suggests those cost savings to primary and secondary health services, to social services, education services and to the voluntary sector. Thus, though it has not been possible to carry out a full economic evaluation in this context due to lack of data, it is possible to say that for the relatively small average cost of £353 per client per course, parent education has the potential to produce large benefits and costs savings with few disbenefits.

6.7 Quantification of cost utility

The marginal cost of training one extra client ranges from £154 for group based to £1121.25 for home based interventions, though with greater than 15 clients a new course needs setting up with additional accommodation and staff training costs. If one takes these costs and projects how much health benefit would need to occur in order to achieve a key threshold cost per QALY of £20,000, the QALY gain would need to be in the region of 0.01 to 0.06. Considering only those benefits that are well established, over just a one year period it seems highly plausible that the net benefit occurring for children and their parents combined would easily reach and exceed these levels. On this basis, although it has not been possible to precisely quantify benefit and so derive a measure of cost utility, it seems likely that the cost per QALY is below £20,000.

7 Conclusions

Aggressive and anti-social child behaviour, drug use, crime and delinquency are increasing concerns in western countries and place a huge burden on both government services and on society. Furthermore, there is also much evidence to link parenting to early child behaviour and hence later to delinquency and criminality^{33 34}. Any intervention to address poor parenting and hence tackle these problems has huge public health implications but must be carefully assessed. This review sets out to review the evidence for the effectiveness of parent education to improve early child behaviour, parental well-being and possible to subsequently decrease levels of delinquency.

The main problem encountered in doing this is that, despite including only the best quality studies, the overall validity of the studies reviewed is still questionable. The lack of a direct control group at the long-term follow-up date, and the fact that outcomes are often parent and teacher recorded rather than independently assessed are two important flaws in the included studies. Secondly, the variety of ways of quantifying changes and the heterogeneity of the studies made it impossible to quantify the effect size across studies and hence difficult to draw conclusions on the likely magnitude of effect of introducing a parent education programme and on the likely cost savings. Thirdly, it is important to also consider the generalisability of the included studies many of which are based on programmes in the United States to the UK setting. Finally the studies reveal a plethora of different interventions and populations studied making it difficult to assess which particular intervention works for which population group.

Despite these problems however, and despite the degree of heterogeneity amongst the included studies, this review has demonstrated that it is possible to look at the studies overall. Thus a clear question is given, strict inclusion and exclusion criteria applied and the overall direction of effect noted under each outcome section. Conclusions are given in each section but overall the results show that the effect of parent education on both child behaviour and parental well-being is positive and this effect is sustained in the medium to long term i.e. greater than 1 year. The potential benefits to society however is more difficult to demonstrate due to the smaller number of studies involved and the greater methodological flaws in these studies though the potential of benefits have been demonstrated.

The cost consequences analysis further demonstrates the relatively low costs involved in providing a parent education service when set against the potential cost savings and short and long term benefits to both the NHS, other statutory bodies and to society as a whole.

In relating the results of this systematic review and cost analysis to the original problem of whether health care commissioners should support teaching parenting skills, it is immediately acknowledged that existing research does not provide a complete answer. However it does provide encouragement to those contemplating such activity provided they stick to the population groups, settings, and interventions which have been evaluated. For those sceptical about the value of such activities, it is

unlikely that the results of this review will be wholly convincing. In this case the report identifies where uncertainty exists, namely better estimation of effect sizes, particularly the global impact. The onus in this case is on rigorous research.

The aim of this review was to inform the decisions of purchaser organisations as to whether to commit resources for parent education programmes and two specific questions were asked. The answers to these questions can now be given.

- That there is evidence that parent education is effective in the medium to long term
- That the likely costs and benefits to be incurred from expansion of this service are most likely to be in favour of parent education.

Health authorities therefore may invest in parent education but any programme should also include a research and evaluation component.

8 Appendices

- I Results and appraisal of previous review.
- II Search Strategy.
- III Quality assessment.
- IV Included studies.
- V Characteristics of child behaviour outcome studies.
- VI Outcome measures for child behaviour outcome studies.
- VII Results of child behaviour outcome studies.
- VIII Characteristics of parental well-being outcome studies.
- IX Outcome measures for parental well-being.
- X Results of parental well-being.
- XI Characteristics of societal and health service outcome studies.
- XII Outcome measures for societal and health service outcomes.
- XIII Results of societal and health service outcomes.
- XIV Cost analysis and models for cost analysis.

Appendix I

Main results and appraisal of previous review by Jane Barlow and Sarah Stewart Brown

Appraisal

The form of this review followed that recommended by JAMA and was rigorous. Extensive databases were searched though searches were restricted to publicised material introducing the possibility of publication bias.

Of 245 studies identified, only 16 were included. Criteria included randomisation, the use of some form of control, a standardised outcome measure and a sample size >10. Not included however was high loss to follow-up which in 10 of the 16 studies was either not accounted for or was high. This could result in an overestimation of the intervention effect. The lack of independent observers in the included studies was a further problem but the potential effect of this was discussed in the analysis. Useful tables summarised the critical appraisal of papers and the main characteristics and results of studies.

Results

Results were largely positive. They concluded that group based programmes improved the behaviour of young children compared with no-treatment controls or waiting list control groups, as measured by both parent reports and independent observations of children's behaviour. The effect size ranged from 0.3-1.8 for parent reported child behaviour outcome measures and 0.2-0.9 for independent observations though two studies failed to confirm the improvements in children's behaviour reported by parents.

Appendix II

Search strategy - Outcomes searched for

The following outcomes were searched for:

Child

- Change in behavioural levels
- Parent- child interaction

Parent

- Change in self-esteem
- Depression and anxiety levels.
- Satisfaction of parents
- Confidence of parent

Social

- Change in delinquency levels and criminality.
- Further education uptake
- Criminality

Other

- Fall in hospital admissions
- Increase in immunisation status
- Fall in A&E attendance
- Improvement in school or college attendance.
- Change in referral patterns.
- Delay of second pregnancy.

Mesh terms

The core terms were:

PARENT and (TRAINING or EDUCATION or GROUP)
(CONDUCT or BEHAVIO*) AND (PROBLEM or DISORDER*)

Then according to outcome e.g. Text word – crime, homelessness, unemployment, school-attendance, mental health, fall in hospital admissions, immunisation status, A&E attendance, children in care, child protection register, adolescent emotional behavioural disorders, delinquency, education, suicide and parasuicide.

Databases

The following databases were searched:

Biomedical Science databases:

- Medline
- Embase
- PsycLit
- ERIC
- CAB Abstracts
- IBSS
- ISI
- CINAHL
- Cochrane

Social Sciences and general reference databases:

- Dissertation Abstracts
- Social Science Citation Index
- Healthstar
- Sociological Abstracts
- ASSIA

Appendix III

Quality assessment criteria

Validity criteria	Comment
Observer bias? Independent or blinded observation?	High quality – Observers blinded or methodology to minimise observer bias. Low quality – Observers not blinded.
Detection bias? Was the study conducted prospectively?	High quality – Prospective or retrospective where all key elements measured before and after intervention using clear criteria defined <i>a priori</i> . Low quality – Studies where key outcomes not measured before and after intervention.
Selection bias? Was the method of selection of cases identified and appropriate?	High quality – Groups randomised or if not randomised shown to be similar. Low quality – Groups different at start in key indicators.
Selection bias? Were groups similar at start?	High quality – Groups randomised or if not randomised shown to be similar. Low quality – Groups different at start in key indicators.
Selection bias? Any possible confounders explored?	High quality – Confounders sought and investigated for in analysis. Low quality – Obvious confounders not considered and potentially problematic.

Appendix IV

Included studies

Bank & Marlowe 1991

Bank L, Marlowe H, Reid JB, Patterson GR, Weinott MR. A comparative evaluation for families of chronic delinquents. *Journal of Abnormal Child Psychology* 1991;19(1): 15-33

Baum & Forehand 1981

Baum CG, Forehand R. Long-term follow-up assessment of parent training by use of multiple outcome measures. *Behaviour Therapy* 1981;12:643-652.

Britner & Repucci 1997

Britner PA, Repucci ND. Prevention of child maltreatment: Evaluation of a parent education program for teen mothers. *Journal of Child and Family Studies* 1997;6(2): 165-175.

Fuscaldo & Kaye 1998

Fuscaldo D, Kaye JW, Phlliber S. Evaluation of a program for parenting. *Families in Society* 1998;1:53- 61.

Kazdin & Siegel 1992

Kazdin AE, Siegel TC & Bass D. Cognitive problem-solving skills training and parent management training in the treatment of anti-social behaviour in children. *Journal of Consulting and Clinical Psychology* 1992;60(5):733-747.

Mullin & Quigley 1994

Mullin E, Quigley K & Glanville B. A controlled evaluation of the impact of a parent training programme on child behaviour and mothers general well-being. *Counselling Psychology Quarterly* 1994;7(2):167-179.

Mullin & Proudfoot 1990

Mullin E, Proudfoot R & Glanville B. Group parent training in the Eastern Health board: programme description and evaluation. *The Irish Journal of Psychology* 1990;11(4):342-353.

O'Donnel & Hawkins 1995

O'Donnel J, Hawkins JD, Catalano RF, Abbott RD, Day LE. Preventing school failure, drug use and delinquency among low-income children: Long term intervention in elementary schools. *American Journal of Orthopsychiatry* 1995; 65(1):87-100.

Routh & Hill 1995

Routh CP, Hill JW, Steele H, Elliot CE, Dewey ME. Maternal attachment status, psychosocial stressors and problem behaviour: follow-up after parent training courses for conduct disorders. *Journal of Child Psychology & Psychiatry & Allied Disciplines* 1995;36(7):1179-1198.

Strayhorn & Weidman 1991

Strayhorn JM, Weidman CS. Follow-up one year after parent-child interaction training: effects on behaviour of pre-school children. *Journal of American Academic Child Psychiatry* 1991;30(1):138-143.

Sutton 1992

Sutton C. Training parents to manage difficult children: A comparison of methods. *Behavioural Psychotherapy* 1992;20:115-139.

Tremblay & Massi 1995

Tremblay RE, Pagini-Kutz L, Masse LC, Vitaro F, Pihl Ro. A bimodel intervention for disruptive kindergarden boys: Its impact through mid-adolescence. *Journal of Consulting and Clinical Psychology* 1995;63(4):560-568.

Tucker & Gross 1998

Tucker S, Gross D, Fogg L, Delaaney K, Lapporte R. The long-term efficacy of a behavioural parent training intervention for families with 2 year olds. *Research in Nursing and Health* 1998;21:199-210.

Van den Boom 1995

Van den Boom DC. Do first year intervention effects endure? Follow-up during toddlerhood of a sample of Dutch irritable infants. *Child Development* 1995;66:1798-1816.

Wahler 1980

Wahler RG. The insular mother: Her problems in parent-child treatment. *Journal of Applied Behaviour Analysis* 1980;13:207-219.

Walker & Kavanagh 1998

Walker HM, Kavanagh K, Stiller B, Golly A, Severson HH, Feil EG. First steps to success: An early intervention approach for preventing school antisocial behaviour. *Journal of Emotional and Behavioural Disorders* 1998;6(2):66-80.

Webster-Stratton & Hammond 1997

Webster-Stratton C, Hammond M. Treating children with early onset conduct problems: A comparison of child and parent training interventions. *Journal of Consulting and Clinical Psychology* 1997;65(1):93-109.

Webster-Stratton 1984

Webster-Stratton C. Randomised trial of two parent-training programs for families with conduct disordered children. *Journal of Consulting and Clinical Psychology* 1984;52(4):666-678.

Webster-Stratton 1990

Webster-Stratton C. Long-term follow-up of families with conduct problem children: From pre-school to grade school. *Journal of Clinical Child Psychology* 1990;19(2):144-149.

Appendix V

Characteristics of studies looking at child behaviour

Study	Design	Quality code	Population	Intervention	Comment
Walker & Kavanagh 1998	RCT No control group at long-term follow-up	5	46 at risk kindergarden children with early signs of antisocial behaviour. Follow-up – 2 years.	2 modules, School intervention and parent training.	Good study but strictly controlled entry criteria and much school based work questions generalisability.
Webster-Stratton 1984	RCT	5	35 Children 3-8 year olds with conduct problems. Follow-up – 1 year.	Individual and group video parent education (PET): - Control group (CON) - Individual therapy (IT) - Video group therapy (VGT)	Good quality study.
Strayhorn Wiedman 1990	RCT	5	50 low income pre-school children with externalising behaviour. Follow-up – 1 year.	Group parenting instruction and individual modelling.	Good quality study Control group and independent observers.
Webster-Stratton 1990	Comparison Of 3 methods No control group.	4	134 Pre-school children 3-7 years old with conduct disorders. Follow-up –3 years.	3 groups of parent education: - Self administered videotape modelling (IVM) - Therapy led discussion group (GD) - Therapy led group discussion videotape modelling (GDMV)	No independent observation of children's behaviour.
Webster-Stratton & Hammond 1997	RCT No control group at long-term follow-up	4	Conduct problems in 97 18-24 months olds. Follow-up – 1 year.	4 equal groups: - Parent training (PT) group - Child training (CT) group - Combined (PT+CT) group - Control group	Both parent records and independent observations made.

Parent education programmes for children's behaviour problems

Study	Design	Quality code	Population	Intervention	Comment
Sutton 1992	RCT No control group at long-term follow-up	4	37 antisocial pre-school children. Follow-up – 12-18 months.	4 comparative parent education programmes: Group, home visit, telephone, waiting list control	Small numbers in each group. Independent observer used.
Routh & Hill 1995	PPS	4	37 Children with conduct disorder. Follow-up – 13-43 months.	Group parent management training.	One group only followed over time.
Trembley & Massi 1995	RCT	4	319 Disruptive kindergarden children. Follow-up – long term till aged 10-15 years.	Social skills and parent education.	Home based parent training with school based social skills training.
Van den boom 1995	RCT	4	82 irritable infants (as assessed by behaviour score) from low income families. Follow-up – 3.5 years.	Home based skills training.	Dutch study with the aim of enhancing maternal sensitivity.
Tucker & Gross 1998	RCT	3	46 21-36 month old infants displaying negative behaviour. Follow-up – 1 year.	Behavioural parent training.	Most outcomes (bar 1) parent recorded.
Kazdin & Siegel 1992	Comparison of 3 types of parent education with control	3	97 Severely antisocial 7-13 year olds. Follow-up – 1 year.	3 groups given individual therapy: - Problem solving skills training (PSST) - Parent management training (PST) - Combined (comp) - Control	No control group Mixture of parent and teacher assessment. No independent measures.

Study	Design	Quality code	Population	Intervention	Comment
O'Donnel & Hawkins 1995	RCT	3	177 low income urban children. Follow-up – 6 years.	Seattle social development project. School based: -Classroom intervention -Child intervention -Parent intervention	A high risk sub-group were analysed separately who were from low income families.
Mullin & Proudfoot 1990	Pre and post intervention study.	2	94 Children with conduct disorder. Follow-up – 1 year.	Parent behavioural training.	Study particularly focused on attachment behaviour.
Mullin & Quigley 1994	RCT No control group at long-term follow-up.	2	79 children with Conduct disorders of 3 months – 14 yrs. Follow-up – 1 year.	Group behavioural modification and self management skills for parents.	All outcome measured self administered. Control group less disturbed at baseline in one measure.
Wahler 1980	PPS	2	18 Isolated, low income families. Follow-up – 1 year.	Individual parent training.	Studies main aim to look at effect of mothers insularity on outcomes.

Abbreviations used in tables.

RCT – Randomised controlled trial.

PPS – Pre and post intervention study.

Appendix VI

Child related outcome measures used

Outcome measure	Description of measure	Expected change in measure for positive change	Has measure been validated?
Child Behaviour Checklist (CBCL).	118 items listed on a 0-2 scale that constitute multiple behaviour problem scores. Can get a total behaviour score or a social score.	Decrease (except; social component)	Y-Achenbach & Edelbrock
Eyberg Child Behaviour Inventory (ECBI)*.	Designed to assess parental report of behaviour in children. 36 problem behaviours measured on 2 measures; frequency of occurrence (F) and identification as a problem (I).	Decrease	Y – Robinson et al 1980
Behar Pre-school Behaviour Questionnaire (PBQ).	Checklist of the DSM-III- R Criteria for oppositional and attention deficit disorders. 3 subscales: hostile-aggressive, anxious, and hyperactive-distractible.	Decrease	Y – Behar 1977
Child Behaviour Questionnaire (CBQ)	8 items on child behaviour.	Decrease	Not independent

* Classified as ECBI(I) for intensity of behaviour and ECBI(F) for frequency of behaviour,

Outcome measure	Description of measure	Expected change in measure for positive change	Has measure been validated?
Daily Parent Record (PDR)	23 behaviours reviewed in previous 24hrs. Requires calling the parent daily.	Decrease	Y – Foster and Robin 1988
Wally Child Social Problem Solving Detection (WALLY)	Assesses quality and quantity of problem solving.	Decrease	Y – Webster-Stratton 1990
Dyadic Parent-child Interaction (DPICS)	29 categories covering child and parental behaviour.	Decrease in negative, increase in positive.	Y – Robinson & Eyberg 1981
Early Screening Project (ESP)	Systematic screening for behavioural disorders.	Adjusted – increase Maladjusted – decrease	Y – Walker & Seversen 1990
Academic Engagement Time (AET)	Measure of classroom behaviour.	Increase	Y - Rich & Ross 1989
Standard Observation Code (SOC)	Direct observation of child and family members behaviour.	Decrease	Y – Wahler et al 1976
Social Behaviour Questionnaire	Measure of disruptiveness.	Decrease	Y – Tremblay et al 1991
Seattle Development Item and Scale Dictionary	Intervention and outcome measures.	Multiple scale – most decrease	Y – Seattle dev project – Unpublished

Outcome measure references

Achenbach TM, Edelbrock CS. *Manual for the child behaviour checklist and revised child behaviour profile*. Burlington, VT: University Associates in Psychiatry, 1991.

Robinson EA, Eyberg SM, Ross AW. The standardisation of an inventory of child conduct problems. *Journal of Clinical Child Psychology* 1980;9:22-28.

Behar LB. The Preschool Behaviour Questionnaire. *Journal of Abnormal Child Psychology* 1977;5:265-275.

Foster, Robin AL. *Family conflict and communication in adolescence*. In Mash EJ, Terdal LG (eds). *Behavioural assessment of childhood disorders* (2nd ed. 717-775). New York: Guilford Press, 1988.

Webster-Stratton C, Hammond M. Treating children with early onset conduct problems: A comparison of child and parent training interventions. *Journal of Consulting and Clinical Psychology* 1997;65:93-109.

Robinson EA, Eyberg SM. The Dyadic Parent-Child Interaction Coding system: Standardization and validation. *Journal of Consulting and Clinical Psychology* 1981;9:22-29.

Walker HM, Seversen I, Feil E. (1994). *The ESP; a proven child-family process*. Laynum co-sopris west, 1994.

Rich H, Ross S. Students time on learning tests in special education. *Exceptional Children* 1989;55(6):508-515.

Wahler RG, House AE, Satmbaugh EE. *Ecological assessment of child problem behaviour: A clinical package for home, school and institutional settings*. New York: Pergamon Press, 1976.

Tremblay RE, McCord J, Boileau H, Charlebois P, Gagnon C, Le Blanc M, Larivee S. Can disruptive boys be helped to become competent? *Psychiatry* 1991;54:148-161.

Appendix VII

Results of studies assessing child behavioural changes

Study	Outcome measure	Measure at t1 or control	Measure at t2 or intervention	Difference	Effect size	Direction of effect	Significance	Independently assessed Y/N	
Webster-Stratton '84	CBI VGT	61.67 t1	36.33 t2	25.34	1.4	Positive	P<0.001	Some CBCL & ECBI Parent or teacher assessed. DPICS Independently assessed.	
	CBI IT	71	34.44	36.56	1.1		P<0.001		
	ECBI						P<0.001		
	ECBIf VGT	19.47	8.47	11	1.44		P<0.001		
	IT	22.37	6.56	15.81	1.9		P<0.001		
	ECBIf VGT	144	104.27	39.73	2.0		P<0.001		
	IT	166.62	117.38	49.24	1.7		P<0.001		
	Teacher BPQ VGT	-	17.43	-	-		-		
	IT	-	15.73	-	-		-		
	DPICS								
	Total deviance – VGT	15.9	1.9	14	1.12		P<0.01		
- IT	12.28	1.44	10.84	0.8	P<0.05				
Total noncompliance- VGT	6.43	1.77	4.66	1.22	P<0.001				
- IT	7.09	1.97	5.12	0.77	P<0.01				
Strayhorn Weidman '90	Parent Behar Composite	43 Control	34 Intervention	9	-	Positive	NS	Yes - Some Independently teacher assessed.	
	Teacher Behar Composite	3025	25	5	-		P<0.05		
	Hostile	3125	25	6	-		NS		
	Hyperactive	3025	25	5	-		P<0.05		

Parent education programmes for children's behaviour problems

Study	Outcome measure	Measure at t1 or control	Measure at t2 or intervention	Difference	Effect size	Direction of effect	Significance	Independently assessed Y/N	
Webster Stratton & Hammond '97	ECBI mother	154.05 t1	119.28 t2	34.77	1.96	Positive	P<0.001	Some – Home observations (DPICS) independently assessed	
	ECBI father	148	108.31	39.69	2.36		P<0.001		
	CBCL mother	67	55.08	11.92	0.77		P<0.001		
	CBCL father	62.88	53.5	9.38	1.1		P<0.001		
	DPICS								
	Deviance with mothers	18.95	8.75	10.2	0.56		P<0.001		
	Deviance with fathers	16.73	6.46	10.27	1.1		P<0.01		
	Positive effect with mothers	11.34	20.5	9.16	0.95		P<0.001		
	Positive effect with fathers	9.23	25.36	16.13	1.2		P<0.01		
	WALLY	5.68	7.68	2.0	0.9		P<0.001		
PDR (-)	10.67	3.88	6.79	1.9	P<0.001				
PDR (+)	13.24	4.4	8.84	1.5	P<0.001				
Sutton '92	CBQ	- t1	- t2	-	-	Positive	P<0.001	No- Parent	
	Home situation	-	-	-	-		P<0.001		
Van den Boom '95	Attachment status	Control	Intervention			Positive	NS NS	Yes Independently blinded.	
	DPICS Positive	0.06	0.24	0.18	0.23				
	- Negative	0.06	0.02	0.04	0.03				
Tucker & Gross '98	ECBI (I) mother reported	108.83 t1	101.92 t2	6.92	0.44	Positive	P<0.05	No Parent assessed.	
	ECBI (f) mother reported	3.33	2.58	0.75	0.17		NS		
Walker & Kavanagh '98	AET	62.5% t1	83.7% t2	21.17%	2.2	Positive	P <0.05	No Teacher or observer rated.	
	ESP Adaptive	21.96	26.72	4.76	1.21		P<0.01		
	Maladaptive	32.58	23.83	8.75	1.3		P<0.01		
	CBCL Aggression	20.33	14.55	5.78	0.83		P<0.01		
	Withdrawn	7.04	6.11	0.93	0.5		P>0.05		

Parent education programmes for children's behaviour problems

Study	Outcome measure	Measure at t1 or control	Measure at t2 or intervention	Difference	Effect size	Direction of effect	Significance	Independently assessed Y/N
Trembley & Massi '95	Disruptiveness	-	-	-	-	No change	NS	No Parent assessed.
Mullin & Quigley	ECBI(f) ECBI(I)	80.72 t1 17.95	63.25 t2 7.6	17.47 10.35	No ES but Exp group improved by 32%, control by 2.8%.	Positive	P<0.001 P<0.001	No Parent assessed.
O'Donnel & Hawkins '95	Conventional involvement	t1	t2					
	Girls	2.63	2.45	0.18	0.14	Positive	NS	No Self and teacher assessed.
	Boys	2.6	2.66	0.06	0.05		NS	
	Social skills							
	Girls	1.78	1.8	0.02	0.05	NS		
	Boys	1.98	1.63	0.35	0.7	P<0.05		
	Rewards							
	Girls	3.52	3.43	0.09	0.14	P<0.05		
	Boys	3.35	3.16	0.19	0.19	P<0.1		
	Social							
	Girls	1.29	1.49	0.2	0.34	NS		
	Boys	1.47	1.46	0.02	0.02	?		

Parent education programmes for children's behaviour problems

Study	Outcome measure	Measure at t1 or control	Measure at t2 or intervention	Difference	Effect size	Direction of effect	Significance	Independently assessed Y/N
Kadzin & Seigel '92	CBCL – Total	t1	t2					
	PSSM	72.0	63.9	8.1	0.96	Positive	P<0.001	No Teacher and parent assessed.
	PMT	69.8	66.1	3.7	0.5		NS	
	Combined	69.6	56.2	13.4	1.8		P<0.001	
	CBCL (Social)							
	PSSM	34.5	39.4	4.9	0.65	P<0.01		
	PMT	32.7	39.8	7.1	0.75	P<0.01		
Combined	36.7	43.5	6.8	0.98	P<0.001			
Webster-Stratton '90	CBCL - GDVM –mother	68.56 t1	56.4 t2	12.16	1.66	Positive	P<0.001	No Parent assessed.
	Father	65.5	48.58	16.92	2.22		P<0.001	
	GD – Mother	66.52	62.68	3.84	0.39		NS	
	Father	65.08	56.92	8.16	1.42		P<0.01	
	IVM – Mother	66.03	59.35	6.68	0.65		P<0.01	
	Father	67.6	57.95	10.35	1.57		P<0.01	
Routh & Hill '95	ECBI(I)	152.8 t1	128.8 t2	24	-	Positive	P<0.001	No Parent assessed.
	ECBI(f)	18.4	11.3	7.1	-		P<0.001	
Mullin & Proudfoot '90	ECBI(I)	71.13 t1	57.18 t2	13.95	-	Positive	P<0.001	No parent records.
	ECBI (f)	12.76	3.25	9.51	-		P<0.001	
Wahler '80	Standard observation code	3.95	4.07	0.12	0.03	Positive	NS	No Self report.
	SOC	2.24	2.23	0.01	0.002			

Appendix VIII

Characteristics of studies looking at parental well-being

Study	Design	Quality code	Population	Intervention	Comment
Mullin & Quigley 1994	RCT	5	79 children with conduct disorders aged 3 months – 14 years. Follow-up 1 year.	Group behavioural modification and self management skills for parents.	All outcome measures parent recorded.
Sutton 1992	RCT	4	37 anti-social pre-school children. Follow-up 12-18 months.	4 comparative parent education programmes: Group, health visitor, telephone, waiting list control.	Small numbers in each group.
Fuscaldò & Kaye 1998	PPS	4	31 Teenage mothers. Follow-up –2 years.	Teen parenting programme with: <ul style="list-style-type: none"> - Infant toddler centre - Parenting classes - Parent support group - Life skills training - Jobs skills training - Tutoring - Mentoring 	Multisystems programme with many components. Cannot record separate effect of parent education component.
Webster-Stratton & Hammond 1997	RCT No control group at long-term follow-up	4	Conduct problems in 97 18-24 months olds. Follow-up – 1 year.	4 equal groups: <ul style="list-style-type: none"> - Parent training (PT) group - Child training (CT)group. - Combined (PT+CT) group. - Control group 	Both parent records and independent observations made.
Tucker & Gross 1998	RCT	3	46 21-36 months old infants displaying negative behaviour. Follow-up – 1 year.	Behavioural parent training.	Most outcomes parent recorded.

Parent education programmes for children's behaviour problems

Study	Design	Quality code	Population	Intervention	Comment
Kazdin & Siegel 1992	Comparison of 3 types	3	97 Severe anti-social 7-13 year old children. Follow-up – 1 year.	3 groups: - Problem solving skills training (PSST) - Parent management training (PMT) - Combined (comp) - Control	Parent recorded results.
Mullin, Proudfoot 1990	PPS	2	94 Children with conduct disorders. Follow-up – 1 year.	Group parent behavioural training programme.	Study focuses on attachment behaviour.
Baum & Forehand 1981	PPS	2	34 Non-compliant children. Follow-up 1 - 4.5 years.	Individual parent training.	Home observation as well as parent records recorded.

Appendix IX

Parent related outcome measures used in tables

Outcome measure	Description of outcome measure	Expected change in measure for positive change	Validity
Beck Depression Inventory (BDI)	Severity of depressive symptoms.	Decrease	Y – Lloyd and Adidin 198535
Rosenberg Self-esteem Inventory (RSEI)	10 items scores 1-4 on self esteem.	Increase	No independent validation
General Health Questionnaire (GHQ)	120 item scale assessing sources of stress to parents Self administered screening test to assess emotional morbidity. 30 questions on a 4 point scale	Decrease	Y –Goldberg 197836
Texas Social Behaviour Inventory (TSBI)	Measure of social competence. 16 items scores 1-4.	Increase	No independent evaluation
Parental Stress Index (PSI)	120 item items measuring parental stress related to childbearing.	Decrease	Y – Adibin 199037
Coopersmith Self-esteem Score	4 sub-scales are combined into a maximum score of 116.	Increase	Y – Foster and Robin 1988.
Adult – Adolescent Parenting Inventory (AAPI)	32 items in 4 areas.	Increase	Not independently evaluated
Parent Attitude Test	Completed by parent – 3 scales – home attitude, behaviour rating and adjective checklist scale.	Decrease	Y – Cowen & Huser 197038

References for parental well-being outcome measures

Lloyd BH, Abidin PR. Revision of the parenting stress index. *Journal of Pediatric Psychology* 1985;10:169-177.

Goldberg D. *Manual of the General Household Questionnaire*. Windsor: Nfer-Nelson, 1978.

Abidin PR. *Parenting Stress Index (3rd edition)*. Charlottesville. VA: Pediatric Psychology Press, 1990.

Foster, Robin AL. *Family conflict and communication in adolescence*. In Mash EJ, Terdal LG (eds). *Behavioural assessment of childhood disorders (2nd ed, 717-775)*. New York: Guilford Press, 1988.

Cowen EL, Huser J, Beach DR, Rappaport J. Parental perception of young children and their relation to index of adjustment . *Journal of Consulting and Clinical Psychology* 1970;34:97-103.

Appendix X

Results of studies assessing changes in parental well-being

Study	Outcome measure	Measure at t1 or control	Measure at t2 or intervention	Difference	Effect size	Direction of effect	Significance	Independently assessed Y/N
Tucker & Gross	PSI	112.17 t1	100.58 t2	11.59	0.4	Positive	P<0.05	No Self assessed.
Mullin & Quigley '94	TSBI RSEI GHQ	33.62 t1 29.85 6.62	43.25 t2 33.42 1.53	9.63 3.57 5.09	% improvement TSBI 19.36 (2.57) RSEI 11.83 (0.54) GHQ 75.98 (3.31)	Positive	P<0.05 P<0.05 P<0.001	No Self assessed.
Sutton '92	PSI	-	-	-	-	Positive	P<0.001	No Self assessed.
Webster-Stratton & Hammond 97	PSI (M) PSI(F)	142.46 t1 125.47	117.13 t2 106.73	25.33 18.74	1.3 1.3	Positive	P<0.001 P<0.001	No Self assessed.
Kazdin & Siegel '92	PSI – PSST PMT Combined Beck depression PSST PMT Combined FES	252.6 t1 263.8 264 8.2 6.3 7.0	248.6 t2 263.7 219.4 6.2 7.8 4	4.0 0.1 44.6 2.0 1.5 3.0	0.08 0.001 0.99 0.26 0.23 0.46	Positive	NS NS P<0.001 P<0.05 P<0.001 P<0.001	No Self assessed.
Fuscaldo & Kaye '98	Coopersmith self esteem PSI AAPI	Mean change 6.6 -13.26 9.81	-0.75 -11.82 6.63	7.35 1.44 3.18	- - -	Positive	NS NS P<0.001	No Self assessed.

Parent education programmes for children's behaviour problems

Study	Outcome measure	Measure at t1 or control	Measure at t2 or intervention	Difference	Effect size	Direction of effect	Significance	Independently assessed Y/N
Mullin & Proudfoot '90	GHQ	5.96 t1	2.59 t2	3.37	-	Positive	P<0.001	No Self assessed.
Baum & Forehand '81	Parental attitude score	t1	t2		-			No Self assessed.
	Home	13.97	8.85	5.12		Positive	P<0.01	
	Behavioural	29.71	20.91	8.8			P<0.01	
	Adjective	29.68	22.82	6.86			P<0.01	

Appendix XI

Characteristics of studies looking at social and health service outcomes

Study	Outcome	Design	Quality code	Population	Intervention	Comments.
Fuscaldò & Kaye 1998	Delayed pregnancy/ Further education	PPS	4	31 Teenage mothers. Follow-up 2 years.	Teen parenting programme with: - Infant toddler centre - Parenting classes - Parent support group - Life skills training - Jobs skills training	Multisystems programme with many components. Cannot record separate effect of parent education component.
Tremblay & Massi 1995	Delinquency Court records	RCT	4	319 Disruptive kindergarden children. Follow-up – 10-15 years to mid adolescence.	Social skills and parent education.	Home based parent training with school based social skills training.
O'Donnell & Hawkins 1995	Delinquency and drug use	RCT	3	177 Low income urban children. Follow-up – 6 years.	Seattle social development project. School based: -Classroom intervention -Child intervention -Parent intervention	Multisystems project.
Bank & Marlowe 1991	Police contacts	RCT	2	60 Chronically offending delinquents under 16 years. Follow-up – 2 years.	Parent training	Families multi-distressed.
Britner & Reppucci 1997	Delayed pregnancy/ Further education Abuse	RCT	2	535 Newborns to at risk single teenage mothers. Follow-up – 3-5years.	PET group work and support	The groups were not similar at the start of the study. The at risk group was actively recruited into the experimental group and they had more risk factors.

Appendix XII

Outcome measures used for societal and health service outcomes.

Outcome area	Measure used	Assessment of measure
Delayed pregnancy	Telephone enquiry	Open to bias.
Further education	Telephone enquiry	Open to bias.
Delinquency	Court records Police contacts Teacher rating Self reports	Not all crimes come to the attention of the police or courts. Open to bias. Open to bias.
Health service use	Hospital records	Independent measure.
Child abuse rates	Social services records	Independent record but may not reflect real situation.
Drug use	Self reports	Open to bias.

Appendix XIII

Results of studies assessing societal and health service changes.

Outcome area	Study	Outcome measure	Measure at t1 or control	Measure at t2 or intervention	Difference	Effect size	Direction of effect	Significance test	Independent record
Police contact	Bank & Marlowe 1991	Offense rate Police contacts	T1 4.39 11	T2 1.79 7	2.6 4	0.57 0.1	Positive	NS NS NS	Police records
	Tremblay & Massi 1995	Court records	Control 9.3%	Intervention 7.4%	1.9%	-	Negative	NS	Police record Only 1-10% offences come to attention of police.
Delinquency	O'Donnel & Hawkins 1995	Delinquency Girls Boys	Control 0.57 0.67	Intervention 0.56 0.41	0.01 0.26	0.02 0.5	Positive	NS P<0.01	Self recorded
	Tremblay & Massi 1995	Delinquency	-	-	-	-	Positive	NS	Self recorded
Drug use	O'Donnel and Hawkins 1995	Drug use Girls Boys	Control 0.17 0.06	Intervention 0.04 0.06	0.13 0	0.34 0	Positive for girls	P<0.05 NS	Self reports
Delayed pregnancy	Britner & Repucci 1997	Delayed Second child	Control 57%	Intervention 71%	14%	-	Positive	P<0.01	No
	Fuscaldo & Kaye 1998		Control 62%	Intervention 89%	27%	-	Positive	P<0.05	Yes

Parent education programmes for children's behaviour problems

Outcome area	Study	Outcome measure	Measure t1 / exp	Measure t2/ control	Difference	Effect size	Direction of effect	Significance	Independent measure y/n
Further education	Fuscaldo & Kaye 1998	Completed education	Control 41%	Intervention 84%	45%	-	Positive	P<0.05	Yes
	Britner & Repucci 1997		Control 50%	Intervention 68%	18%	-	Positive	NS	Yes
Child abuse	Britner & Repucci 1997	Reported rates	Control 68%	Intervention 50%	18%	-	Positive	NS	Social services records
Use of health services	Fuscaldo & Kaye 1998	Regular source of health care	Control 87%	Intervention 100%	13%	-	Positive	P>0.05	Self records

Appendix XIV

Cost analysis

1. Details of cost sources for cost analysis

The following outlines details of how the costs for the cost studies were derived.

- Staff costs for both the statutory and non statutory section are taken from independently assessed unit costs (39) and referred to in the table as 'NHS costs'. It was assumed here that the statutory staff would be Health Visitors and the non-statutory staff appropriately qualified. Travel costs for statutory staff are included in the overall staff costings when the parent education is based in a centre and is set at £1 a visit for home visits. This rate is based on the same independently assessed unit costs. The wages of the Health Visitors is taken as their opportunity cost. Working with vulnerable families is now seen as core work for Health Visitors.
- Training costs from the 'Handling Children's Behaviour' course run for Health Visitors in Shropshire from local costings.
- Resource pack costs also from the 'Handling Children's Behaviour course'.
- Accommodation costs are taken from local costs in Shropshire. In model 1, where the programme is run in government buildings, the opportunity cost of accommodation was taken to be zero as such programmes are typically held in public buildings such as schools at times when the buildings would not otherwise be in use. The effect of including the opportunity cost of such accommodation on programme cost estimates can be seen by comparing model 1 and model 2, where the opportunity cost of accommodation is taken from local cost estimates of a local centre room. If the true opportunity cost of the use of public buildings is between zero and the cost of a local centre room, model 1 programme cost will lie between the estimates of model 1 and model 2.

1. Models of parent education training

Model 1: Statutory staff – government centre based

Cost centre	Description	Unit cost	Estimate of cost per course	Source
Staff	Health visitor / equiv	£38 per hour (clinic costs)	£760	NHS costings
Staff training	Example – Handling Children's behaviour	£82.60	£165	Local costings
Staff follow-up costs	Meetings to follow- up and organise courses	£16 per hour	£80 (5 meetings)	NHS costings
Resource packs	Included in training costs but for copying	£1.25 per client	£25	Local costings
Accommodation	Statutory building	No cost	No cost	Na
Travel costs	To and from centre only	No extra cost	Included in staff costs	NA
Creche costs	Worker only in this case – 3 workers for 2 hours	£44.70 per session	£447	Local costings

Here a breakdown is given of the initial costs to set up the course i.e. training and initial support costs of staff and of the on-going costs i.e. those needed to provide the service on an on-going basis

Total cost per course	- Initial costs - £245
	- On-going costs - £1232
Total cost per client per course (based on 15 clients)	- Initial £16.33
	- On-going £82.13
Total cost per client per course (based on 8 clients)	- Initial £30.62
	- On-going <u>£154</u>

Model 2: Statutory staff – private centre based

Cost centre	Description	Unit cost	Estimate of cost per course	Source
Staff	Health visitor / equiv	£38 per hour (clinic costs)	£760	NHS costings
Staff training	Example – Handling Children's behaviour	£82.60	£165	Local costings
Follow-up	Meetings to follow- up and organise courses	£16 per hour	£80 (5 meetings)	NHS costings
Resource packs	Included in training costs but for copying	£1.25 per client	£25	Local costings
Accommodation	Local centre room	£46.50 per session	£467.50	Local costings
Travel costs	To and from centre only	No extra cost	Included in staff costs	NA
Creche	Room and worker – 3 workers for 2 hours	£59.45 per session	£594.50	Local costings

Total cost per course

- Initial costs - £245
- On-going costs - £1847

Total cost per client per course (based on 15 clients)

- Initial £16.33
- On-going £123.13

Total cost per client per course (based on 8 clients)

- Initial £30.62
- On-going £231

Model 3: Non-statutory (voluntary) staff – private centre based

Cost centre	Description	Unit cost	Estimate of cost per course	Source
Staff	Volunteer worker	£12 per hour (clinic costs)	£240	NHS costings
Staff training	Example – Handling Children's behaviour	£82.60	£165	Local costings
Follow-up	Meetings to follow- up and organise courses	£12 per hour	£60 (5 meetings)	NHS costings
Resource packs	Included in training costs but for copying	£1.25 per client	£25	Local costings
Accommodation	Local centre room	£46.50 per session	£467.50	Local costings
Travel costs	To and from centre only	No extra cost	Included in staff costs	NA
Creche.	Room and worker – 3 workers for 2 hours	£59.45 per session	£594.50	Local costings

Total cost per course

- Initial costs - £225
 - On-going costs - £1327

Total cost per client per course (based on 15 clients)

- Initial £16.33
 - On-going £88.47

Total cost per client per course (based on 8 clients)

- Initial £30.61
 - On-going £166

Model 4: Statutory staff - home visiting

Cost centre	Description	Unit cost	Estimate of cost per individual course	Source
Staff	Health visitor / equiv	£55 per hour (home visit costs)	£1100	NHS costings
Staff training	Example – Handling Children's behaviour	£82.60	£165	Local costings
Follow-up costs.	Meetings after course	£12	£60	NHS costings
Resource packs	Meetings to follow- up and organise courses	£1.25	£1.25	NHS costings
Accommodation	Not applicable			
Travel costs	Extra for visits	£1 per visit	£20	NHS costings
Creche	Not applicable			

Total cost per client per course - Initial costs - £2
 - On-going costs - **£1121 per client/**

Model 5: Non-statutory staff - home visiting

Cost centre	Description	Unit cost	Estimate of cost per course Per individual	Source
Staff	Volunteer worker	£12 per hour (clinic costs)	£240	NHS costings
Staff training	Example – Handling Children's behaviour	£82.60	£165	Local costings
Follow-up costs	Meetings to follow- up and organise courses	£12 per hour	£60 (5 meetings)	NHS costings
Resource packs	Handling childrens behaviour	£ 1.25 per client	£1.25	Local costings
Accomm-odation	Not applicable			
Travel costs	For home visits	£1 per visit	£20	NHS costings

Total cost per client per course

- Initial costs - **£225**
- On-going costs - **£261 per client/**

9 References

- ¹ Gardner FEM. Inconsistent parenting: Is there evidence for a link with children's conduct problems? *Journal of Abnormal Child Psychology* 1989;17(2):223-233.
- ² Patterson GR, DeBaryshe D, Ramsey E. A developmental perspective on anti-social behaviour. *American Psychologist* 1989;44(2):329-335.
- ³ Scott S. Aggressive behaviour in childhood. *BMJ* 1998;316:202-206.
- ⁴ Offord MD, Bennett KJ. *Journal of the American Academy of Child and Adolescent Psychiatry* 1994;33(8):1069-1078.
- ⁵ Robis LN. Conduct Disorder. *Journal of Child Psychology and Psychiatry* 1991;32(1):193-212.
- ⁶ Eron LD, Huesmann LR. The stability of aggressive behaviour – Even to the third generation. In M Lewis, SM Miller (Eds). *The development and treatment of childhood aggression (pp5-29)*. Hillsdale, NJ: Lawrence Erlbaum, 1990.
- ⁷ Hodnett ED, Robert I. Home-based social support for socially disadvantaged mothers. *The Cochrane Library* 1997, Issue 3.
- ⁸ Bone M, Meltzer H. The prevalence of disability among children. *OPCS Surveys of disability in Great Britain. Report 3*. London: HSMO, 1989.
- ⁹ Campbell SB. Behaviour problems in childhood and stressors in early adult life: 1. A 20-year follow-up of London school children. *Psychological Medicine* 1995;25(2): 231-246.
- ¹⁰ Robins LN. Epidemiological approaches to natural history research: Antisocial disorders in children. *Journal of the American Academy of Child and Adolescent Psychiatry* 1981;20:566-680.
- ¹¹ SA Wallace, JM Crowen, AD Cox, M Berger, Epidemiological based needs assessment: *Child and adolescent mental health*. June 1995.
- ¹² Peyanne Assasu. Mental Health needs in Shropshire. Shrewsbury: Public Health Department, *Shropshire Health Authority, 1995*.
- ¹³ Smith C. Developing parenting programmes. *National children's bureau, 1996*.
- ¹⁴ Todres R, Bunston T. Parent education program evaluation: A review of the literature. *Canadian Journal of Community Mental Health* 1993;12(1):225-257.
- ¹⁵ Cedar B, Levant RF. A meta-analysis of the effects of parent effectiveness training. *The American Journal of Family Therapy* 1990;18(4):373-384

-
- ¹⁶ Serketich WJ, Dumas JE. The effectiveness of behavioural parent training to modify antisocial behaviour in children: A meta-analysis. *Behaviour Therapy* 1996;27:171-186.
- ¹⁷ Barlow J, Stewart-Brown S. *Review article – behavioural problems and parent education programmes*. Unpublished.
- ¹⁸ Barlow J. Parent-education programmes and behaviour problems – findings from a systematic review. In: Buchanan A, Hudson BL (Eds). *Parenting, schooling and children's behaviour: interdisciplinary approaches*. Ashgate Publishing Ltd., Aug 1998.
- ¹⁹ Oxman AD, Guyatt GH. Guidelines for reading literature reviews. *Canadian Medical Association Journal* 1988;138:697-703.
- ²⁰ Tremblay RE, Pagani-Kutz L, Masse LC, Vitaro F, Pihl Ro. A bimodel intervention for disruptive kindergarden boys: Its impact through mid-adolescence. *Journal of Consulting and Clinical Psychology* 1995;63(4):560-568.
- ²¹ Wahler RG. The insular mother: Her problems in parent-child treatment. *Journal of Applied Behaviour Analysis* 1980;13:207-219.
- ²² Strayhorn JM, Weidman CS. Follow-up one year after parent-child interaction training: effects on behaviour of pre-school children. *Journal of American Academic Child Psychiatry* 1991;30(1):138-143.
- ²³ Tucker S, Gross D, Fogg L, Delaaney K, Lapporte R. The long-term efficacy of a behavioural parent training intervention for families with 2 year olds. *Research in Nursing and Health* 1998;21:199-210.
- ²⁴ Van den Boom DC. Do first year intervention effects endure? Follow-up during toddlerhood of a sample of Dutch irritable infants. *Child Development* 1991;66:1798-1816.
- ²⁵ Fuscaldò D, Kaye JW, Phlliber S. Evaluation of a program for Parenting. *Families in Society* 1998;1:53- 61.
- ²⁶ Kazdin AE, Siegel TC, Bass D. Cognitive problem-solving skills training and parent management training in the treatment of anti-social behaviour in children. *Journal of Consulting and Clinical Psychology* 1992;60(5):733-747.
- ²⁷ Ruma PR, Burke RV, Thompson RW. Group parent training: is it effective for children of all ages? *Behaviour therapy* 1996;27:159-169.
- ²⁸ Cunningham CE, Bremner R, Boyle M. Large group community-based parenting programs for families of pre-schoolers at risk of disruptive behaviour disorders. Utilisation, cost effectiveness and outcome. *Journal of Child Psychology and Psychiatry and Allied Disciplines* 1995;36(7):1141-1150.

- ²⁹ Seigert FE, Yates BT. Behavioural child management cost effectiveness. A comparison of individual in-office, individual in home and group delivery systems. *Evaluation and the Health Professions* 1980;3:123-152.
- ³⁰ Webster-Stratton C. Systematic comparison of consumer satisfaction with 3 cost-effective parent training programmes for conduct problem children. *Behaviour Therapy* 1989;20:103-115.
- ³¹ Hallam A, Knapp M. Costing services in family centres. In: Unit costs of health and social care. *PSSRU, University of Kent at Canterbury, 1998.*
- ³² Herbert M. A collaborative model of training for parents of children with disruptive behaviour disorders. *British Journal of Clinical Psychology* 1995;34:325-342.
- ³³ Loeber R, Dishion T. Early predictors of male delinquency: a review. *Psychological Bulletin* 1983;94:68-99.
- ³⁴ Klein K, Foirehand R, Armistead L, Long P. Delinquency during the transition to early adulthood: Family and parenting predictors from early adolescence. *Adolescence* 1997;32:61-80.