

THE UNIVERSITY *of York*



**The Effectiveness of Behavioural Interventions Which
Involve Parents in the Management of Behaviour Problems
Among Disabled Children: A Rapid Review**

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Chapter 1 Introduction

The rates of behaviour problems among young disabled children, and especially children with learning difficulties¹ are three to four times higher than among non-disabled children (Baker *et al.*, 2002; Baker *et al.*, 2003; Volkmar and Dykens, 2002). These behaviour problems typically continue to persist into later childhood and adolescence (Emerson, 2003) and, as the child increases in size, strength and speed, become more severe. This puts the child at increased risk of harm and also means they become more and more difficult for parents and schools to manage. Challenging behaviour is the main reason why children are placed in 38 or 52 week placements in residential schools (Abbott *et al.*, 2000), and is also a key factor for families being unable to access short breaks (or respite care), and/or the child being unable to access educational, therapeutic and/or community or social activities (Kahng and DeLeon, 2008).

High levels of unmet need in skills to manage their child's behaviour are reported by parents, and severity of the child's behaviour problem has been found to be associated with levels of maternal stress (for example, Baker *et al.*, 2003; Quine and Pahl, 1989).

1.1 The principles of behaviour modification

Over many years, behavioural theory and behaviour modification principles have been used to inform and determine interventions to address problem behaviour.

In essence, behavioural theory argues that whether or not behaviours (desired or undesired) are maintained (or continue to be exhibited) is dependent on what happens (in terms of changes in the situation, demands on the individual, and/or other people's reactions) when that behaviour is displayed. These are known as '*reinforcers*'. Reinforcers are conceived as positive or negative. Positive reinforcement is the *presentation of something* to the individual following a behaviour which makes it more likely that the behaviour will happen again (for example, attention from an adult). Negative reinforcement is *the removal of something* in the individual's environment following a behaviour that results in strengthening that behaviour (for example, removing a plate of food once a spoonful of a disliked vegetable has been eaten).

¹ A number of different phrases can be used to describe children with impaired cognitive and learning abilities. Different countries use different phrases and, across time, the terms used have changed. Learning difficulties is the term chosen for use in this report and is the same as '*developmental delay*', '*intellectual disabilities*', '*mental retardation*' and '*learning disabilities*'.

Based on this principle, in order to change any behaviour or remove an undesired or problem behaviour, it is necessary to stop reinforcing it. This is known as extinction. So, returning to the example of positive reinforcement given above, extinction would involve removing adult attention following an undesired behaviour. In the example of negative reinforcement, removing a plate of food once a spoonful of vegetable has been eaten may result in extinguishing the target behaviour (of fussing over eating vegetables). 'Punishment' is a third way in which behaviour can be modified. A punishment is anything which decreases the probability of the undesired behaviour occurring again because the individual experiences it as an unpleasant event or stimulus. What constitutes a punishment will, to some extent, vary between individuals because of the individual differences which exist in what people find pleasurable or unpleasurable.

The overall approach of behavioural interventions for behaviour problems involves: identifying what provokes or causes the problem behaviour and what is reinforcing the behaviour (called functional analysis), and using this information to develop a strategy by which the behaviour can be modified through changing reinforcers and, sometimes, punishment. (See Emerson, 2001; Kahng and DeLeon, 2008 for more detailed descriptions of behavioural principles applied to managing behaviour problems among disabled children.)

1.2 Behavioural approaches and interventions to deal with problem behaviour in children

Until the 1960's, the management of problem behaviours in children was seen as the preserve of professionals and there was no or very little parental involvement in the delivery of an intervention. Two significant changes in thinking occurred in the late 1960's and early 1970's and resulted in a different approach being adopted (Wyatt Kaminski *et al.*, 2008). First, Bandura's work (for example, Bandura, 1969) revealed the significant role parents' play in shaping their child's behaviours. Second, clinicians realised that parents could be trained to deliver behavioural interventions.

Since then, behavioural interventions which have involved parents in the delivery of the intervention have been shown to be highly effective in a range of child behaviour problems among non-disabled children (for example, Campbell, 1995; Taylor, 1998; Barlow, 2000). Indeed, in light of this growing body of evidence, parent-training programmes have been incorporated in governments' family support strategies in this and other countries across the world (for example, Lindsay *et al.*, 2008).

More recently, researchers have been concerned with identifying the relative contribution different components of an intervention contribute to its effectiveness

(Kaminski *et al.*, 2008), and the relative effectiveness of different media to deliver parent training programmes (Montgomery *et al.*, 2008).

1.3 'Parent-involved' behavioural interventions with disabled children

Parent-training programmes and other 'parent-involved' behaviour interventions were initially developed for non-disabled children. Differences in cognitive ability, the co-occurrence of physical impairments or autistic spectrum disorder, and possibly, the increased severity of the behaviour problem and/or the older age of the child (many of the generic programmes are designed for pre-schoolers and young children), have implications for the appropriateness and applicability of these generic interventions. Recently some generic programmes have been modified or adapted for use with parents of disabled children. In addition, specific programmes or approaches for disabled children have been developed (typically at a local and/or regional level).

The purpose of this rapid review is to review the evidence of the effectiveness of 'parent-involved' behavioural interventions in managing problem behaviours among disabled children.

Chapter 2 Methods

2.1 Searches

Searches were undertaken for research studies on the effectiveness of behavioural interventions for disabled children with behavioural problems. This is a complex topic to capture in searches because of the number of disabilities that might be involved, the variation in descriptions of behavioural problems, and the range of behavioural therapies that might be used. Several approaches to capturing the concepts in the search question were explored in preliminary searches varying the search terms and the number of concepts. Two search approaches were used for the full searches combining the following concepts:

Behavioural problems AND Children AND Disability AND behavioural interventions

Disabled people AND behavioural problems AND behavioural interventions AND reviews

Case studies, letters, notes, comments and editorials were excluded from the searches. Searches were restricted to English language studies published since 1980.

A range of databases and websites were searched (see Table 2.1). Records were downloaded and added to Endnote bibliographic software. The records were deduplicated.

Table 2.1 Databases searched for research evidence on behavioural interventions for behavioural problems in disabled children

<i>Database</i>	<i>Interface</i>	<i>Date searched</i>
Cochrane Database of Systematic Reviews (CDSR)	Cochrane Library 2008 Issue 3	23/9/08
DARE	Cochrane Library 2008 Issue 3	23/9/08
MEDLINE	Ovid MEDLINE(R) In-Process & Other Non-Indexed Citations and Ovid MEDLINE(R) <1950 to Present>	23/9/08
EMBASE	OvidSP, 1980 to 2008 Week 38	23/9/08
PsycINFO	OvidSP, 1806 to September Week 2 2008	16/9/08
CINAHL	OvidSP, 1982 to September Week 3 2008	23/9/08
CENTRAL	Cochrane Library 2008 Issue 3	23/9/08
Campbell Library	http://www.campbellcollaboration.org/campbell_library/index.php	3/10/08
SPECTR (Campbell Collaboration)	http://geb9101.gse.upenn.edu/RIS/RISWEB.ISA	3/10/08
HMIC	OvidSP, to September 2008	23/9/08
NRR archive	https://portal.nihr.ac.uk/Pages/NRRArchiveSearch.aspx	24/9/08
CERUK	http://www.ceruk.ac.uk/	24/9/08
ERIC	Dialog/Datastar	23/9/08
Childdata	http://www.childdata.org.uk/library_search.asp	24/9/08
Australian Education index (AUEI)	Dialog/Datastar	23/9/08
British Education Index (BRIE)	Dialog/Datastar	23/9/08

The searches identified 10,592 records. After deduplication 7,908 records remained to be assessed for relevance. The result breakdown is shown in Table 2.2.

Table 2.2 Numbers of records downloaded and remaining after deduplication per database. Evidence on behavioural interventions for behavioural problems in disabled children using both search approaches

<i>Database</i>	<i>Number of records retrieved</i>	<i>Number of records remaining after deduplication</i>
Cochrane Database of Systematic Reviews (CDSR)	12	12
DARE	17	11
MEDLINE	1590	1288
EMBASE	2743	2041
PsycINFO	2304	1754
CINAHL	761	468
CENTRAL	239	49
Campbell Library	7	7
SPECTR	18	9
HMIC	152	133
NRR archive	13	13
CERUK	15	15
ERIC	2192	1695
Childdata	190	172
Australian Education index (AUEI)	203	177
British Education Index (BRIE)	136	64
Totals	10592	7908

2.2 Inclusion and exclusion criteria

The titles and abstracts were screened and full papers ordered for any records identified as potentially relevant. These were then screened using the screening criteria shown in Table 2.3.

Table 2.3 Inclusion and exclusion criteria

Exclusion criteria

- Not English language
- Published before 1980
- Conference proceeding
- Single subject design
- Research not concerned with intervention to manage/address/resolve a behaviour problem
- Intervention includes pharmacological element
- Intervention focussed on behavioural *symptom/indicator* of a condition
- Social skills intervention without an explicit problem behaviour component
- Intervention does not include parental involvement in the delivery of the intervention
- Intervention delivered entirely in school or care setting
- Interventions which only and specifically address the following behaviour problems:
 - Bullying
 - Inappropriate sexual behaviour
 - Criminal activities
 - Self-harm associated with mental health problems
- Case studies, letters, notes, editorials
- Research where the sample includes disabled and non-disabled children, and not analysed separately
- No quantitative outcome measures used
- Age of sample (or some of sample) 19 years of age or older (inclusive)
- Sample only includes children with the following as their 'primary need':
 - Attention deficit hyperactivity disorder (ADHD)
 - Mental health problems
 - Emotional/social/behavioural difficulties
 - Specific learning difficulties (for example, dyslexia)
- Children with a 'dual diagnosis' – i.e. disability *and* psychological/psychiatric problem (but not ASD).

Inclusion criteria

- Intervention includes at least a behavioural intervention element to manage/address/resolve a behaviour problem
- and*
- Intervention for disabled children aged 18 years of age and under
- and*
- Evaluation of that intervention which includes, at least, a quantitative element.

2.3 Data extraction

Data were extracted onto standard tables, the headings of which are displayed in Table 2.4.

Table 2.4 Data extraction headings

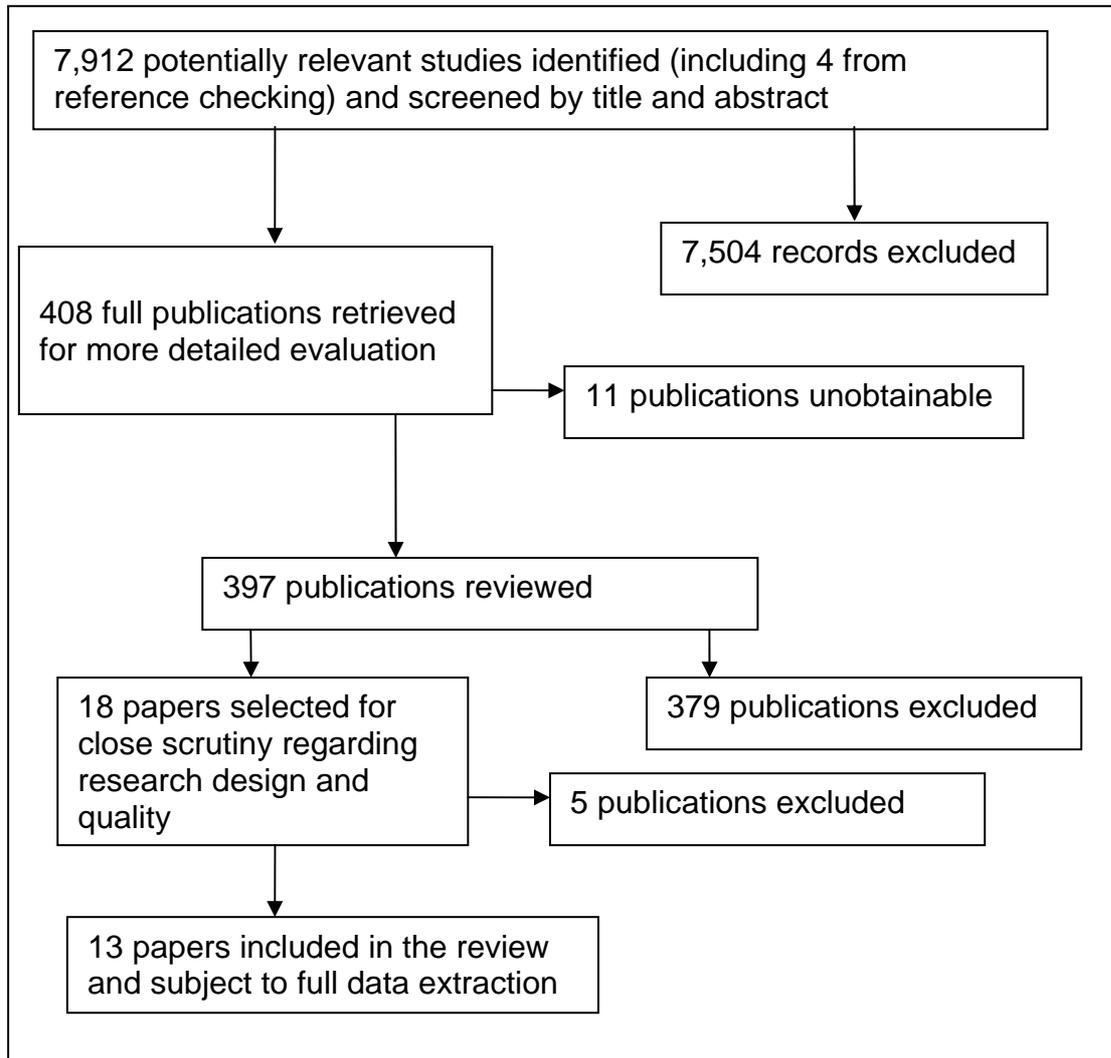
- Author and year
- Focus of intervention (type of behaviour problem tackling)
- Disability-generic or disability-specific/Type of impairment
- How referring behaviour problem assessed
- Description of intervention (including behavioural principles)
- Duration of intervention
- Setting where intervention delivered
- Who delivers?
- Parent involvement in delivering intervention
- Service evaluation or research project?
- Research design
- Sampling
- Intervention and comparator samples
- Attrition/drop-out
- Outcome measures
- Outcome findings
- Country

Chapter 3 Results

3.1 Study selection

7,912 records were screened for relevance. 7,908 from the electronic searches and four publications identified through reference checking (see Figure 3.1). 7,504 were excluded and of the remaining 408 records, full copies of 397 publications were obtained for more detailed evaluation (11 were unobtainable). 379 publications were subsequently excluded. Amongst these, 65 publications provided useful background information or were literature reviews, and 31 were studies which were of relevance but used single subject research design. The remaining 18 papers, representing 18 studies, were submitted for close scrutiny in terms of research design and research quality. The outcome of this process is reported in the following section. The result of this process was that five studies were excluded leaving 13 studies included in the review.

Figure 3.1 Study selection



3.2 Overview of selected studies: research design and quality of research

Scrutiny of the 18 included studies with regard to research design and research quality formed a further stage in the study selection process. An overview of the research designs employed by these studies is provided in Table 3.1.

Table 3.1 Research design of selected studies

<i>Author</i>	<i>Year of publication</i>	<i>Design (as described by author(s))</i>	<i>Maryland level</i>	<i>Number of participants</i>	<i>Follow-up?</i>	<i>Comparators</i>	<i>Country</i>
Bagner and Eyberg	2007	Randomised controlled trial	Level 5	N=30	No	Intervention vs waiting list control	US
Brightman <i>et al.</i>	1982	Randomised controlled trial	Level 5	N=66	6 months	Group intervention vs individual intervention vs waiting list control	US
Buono and Citta	2007	Before and after	Level 2	N=40 ²	No	n/a	Italy
Butter	2007	Before and after	Level 2	N=17	No	n/a	US
Chadwick <i>et al.</i>	2001	Randomised controlled trial	Level 5	N=68	6 months	Group intervention vs individual intervention vs no intervention control	UK
Feldman and Werner	2000	Post intervention (variable time since intervention) assessment	Level 1	N=36	Variable	Waiting list	Canada
Gates <i>et al.</i>	2001	Controlled trial	Level 4	N=103	3, 6 and 12 months	Gentle teaching vs behaviour modification vs no intervention	UK
Hornby and Singh	1984	Controlled trial	Level 4	N=11	No	Treatment vs no treatment	New Zealand
Hudson <i>et al.</i>	2003	Controlled trial	Level 4	N=115	4-6 months	Group support vs telephone support vs self-directed vs no intervention	Australia
McIntyre	2008a	Randomised controlled trial	Level 5	N=44	No	Intervention vs usual care	US

² Mean age of sample given as 17 years. No further information on sample size given.

<i>Author</i>	<i>Year of publication</i>	<i>Design (as described by author(s))</i>	<i>Maryland level</i>	<i>Number of participants</i>	<i>Follow-up?</i>	<i>Comparators</i>	<i>Country</i>
Mullin <i>et al.</i>	1995	Before and after	Level 2	N=9	No	n/a	Ireland
Plant and Sanders	2007	Randomised controlled trial	Level 5	N=74	12 months	Standard intervention enhanced intervention vs waiting list control	Australia
Prieto-Bayard and Baker	1986	Randomised controlled trial	Level 5	N=20	6 months	Intervention vs waiting list control	US
Quinn <i>et al.</i>	2007	Controlled trial	Level 4	N=42	10 months	Intervention vs waiting list control	Ireland
Roberts <i>et al.</i>	2006	Randomised controlled trial	Level 5	N=44	6 months	Intervention vs waiting list control	Australia
Sofronoff and Farbotko	2002	Controlled trial	Level 4	N=89	3 months	Workshop intervention vs individual intervention vs waiting list control	Australia
Sofronoff <i>et al.</i>	2004	Randomised controlled trial	Level 5	N=51	3 months	Workshop intervention vs individual intervention vs waiting list control	Australia
Volenski	1995	Before and after	Level 2	N=47	No	n/a	US

Eight of the 18 studies were described by the authors as randomised controlled trials (Bagner and Eyberg, 2007; Brightman *et al.*, 1982; Chadwick *et al.*, 2001; McIntyre, 2008a; Plant and Sanders, 2007; Prieto-Bayard and Baker, 1986; Roberts *et al.*, 2006; Sofronoff *et al.*, 2004). A further five studies were of controlled trial design (Gates *et al.*, 2001; Hornby and Singh, 1984; Hudson *et al.*, 2003; Quinn *et al.*, 2007; Sofronoff and Farbotko, 2002). Four were before and after studies (Buono and Citta, 2007; Butter, 2007; Mullin *et al.*, 1995; Volenski, 1995), and the final study compared scores on a post-intervention sample (no standard time since intervention) with a waiting list sample (Feldman and Werner, 2000).

The Maryland Scale of Scientific Methods (Sherman *et al.*, 1988) was applied to these studies. This scale ranges from 1–5. Level 5 represents randomised controlled trials, Level 4 covers studies which use a control group, Level 3 is assigned to studies with another treatment comparator group, Level 2 are before and after studies (no comparator groups), and Level 1 applies to research where measures are only taken at one point in time.

It is widely accepted that only studies which score three or above on the Maryland scale are of robust enough design to potentially provide evidence with regard to whether or not an intervention works, does not work, or appears promising.

3.2.1 Studies excluded on grounds of research design

Five studies did not meet the Maryland criteria and were therefore excluded from the review at this stage. Three of these studies concerned structured, manual based, parent training interventions delivered to groups of parents (Buono and Citta, 2007; Butter, 2007; Feldman and Werner, 2002). These interventions were of a very similar nature to those evaluated by the trials included in this review.

The other two studies concerned non-manual based, therapeutic interventions delivered individually which included a functional assessment and development of a behaviour modification programme, followed by training and supporting parents in the delivery of that programme. This sort of intervention was not represented in the trials included in this review. One study (Buono and Citta, 2007) investigated the delivery of such an intervention via video-conferencing and email. The other (Feldman and Werner, 2002) followed up a sample of families discharged within the previous five years from a community behaviour management service and compared this sample to a sample of waiting list families. This latter study also represented the only service evaluation identified by the searches which fulfilled the inclusion criteria.

The absence in this review of investigations into the effectiveness of interventions being delivered by actual services represents a significant gap in the evidence. The innovative approach being taken by the intervention studied by Buono and Citta

(2007), in which parents are trained and supported via video conferencing and email is an interesting use of e-health technology and hopefully one which, in the future, will be subject to rigorous evaluation.

3.2.2 Research quality of included studies

The quality assessment tool for quantitative studies developed by the Effective Public Health Practice Project (EPHPP) was used to assess the quality of the included studies. This tool assesses research quality and quality of reporting. Full results of the quality assessments can be found in Appendix B. Table 3.2, below, provides a summary.

Table 3.2 Research quality: summary

Randomised controlled trials								
	Bagner and Eyberg (2007)	Brightman <i>et al.</i> (1982)	Chadwick <i>et al.</i> (2001)	McIntyre (2008a)	Plant and Sanders (2007)	Preito-Bayard and Baker (1986)	Roberts <i>et al.</i> (2006)	Sofronoff <i>et al.</i> (2004)
Global rating³	Moderate	Moderate	Weak	Moderate	Moderate	Moderate	Moderate	Moderate
Controlled trials								
	Gates <i>et al.</i> (2001)	Hornby and Singh (1984)	Hudson <i>et al.</i> (2003)	Quinn <i>et al.</i> (2007)	Sofronoff <i>et al.</i> (2002)			
Global rating	Weak	Weak	Weak	Moderate	Moderate			

None of the studies achieved a ‘strong’ rating using the EPHPP assessment tool. In the randomised controlled trials RCTs key areas of poor quality concerned selection bias, withdrawal and/or dropout rates, and the outcome measures used. Seven of the eight RCTs used self-selecting samples, the remainder used referrals to the intervention programme from professionals or self-referrals (Bagner and Eyberg, 2007). In terms of withdrawal and/or dropout, only two RCTs performed strongly against this indicator, with five RCTs did not reporting reasons for withdrawal of dropouts and/or reported withdrawal and or dropout rates of greater than 20 per cent. Half of the RCTs used at least one measure where information about their reliability was either not was not reported or did not exist.

³ Rating based on ratings for: selection bias, study design, management of confounding variables, blinding, data collection methods/measures, withdrawal and dropout rates.

Amongst the controlled trials, selection bias was also a common difficulty, with three out of five studies using self-selected samples. Similarly, three out of the five controlled trials did not report nor had high dropout rates (greater than 40 per cent).

The EPHPP tool also assesses quality of the data analysis and intervention integrity. In terms of data analysis, the majority of studies used (at least in part) appropriate statistical methods (n=11/13), though only four reported analysing the data on an intention to treat basis.

Consistency of treatment delivery was a relevant quality dimension in 11 of the included studies as they concerned structured, manual based interventions. Seven of these studies reported how intervention integrity was monitored, with five studies reporting protocol adherence rates. In all cases these were very high.

3.2.3 Research quality implications

There are implications arising from the quality of the studies included in the review. A key issue is the fact that the majority of studies (10/13) used self-selecting samples. This means that the samples will not be representative of all families with a disabled child with behaviour problems. Families participating in such research projects may be different to the rest of the target population with respect to a number of important dimensions including readiness to address their child's behaviour, motivation, having the capacity to take on implementing a behaviour management programme with the child, and the severity of their child's behaviour problem. More generally, it is known that level of education and socio-economic status affect participation in research which, again, affects representativeness. This limits the conclusions that can be drawn from individual study findings and syntheses of the evidence.

3.3 The interventions

The studies included in the review were all researching the effectiveness of parent training interventions, see Table 3.3 (pp 17-20).

The 13 included studies concerned 11 different parent training interventions. (There were two effectiveness studies each of two of the interventions.)

Six of the interventions were pre-existing with a manual or curriculum. Two (Steps to Independence, Baker *et al.*, 1976, 1977, 1978; Parents as Teachers, UCLA Project for Developmental Disabilities, 1980) had been developed for use with children with learning difficulties. The other pre-existing interventions had been developed (or previously used) with parents of children without learning difficulties. Two of these interventions were delivered without modification, namely:

- Parent Plus (Sharry and Fitzpatrick, 1998); (n=1 included study: Quinn *et al.*, 2007);
- Parent-Child Interaction Therapy (Eyberg *et al.*, 2008); (n=1 included study: Bagner and Eyberg, 2007).

The other two pre-existing intervention had been modified for use with parents of children with learning difficulties:

- Incredible Years Parenting Training (Webster-Stratton, 2001) (with minor modifications, McIntyre, 2008b); (n=1 included study: McIntyre, 2008a)
- Triple P – Positive Parenting Program (Sanders, 1999) (with minor modifications: Stepping Stones Triple – P (Sanders *et al.*, 2003); (n=2 included studies: Plant and Sanders, 2007; Roberts *et al.*, 2006).

The remaining five interventions had been developed by the author of the included studies and had not been used previously. One intervention was the subject of two separate studies. All are described by the authors as being manual-based, or having a fixed curriculum, sometimes with associated resources (for example, information booklets).

3.3.1 The scope of the interventions

Four studies concerned training on behaviour management skills (Chadwick, *et al.*, 2001; Gates *et al.*, 2001; Hornby and Singh, 1984; Quinn *et al.*, 2007). Two were concerned with training on behaviour management skills and nurturing the parent-child relationship (Bagner and Eyberg, 2007; McIntyre, 2008a). Five were studying interventions covering behaviour management skills and teaching skills (for example, teaching the child self-care and/or life skills) (Brightman *et al.*, 1982; Hudson *et al.*, 2003; Plant and Sanders, 2007; Prieto-Bayard and Baker, 1986; Roberts *et al.*, 2006). Finally, two studies investigated an intervention designed to improve parents' understanding of their child's condition as well as their behaviour management skills (Sofronoff and Farbotko, 2002; Sofronoff *et al.*, 2004).

The amount of information provided on the elements of the intervention varied considerably between papers. However, it would appear that all of the interventions sought to provide parents with a repertoire of behavioural behaviour management strategies as opposed to focusing on one or two behavioural strategies.

Most of the interventions included additional resources and/or activities for parents outside of intervention appointments or sessions. 'Homework' assignments (n=10), sometimes supported by a 'workbook' (n=3) were reported to form part of the intervention. In addition, reading material, in the form of manual/booklets or training presentation handouts, were a common feature of the interventions.

Table 3.3 The interventions under investigation

<i>Author and year</i>	<i>Intervention</i>	<i>Description of behavioural approach</i>
Intervention on parents' behaviour management skills only		
Chadwick <i>et al.</i> (2001)	<p>Training parents on the elements and techniques of behavioural analysis and behaviour management, and assisting parents in setting up focussed behaviour therapy programmes.</p> <p>Homework assignments used to reinforce learning and apply newly learnt skills.</p> <p>Parents given handouts of material covered in the training.</p>	<p>Sessions covered: behavioural analysis, principles of behaviour modification, setting-up focused behaviour therapy programmes and addressing obstacles to implementing the programme.</p>
Gates <i>et al.</i> (2001)	<p>The research compared training parents in behaviour modification with training parents in 'gentle teaching'.</p> <p>'The content of the behaviour modification workshops focussed on both the teaching and discussion of strategies to manage difficult behaviours that parents identify as problematic' (p.89).</p>	<p>'A package of interventions based on learning theory that emphasises contingent reinforcement' (p.88)</p>
Hornby and Singh (1984)	<p>Parent training in behavioural principles and application of principles to specific problems.</p> <p>Homework assignments used to reinforce learning and apply newly learnt skills.</p> <p>Parents given handouts of material covered in the training.</p>	<p>Lectures covered: contingent reinforcement of appropriate behaviour; decreasing inappropriate behaviours using extinction, time-out, punishment, over-correction, satiation and reinforcement of incompatible behaviour; increasing appropriate behaviour using: stimulus control, negative reinforcement, and contingency contracts; developing new skills: modelling, shaping and backward training.</p>
Quinn <i>et al.</i> (2007)	<p>The <i>Parent Plus</i> programme. A 'behavioural parent training programme' developed for use in an Irish context but modelled on US programmes (for example, Webster Stratton). Purpose is to 'help parents manage and solve discipline problems'. P</p> <p>Parents given handouts of material covered in the training.</p>	<p>The programme uses a 'broadly cognitive behavioural model' but is also 'solution-focused, drawing on parents' strengths and expertise'.</p> <p>Topics covered include: 'parental attention to change behaviour, play and special time, encouragement and praise, using reward systems effectively, setting rules and helping children keep them, using active ignoring, using time-out and other sanctions and solution-building with children'. (p.346)</p>

Author and year	Intervention	Description of behavioural approach
Intervention on parents; behaviour management skills and parent-child relationship		
Bagner and Eyberg (2007)	<p><i>Parent-Child Interaction Therapy (PICT)</i>. A treatment manual provides session outlines.</p> <p>Two phases: Child-Directed Interaction Phase (enhancing the parent-child-relationship, increasing positive parenting and improving child social skills) and Parent Directed Interaction Phase (improving behaviour management skills). Coaching in interaction skills is maintained across the entire treatment period.</p> <p>Parents asked to practice newly learnt skills in 5–10 minute daily sessions.</p>	Sought to improve parents' ability to set limits and follow through consistently to reduce child non-compliance and disruptive behaviour.
McIntyre (2008a)	<p>The <i>Incredible Years Parent Training (IYPT)</i> (Webster-Stratton ('with developmental disabilities adaptations')). The focus of the intervention is prevention or early intervention. Includes training parents in behaviour management and developing positive relationships with children, particularly through play and positive interactions.</p> <p>Homework assignments used to reinforce learning and apply newly learnt skills.</p>	Training in behaviour management included 'behaviour management, limit-setting, and reducing challenging behaviour' based on 'principles of operant theory and behaviour modification'.
Intervention on parents' behaviour management skills and teaching skills		
Brightman <i>et al.</i> (1982)	<p>The '<i>Steps to Independence</i>' programme. The programme consists of a fixed curriculum.</p> <p>Parents taught how to teach their child self-help-skills, toilet training, supporting speech and language development and how to manage behaviour problems.</p> <p>Homework assignments used to reinforce learning and apply newly learnt skills. Parents given a manual produced by the '<i>Steps to Independence</i>' programme.</p>	Parents trained in 'behavioural principles and behaviour modification'.
Hudson <i>et al.</i> (2003)	<p>Intervention used resources from the '<i>Signposts for Building Better Behaviour</i>' programme to train parents in teaching new skills their children and managing their child's behaviour problems.</p> <p>Parents given information booklets with videotape and workbook.</p>	Parents trained in managing behaviour using a functional assessment approach.

<i>Author and year</i>	<i>Intervention</i>	<i>Description of behavioural approach</i>
Plant and Sanders (2007)	<p><i>Stepping Stones Triple P (SSTP): adapted version of the Triple P-Positive Parenting Program</i> (Sanders, 1999): delivered in its standard form (SSTP-S) (Sanders <i>et al.</i>, 2003) and in its enhanced form (SSTP-E).</p> <p>A behavioural parent training programme which trains parents in skills to support their child's development, managing misbehaviour and generalising and maintaining those skills.</p> <p>The enhanced form included consists of six additional sessions which focused on assisting parents to cope with caring for a child with a developmental disability though improving coping skills and developing internal and external coping resources.</p> <p>Homework assignments used to reinforce learning and apply newly learnt skills. Parents given a workbook to enable parents to set and monitor goals for behaviour change.</p>	<p>Parents taught 11 strategies to manage misbehaviour (diversion, setting rules, directed discussion, planned ignoring, clear and direct instructions, communication, logical consequences, blocking, brief interruption, quiet time and time-out) and strategies to maintain and generalise parenting skills (plan ahead, set rules, select engaging activities, identify rewards and consequences, provide feedback to child).</p>
Prieto-Bayard and Baker (1986)	<p>Adapted version of '<i>Parents as Teachers</i>': (UCLA Project for Developmental Disabilities, 1980). A group curriculum for parents of 'retarded children' which trains parents in teaching their children self-help skills and in behaviour problem management. Content adapted for Spanish speaking parents and those in low SES (for example, incentives for compliance with programme demands, video-modelling, direct supervision of teaching).</p> <p>Each week parents select on self-help skill and one behaviour problem to work on at home in between sessions. Parents given course reading materials.</p>	<p>Sessions cover 'behavioural techniques for assessment, self-help, play skill teaching and behaviour problem management'.</p>
Roberts <i>et al.</i> (2006)	<p><i>Stepping Stones Triple P programme</i>. This is a behavioural parent training programme which trains parents in skills to support their child's development, managing misbehaviour and generalising and maintaining those skills. Families with 'additional needs' took part in one or two <i>Enhanced Triple P modules</i>: Partner Support and Coping Skills which comprised four additional sessions.</p> <p>Homework assignments used to reinforce learning and apply newly learnt skills. A workbook was used to enable parents to set and monitor goals for behaviour change.</p>	<p>Parents taught 11 strategies to manage misbehaviour (diversion, setting rules, directed discussion, planned ignoring, clear and direct instructions, communication, logical consequences, blocking, brief interruption, quiet time and time-out) and strategies to maintain and generalise parenting skills (plan ahead, set rules, select engaging activities, identify rewards and consequences, provide feedback to child).</p>

<i>Author and year</i>	<i>Intervention</i>	<i>Description of behavioural approach</i>
Intervention on parents' behaviour management skills and understanding of their child's condition		
Sofronoff and Farbotko (2002)	A manual-based intervention specifically designed for parents of children with Asperger Syndrome to 'increase parents' ability to manage and understand the child with Asperger Syndrome'. Intervention covered psycho-education; comic strip conversations; social stories; management of behaviour problems; management of rigid behaviours, routines and special interests; anxiety management. Parents given a manual for use during sessions and as a reference for home.	'Techniques were outlined for dealing with (problem behaviours) and then parents were asked to choose a particular problem behaviour and to outline a management strategy for that behaviour. The emphasis was on the parent's need to understand why the behaviour occurs'.
Sofronoff <i>et al.</i> (2004)	A manual-based intervention specifically designed for parents of children with Asperger Syndrome to 'increase parents' ability to manage and understand the child with Asperger Syndrome'. Intervention covered psycho-education; comic strip conversations; social stories; management of behaviour problems; management of rigid behaviours, routines and special interests; anxiety management. Parents given a manual for use during sessions and as a reference for home.	'Techniques were outlined for dealing with (problem behaviours) and then parents were asked to choose a particular problem behaviour and to outline a (behavioural) management strategy for that behaviour. The emphasis was on the parent's need to understand why the behaviour occurs'.

3.4.1 The delivery of the interventions

Table 3.4 (pp 23-25) describes the interventions in terms of their mode of delivery, duration and setting. The delivery modes represented by the included studies were: individual work with parents, parent groups, one-off workshops and self-directed training.

Interventions on parents' behaviour management skills only

Two of the four interventions which focused only on parents' behaviour management skills were delivered through groups of parents (Hornby and Singh, 1984; Quinn *et al.*, 2007) with one also delivering the intervention individually (Chadwick *et al.*, 2001). All consisted of five to six weekly sessions (fortnightly if delivered individually). The fourth intervention (Gates *et al.*, 2001) consisted of a single, one day workshop. These interventions were delivered in a range of settings (community-based venues, clinics, home).

Interventions on parents' behaviour management skills and parent-child relationship

The two included studies which investigated the effectiveness of interventions on parents' behaviour management skills and parent-child relationship used different modes of delivery: individual and group. One of these interventions (McIntyre, 2008a) was a fixed duration (12 weekly sessions), the other (Bagner and Eyberg, 2007) continued until the desired outcomes had been achieved. It is not clear where these interventions were delivered.

Intervention on parents' behaviour management skills and teaching skills

There was also diversity in delivery of interventions which sought to improve parents' behaviour management skills and teaching skills. Two studies compared different delivery modes (group versus individual (Brightman *et al.*, 1982); group versus individual versus self-directed (Hudson *et al.*, 2003)). The other three were either delivered individually (n=2: Plant and Sanders, 2007; Roberts *et al.*, 2006) or to groups of parents (Prieto-Bayard and Baker, 1986). The duration of the interventions was between ten and 16 weeks. Three interventions were delivered weekly (Plant and Sanders, 2007; Prieto-Bayard and Baker, 1986; Roberts *et al.*, 2006), one was delivered fortnightly (Hudson *et al.*, 2003) and the other began with weekly sessions which then moved to fortnightly sessions towards the end of the treatment period (Brightman *et al.*, 1982). These interventions were also delivered in a range of settings (community-based venues, clinics, home).

Intervention on parents' behaviour management skills and understanding of child's condition

Finally, two studies studied the effectiveness of an intervention specifically developed for parents of children newly diagnosed with Asperger Syndrome (Sofronoff and Farbotko, 2002; Sofronoff *et al.*, 2004). This intervention sought to both improve

parents' behaviour management skills and also their understanding of their child's condition. The intervention was delivered either as a single day workshop or in the form of six individual sessions over a period of six weeks. Both the workshop and individual sessions were delivered at a university clinic.

3.4.2 Overview of the nature of the interventions

There is quite a lot of variability between the interventions represented by the included studies in terms of mode and duration of delivery. This varies across the entire set of studies and within the different types of intervention (except for the two studies investigating an intervention which sought to improve parents' behaviour management skills and understanding of their child's condition, Sofronoff and Farbotko, 2002; Sofronoff *et al.*, 2004). This variability is a result of two key factors. First, where pre-existing manuals or curricula were being used the delivery mode would be pre-determined. The second factor (only operating where flexibility in delivery mode occurred) was the purpose of the research. Thus some studies were seeking to compare effectiveness across different delivery modes, others were not.

Table 3.4 Delivery of the intervention

<i>Author and year</i>	<i>Intervention</i>	<i>Mode of delivery</i>	<i>How intervention delivered</i>	<i>Frequency</i>	<i>Duration</i>	<i>Period of intervention</i>	<i>Setting</i>
Intervention on parents' behaviour management skills only							
Chadwick <i>et al.</i> (2001)	Parent training programme developed by authors.	Group or individual	Group: structured input with group discussion. Individual: functional analysis and development and implementation of management strategies.	Group: weekly; Individual: fortnightly sessions	Group: 1.5 hours; Individual: 1.5-2 hours	Group: five weeks sessions; Individual: 10-14 weeks	Group: local leisure centres; Individual: family home
Gates <i>et al.</i> (2001)	Parent training workshop developed by authors.	Single workshop	Workshop format including teaching and group discussion.	One-off	Day	One day	Not stated
Hornby and Singh (1984)	Parent training programme developed by authors.	Group	Combination of lecture, role play, problem-solving tasks and group discussion.	Weekly	Two hours	Six weeks	Special school
Quinn <i>et al.</i> (2007)	<i>Parent Plus</i>	Group	Teaching based on video-vignettes with sessions also incorporating group discussion, role play and skills rehearsal. Handouts for parents.	Weekly	Two hours	Six sessions	Clinic
Intervention on parents' behaviour management skills and parent-child relationship							
Bagner and Eyberg (2007)	<i>Parent-Child Interaction Therapy (PCIT)</i>	Individual	Individual work by therapist with parent and child to enhance the parent-child relationship, increasing positive parenting and improving child social skills. All sessions also include observation of parent-child interaction followed by coaching delivered by therapist.	One week	Approximately one hour	Continues until desired outcomes for parenting skills and child behaviour achieved. Average=12 sessions.	Not clear

<i>Author and year</i>	<i>Intervention</i>	<i>Mode of delivery</i>	<i>How intervention delivered</i>	<i>Frequency</i>	<i>Duration</i>	<i>Period of intervention</i>	<i>Setting</i>
McIntyre (2008a)	<i>The Incredible Years Parent Training</i> (modified)	Group	Teaching, group discussions, role-play, video-vignettes, homework assignments.	Weekly	2.5 hours	12 weeks	Not stated
Intervention on parents' behaviour management skills and teaching skills							
Brightman <i>et al.</i> (1982)	The 'Steps to Independence' training curriculum.	Group or individual	Group: predominantly didactic approach alongside role play, small group problem-solving and 'co-consulting'. Video-taped material used to support training. Individual: child involved and therapist observes the parent teaching the child; provides videotaped feedback, suggestions on developing skills and modelling. Video-taped material used to support training.	Sessions 1-6 weekly; Sessions 7-9: bi-weekly	Group: two hours; Individual: one hour	Nine sessions, delivered over 12 weeks, plus a preliminary orientation session.	'Community-based centres'
Hudson <i>et al.</i> (2003)	'Signposts'. Parent training programme developed by authors.	Group or individual or self-directed	Group: training delivered at a group meeting facilitated by a therapist. Video vignettes used to support input. Individual: training resources received via post at set intervals with follow-up telephone call from therapist. Video vignettes used to support input. Self-directed: resources received via post at set intervals. Video vignettes used to support input.	Fortnightly	Group: two hours; Individual: 20 minutes	12 weeks	Group: community venue; Individual: home.

<i>Author and year</i>	<i>Intervention</i>	<i>Mode of delivery</i>	<i>How intervention delivered</i>	<i>Frequency</i>	<i>Duration</i>	<i>Period of intervention</i>	<i>Setting</i>
Plant and Sanders (2007)	<i>Stepping Stones Triple P: standard (SSTP-S) and enhanced (SSTP-E)</i>	Individual	Training from therapist using modelling, role plays, and feedback.	Weekly	60-90 minutes	SSTP-S: ten weeks; SSTP-E: 16 weeks.	Mainly at clinic with two home sessions.
Prieto-Bayard and Baker (1986)	<i>Parents as Teachers</i>	Group	Presentations, video vignettes, group discussions. The children also present at half the meetings when therapists also modelled and supervised parents as they worked with their children.	Weekly	Two hours	Ten weeks	Community-setting venue
Roberts <i>et al.</i> (2006)	<i>Stepping Stones Triple P: standard (SSTP-S) and enhanced (SSTP-E)</i>	Individual	Training from therapist using modelling, role plays and feedback. Video vignettes used to support teaching.	Weekly	Clinic: two hours; Home: 40-60 minutes	SSTP-S: ten weeks; SSTP-E: 16 weeks.	Clinic and home
Intervention on parents' behaviour management skills and understanding of their child's condition							
Sofronoff and Farbotko (2002)	Parent training programme developed by authors.	Single workshop or individual	Group: teaching, group discussion, small group tasks. Individual: as above but discussion/tasks always specific to parents own child.	Group: single day workshop; Individual: weekly	Workshop: one day; Individual: sessions: one hour	Workshop: single day; Individual: six weeks	University clinic
Sofronoff <i>et al.</i> (2004)	Parent training programme developed by authors.	Single workshop or individual	Group: teaching, group discussion, small group tasks. Individual: as above but discussion/tasks always specific to parents own child.	Group: single day workshop; Individual: weekly	Workshop: one day; Individual: sessions: one hour	Workshop: single day; Individual: six weeks	University clinic

3.5 Overview of the studies

Table 3.5 (pp 29-30) summarises the studies included in this review. These are organised according to the four types of intervention described above.

3.5.1 Research design

The studies included regarding interventions on parents' behaviour management skills include an RCT (Chadwick *et al.*, 2001) and three controlled trials (Gates *et al.*, 2001; Hornby and Singh, 1984; Quinn *et al.*, 2007). The RCT had two treatment arms. Two of the controlled trials compared outcomes of the intervention with a no-intervention group (Hornby and Singh, 1984; Quinn *et al.*, 2007). The third controlled trial had a wait list control group and two treatment arms (one of which was non-behavioural approach to addresses problem behaviour (Gates *et al.*, 2001)). Both studies (Bagner and Eyberg, 2007; McIntyre, 2008a) of interventions on parents' behaviour management skills and parent child relationship used an RCT design. Included studies of interventions on parents' behaviour management skills and teaching skills include four RCTs, two with one treatment arm (Prieto-Bayard and Baker, 1986; Roberts *et al.*, 2006) and two with two treatment arms (Brightman *et al.*, 1982; Plant and Sanders, 2007). The fifth study (Hudson *et al.*, 2003) was a controlled trial with three treatment arms and no control group. Two studies (Sofronoff and Farbotko, 2002; Sofronoff *et al.*, 2004), an RCT and a controlled trial, looked at the effectiveness of interventions on parents' behaviour management skills and understanding of the child's condition. Conducted by the same research team, both had two treatment arms and a wait list control

3.5.2 Type of disability or impairment

Studies concerning the first three types of intervention were concerned with the effectiveness of the interventions for parents of children with learning difficulties. However, differences between studies in the level of detail reported about their samples means it is not possible to ascertain how similar or dissimilar the studies are either in terms of the level (or range) of learning difficulties.

The two studies of the intervention which sought to improve parents' behaviour management skills and understanding of their child's condition (Sofronoff and Farbotko, 2002; Sofronoff *et al.*, 2004) are different. Here the parents all had children aged six to 12 years recently diagnosed with Asperger Syndrome. Children with Asperger Syndrome do not generally have learning difficulties, instead their impairments lie in areas of social and emotional skills and understanding.

3.5.3 Severity of the behaviour problem

Studies varied as to whether the severity of the child's behaviour problems was used as an inclusion criteria or as a factor by which the sample was described. In only four of the 13 studies (Chadwick *et al.*, 2001; Plant and Sanders, 2007; Quinn *et al.*, 2007; Bagner and Eyberg, 2007) was an indicator of the severity or frequency of the child's problem behaviours used to select families to the study. In two studies, parent-report assessment tools were used. One study only selected children with a diagnosis of Oppositional Defiant Disorder, and another was concerned with children referred to a service for behaviour problem management (which can be taken to suggest some degree of severity).

3.5.4 Child's age

The studies covered children between the ages of two and 19 years old. Not all studies report age range: some only provide a mean age.

3.5.5 Country

Just two of the studies were carried out in the UK (Chadwick *et al.*, 2001; Gates *et al.*, 2001), and a further one in Ireland (Quinn *et al.*, 2007). All these were studies of interventions on parents' behaviour management skills only. The other study of this intervention type included in the review was carried out in New Zealand (Hornby and Singh, 1984). Five studies (covering four interventions) were carried out in Australia and included investigations into interventions on parents' behaviour management skills and teaching skills (Hudson *et al.*, 2003; Plant and Sanders, 2007; Roberts *et al.*, 2006) and parents' behaviour management skills and understanding of the child's condition (Sofronoff and Farbotko, 2002; Sofronoff *et al.*, 2004). Four are US studies and these cover both the interventions included in the review on parents' behaviour management's skills and parent-child relationship (Bagner and Eyberg, 2007; McIntyre, 2008a), and two of the studies of interventions on parents' behaviour management skills and teaching skills (Brightman *et al.*, 1982; Prieto-Bayard and Baker, 1986).

3.5.6 Outcome measures used

Table C.1 (see Appendix C) details the outcome measures used by the intervention studies which, in the case of multi-faceted interventions, were pertinent to assessing the effectiveness of the behaviour management aspect of the intervention. All used child behaviour as an outcomes measure and, aside from one study (Sofronoff *et al.*, 2004), used at least one other measure. The second most common outcome

measure was of parental stress or mental health which was used by seven studies. Six studies used a measure or assessment of parent-child interaction. Other outcome measures used include: parenting skills (n=3); parent knowledge of behaviour modification principles (n=3); extent to which parent is implementing these principles (n=3); parent attitude to child (n=1); parent sense of competence/self-efficacy (n=2); parenting hassles (n=1); child's impact on family life (n=1); family stress (n=1) and quality of the marital relationship (n=1). Eleven of the studies also used some sort of measure of consumer satisfaction.

Table 3.5 Overview of the studies

<i>Author and year</i>	<i>Design</i>	<i>Child's age (years)</i>	<i>Recruitment/sampling</i>	<i>Disability/impairment</i>	<i>Type/severity of behaviour problem</i>	<i>Country</i>
Intervention on parents' behaviour management skills only						
Chadwick <i>et al.</i> (2001)	RCT Mode1 versus Mode2 versus WLC	4-11 (Not pre-existing intervention)	Self-selection via special schools followed by screening (learning difficulty diagnosis and parent reported level of behaviour problems).	Formal diagnosis of severe learning disabilities.	Assessed as having one or more (major or minor) behavioural problems.	UK
Gates <i>et al.</i> (2001)	CT NonBM versus BM versus WLC	3-18 (Not pre-existing intervention)	Recruited from caseloads of Community Learning Difficulty Nurses and other professional and voluntary organisations.	Diagnosed as having learning disabilities.	Parents reported child had behavioural difficulties.	UK
Hornby and Singh (1984)	CT Int versus No Int	7-14 (Not pre-existing intervention)	Self-selection via a school.	IQ within the moderately retarded range.	Type or severity of behaviour problem not an inclusion criteria.	New Zealand
Quinn <i>et al.</i> (2007)	CT Int versus No Int	4-7	Consecutive referrals to four early intervention clinics for behaviour problem intervention.	Developmental disabilities.	'Significant behaviour problems'.	Ireland
Intervention on parents' behaviour management skills and parent child relationship						
Bagner and Eyberg (2007)	RCT Int versus WLC	3-6 (Not stated)	Referred by health professionals, teachers or self-referral, followed by screening (diagnosis of learning difficulties and behaviour problem).	Children had received a formal diagnosis of mild or moderate mental retardation.	Children had a diagnosis of Oppositional Defiant Disorder.	US
McIntyre (2008a)	RCT Int versus No Int	2-5 (Modified version of 0-3 years programme)	Self-selection via early intervention and pre-school services, followed by a screening (IQ).	Developmental functioning score within pre-set range.	Type or severity of behaviour problem not an inclusion criteria.	US
Intervention on parents' behaviour management skills and teaching skills						
Brightman <i>et al.</i> (1982)	RCT Mode1 versus Mode2 versus WLC	2-15	Self-selection via schools, services and local media.	Children were moderately to severely retarded.	Type or severity of behaviour problem not an inclusion criteria.	US

<i>Author and year</i>	<i>Design</i>	<i>Child's age (years)</i>	<i>Recruitment/sampling</i>	<i>Disability/impairment</i>	<i>Type/severity of behaviour problem</i>	<i>Country</i>
Hudson <i>et al.</i> (2003)	CT Mode1 versus Mode 2 versus Mode3	4.6-19.4 (Not pre-existing intervention)	Self-selection via schools and local media.	Children assessed as having intellectual disability.	Type or severity of behaviour problem not an inclusion criteria.	Australia
Plant and Sanders (2007)	RCT Mode1 versus Mode 2 versus Mode3	<6	Self-selection via early intervention services followed by screening (mos rating of behaviour problems).	Identified developmental disability or 'at risk' due to a diagnosed condition.	Mos rated child's behaviour in the elevated range on behaviour inventory.	Australia
Prieto-Bayard and Baker (1986)	RCT Int versus WLC	3.5-6	Self-selection via disability services.	One child 'mildly retarded', the remainder reported to be 'moderately to severely retarded'.	Type or severity of behaviour problem not an inclusion criteria.	US
Roberts <i>et al.</i> (2006)	RCT Int versus WLC	Mean: 4.95	Self-selection via disability services.	Mild developmental delays.	Type or severity of behaviour problem not reported an inclusion criteria.	Australia
Intervention on parents' behaviour management skills and understanding of their child's condition						
Sofronoff and Farbotko (2002)	CT Mode1 versus Mode 2 versus WLC	6-12.	Self-selection via clinic lists.	Diagnosed with Asperger Syndrome.	Type or severity of behaviour problem not an inclusion criteria.	Australia
Sofronoff <i>et al.</i> (2004)	RCT Mode1 versus Mode 2 versus WLC	6-12	Self-selection via clinic lists.	Diagnosed with Asperger Syndrome.	Type or severity of behaviour problem not an inclusion criteria.	Australia

Key:

RCT = randomised controlled trial

CT = controlled trial

WLC = waiting list control

BM = behaviour modification

Int = intervention

Chapter 4 Findings on Intervention Outcomes

This chapter reports findings from the included studies on the outcomes of the interventions. Detailed reports of each study's results can be found in Table D.1 (Appendix D), tables summarising the findings are used here.

4.1 Interventions on behaviour management skills only

Four studies evaluated the effectiveness of interventions on parents' behaviour management skills: three controlled trials and one RCT. One of the studies (Quinn *et al.*, 2007) was investigating the effectiveness of a pre-existing parenting programme called *Parent Plus*. The research quality of three of these studies was assessed to be weak, and the fourth assessed as being of moderate research quality (Quinn *et al.*, 2007). One of the weak-rated studies (Hornby and Singh, 1984) had a very small sample (n=11). Three of the studies used self-selected samples whilst Quinn *et al.* used consecutive referrals to an early intervention service for behaviour problems. Three studies (Chadwick *et al.*, 2001; Hornby and Singh, 1984; Quinn *et al.*, 2007) used parent groups (5-6 sessions) as the delivery mode with one study (Chadwick *et al.*, 2001) comparing this to individual delivery mode (5-6 sessions). In Gates *et al.*'s (2001) study the delivery mode was a single day workshop. The four interventions were being delivered to different groups in terms of the child's age. One intervention included children age 3-18 years (Gates *et al.*, 2001), in others the age range was 7-14 years (Hornby and Singh, 1984); 4-11 years (Chadwick *et al.*, 2001) and 4-7 years (Quinn *et al.*, 2007). The findings from these studies are summarised in Table 4.1 (pp 34-37).

4.1.1 Child behaviour outcomes

All studies measured changes in child behaviour. Three used standardised, though different, measures. In addition, all used a child behaviour measure developed specifically for the study.

Chadwick *et al.*'s (2001) study compared group treatment versus individual treatment versus no treatment. They found no differences post-treatment or at six month follow-up between the groups on Disability Assessment Schedule (DAS) (Holmes *et al.*, 1982; Wing, 1989) scores. However, they did find clinically significant effects in terms of the magnitude of the reduction in the severity of the behaviour problems as measured by the DAS, for the individual treatment group compared to the other two groups. Chadwick *et al.* (2001) also developed a measure of parent reported change with respect to all the child's problem behaviours and to target problem behaviours

(that is, problem behaviours identified and addressed on by the parent during the intervention). On this measure at post-treatment, no statistically significant improvements between groups were found in the frequency of occurrence of behaviour problems, or the number of behaviour problems posing greater management difficulties. However, at post-treatment, parents in the intervention groups were significantly more likely than control group parents to report a reduction in one or more problem behaviour, and also a reduction in the management difficulty posed by one or more problem behaviour. Parents receiving the individual treatment intervention also provided information about changes to target behaviours. There were statistically significant improvements in the number and severity of target behaviours at post-treatment compared to pre-treatment reported by parents. However, these improvements were not sustained at follow-up.

Neither Gates *et al.* (2001) or Hornby and Singh (1984) report statistically significant improvements in child behaviour scores among parents receiving the intervention compared to the control group or, in Gates *et al.*'s (2001) study, parents receiving training in a non-behavioural approach to behaviour management.

Quinn *et al.* (2007) reports statistically significant improvements in child behaviour as assessed by the Strengths and Difficulties Questionnaire (SDQ) (Goodman, 1997) at post intervention among parents receiving the *Parent Plus* intervention compared to a waiting list control group. However, in terms of the clinical significance of this finding, a test of reliable improvement did not reveal significant differences in improvement between the intervention and control group. Looking just at intervention group scores, Quinn *et al.* did find statistically significant improvements in the total SDQ score and on the conduct problem sub-scale score, which were both sustained at ten month follow-up. These changes in the SDQ scores were found to be clinically significant. In addition to the SDQ, a tool to assess the child achieving parent set goals for behaviour change was developed for the study. On this measure statistically significant improvements were found in children achieving these targets from pre-treatment to post-treatment, and between post-treatment and follow-up. Quinn *et al.* also used Child Behaviour Checklist (Achenbach, 1991) as an outcome measure, here scores for the intervention and control groups did not differ at post-treatment.

4.1.2 Parental stress and mental health

Both Chadwick *et al.* (2001) and Quinn *et al.* (2007) used the Parenting Stress Index (PSI) as an outcome measure. Neither found significant differences in PSI scores between intervention and control groups, nor, in Chadwick's case, between treatment formats. Quinn *et al.* also used the General Health Questionnaire (GHQ) as a parent mental health outcome measure. Again, the intervention was not found to effect scores on this measure.

4.1.3 Knowledge and implementation of behaviour modification principles

Two studies assessed changes in knowledge and implementation of behaviour modification principles. Hornby and Singh (1984) report statistically significant improvements in parents' scores on a measure of parental knowledge of behaviour modification principles compared to parents who did not receive the intervention. Gates *et al.* (2001) found that parents who received training in behaviour modification principles were statistically more likely to report implementing behaviour management strategies based on behaviour modification principles after training compared to parents who had been trained in non-behavioural behaviour management strategies.

4.1.4 Other outcome measures

Quinn *et al.* (2007) used a number of other outcome measures including individual parent-centred goals, parent satisfaction and family stress. They report statistically significant improvements in *parenting satisfaction* from pre- to post-treatment among the intervention group compared to the control group, with this improvement being sustained at follow-up. In terms of *family stress*, no differences were found between the intervention group and control group at post-treatment on the Family Inventory of Life Events and Changes (McCubbin *et al.*, 1982). However, on the *parent and family problems scale* of the Questionnaire on Resources and Stress (Friedrich *et al.*, 1983), a statistically significant improvement in scores (indicating a reduction in sources of stress) was found for the intervention group but not the control group, with this improvement being sustained at ten month follow-up. Finally, ratings of the extent to which *individually set parental outcomes* of the intervention were achieved showed that statistically significant changes occurred for these outcomes, and that these changes were maintained at ten month follow-up.

Table 4.1 Outcomes of interventions on behaviour management skills only

<i>Author and year</i>	<i>Design</i>	<i>Research quality</i>	<i>Sample size</i>	<i>Treatment completion rates</i>	<i>Outcomes⁴</i>
Intervention on parents' behaviour management skills only					
Chadwick <i>et al.</i> (2001)	RCT. Group treatment format (GTF) vs individual treatment format (ITF) vs no treatment control (NT). 6 month follow-up (T3).	Weak	GTF=16 ITF=24 NT=28	92%	<p>CHILD BEHAVIOUR Disability Assessment Schedule (DAS) (Holmes et al., 1982; Wing 1989): Mean no. of DAS behaviour problems: GTF=ITF=NTC Posing severe management difficulties: GTF=ITF=NTC Frequency of occurrence: GTF=ITF=NTC</p> <p><i>Treatment effect⁵</i> Severity of behaviour problems: ITF>GTF=NTC Followup: ITF=GTF=NTC</p> <p>Parent reported change: all problem behaviours (developed for the study): No. beh. problems occurring more frequently: ITF=GTF=NT; Follow-up: ITF=GTF=NTC</p> <p>No. beh. probs. posing greater management difficulties: ITF=GTF=NT; Follow-up: ITF=GTF=NTC</p> <p>No. beh. probs. occurring less frequently: ITF<GTF=NTC Mean no. beh. probs. posing less of a management problem: ITF>GTF=NTC</p> <p>Parent reported change: target problem behaviours (developed for the study) (ITF only): Severity of problem posed by target behaviours: T1 > T2; T1=T3 Mean number of target behaviours posing a problem: T1 > T3; T1=T3</p> <p>PARENTAL STRESS Parenting stress index (Abidin, 1995): GTF=ITF=NTC Follow-up: GTF=ITF=NTC</p>

⁴ All changes found were in a positive direction.

⁵ Magnitude of the reduction in severity of behaviour problems.

<i>Author and year</i>	<i>Design</i>	<i>Research quality</i>	<i>Sample size</i>	<i>Treatment completion rates</i>	<i>Outcomes⁴</i>
Gates, Newell and Wray (2001)	<p>Controlled trial.</p> <p>Gentle teaching (GT) vs behaviour modification training (BM) vs control group (CG).</p> <p>Used mean of post treatment scores at 3, 6 and 12 mos.</p>	Weak	GT=41 BM=36 CG=26	n/a ⁶	<p>CHILD BEHAVIOUR Problem and target scales (Marks et al., 1977) (severity of identified prob, beh's.): GT=BM=CG</p> <p>Behaviour checklist (designed for study): GT=BM=CG</p> <p>IMPLEMENTATION OF BEHAVIOUR MODIFICATION PRINCIPLES Parent reported implementation of skills: Overall implementation: BM>GT Implementing a strategy: BM>GT Identify reinforcers: BM>GT Identifying outcomes and targets: BM>GT.</p>
Hornby and Singh (1984)	<p>Controlled trial.</p> <p>Treatment group (TG) vs control group (CG).</p> <p>No follow-up.</p>	Weak	TG=7 CG=4	Unclear ⁷	<p>CHILD BEHAVIOUR Behaviour checklist (developed for study): TG=CG</p> <p>PARENTAL KNOWLEDGE OF BEHAVIOUR MODIFICATION PRINCIPLES Vignette test (Heifetz, 1977): TG>CG</p>

⁶ Single day workshop.

⁷ Eighty-three per cent attendance across all sessions.

<i>Author and year</i>	<i>Design</i>	<i>Research quality</i>	<i>Sample size</i>	<i>Treatment completion rates</i>	<i>Outcomes⁴</i>
Quinn <i>et al.</i> (2007)	Controlled trial. Intervention (IG) vs Waiting list control (WLC). 10 mos follow-up (T3) (IG only)	Moderate	I=23 WLC=19	96%	<p>CHILD BEHAVIOUR Strengths and Difficulties Questionnaire (Goodman 1997): Total score: IG<WLC <i>Clinical significance:</i> reliable improvement rates⁸: IG=WLC) Follow up: Total score: T1>T2=T3 (IG: clinical → non-clinical range); Conduct problem scale: T1>T2=T3.</p> <p>Child Behaviour Checklist (Achenbach, 1991): IG=WLC</p> <p>Child centred goal attainment: parent set targets: IG only (developed for study): T1<T2<T3</p> <p>PARENTAL STRESS/MENTAL HEALTH General Health Questionnaire 12 (Goldberg and Williams, 1988): IG=WLC</p> <p>Parental distress scale (Parenting stress index) (Abidin, 1995): IG=WLC</p> <p>PARENT SATISFACTION Kansas parental satisfaction scale (James et al., 1985) IG>WLC Follow-up: T1<T2=T3</p> <p>FAMILY STRESS Family Inventory of life events and changes (McCubbin et a., 1982): IG=WLC</p> <p>Parent and family problems scale of the Questionnaire on Resources and Stress (Friedrich et al., 1983): IG<WLC Follow-up: T1<T2=T3</p> <p>PARENT CENTRED GOAL ATTAINMENT (INDIVIDUALISED) Parent set targets (developed for study) T1<T2=T3</p>

⁸ Reliable change index, Jacobson and Truax, 1991.

4.2 Interventions on behaviour management skills and the parent-child relationship

Two included studies evaluated the effectiveness of interventions which seek to improve parents' behaviour management skills and the parent-child relationship. Both were randomised controlled trials evaluating of existing interventions – Parent Child Interaction Therapy (PCIT) (Bagner and Eyberg, 2007) and a modified version of the Incredible Years Parent Training programme (IYPT) (McIntyre, 2008a). PCIT is delivered individually and IYPT through parent groups. The quality of both the studies was assessed as moderate. The PCIT evaluation used a waiting list control group, and the IYPT study had a usual care control group. Neither study had a follow-up element. The evaluations involved children in a similar age range (PCIT: 3-6 years; IYPT: 2-5 years). Table 4.2 (pp 40-41) summarises the findings of these studies.

4.2.1 Child behaviour outcomes

Both studies used the Child Behaviour Checklist (CBCL) (Achenbach, 2000) to assess child behaviour outcomes. Both report statistically significant improvements in total scale scores on the CBCL from pre- to post treatment in the intervention groups which were not found in the control groups. In addition, the IYPT (McIntyre, 2008a) evaluation reports a similar effect for scores on the externalising sub-scale of the CBCL, but not the internalising sub-scale. In contrast, the PCIT evaluation (Bagner and Eyberg, 2007) found statistically significant improvements on the externalising subscale for the intervention group at post-treatment but not the control group. Both studies report these improvements in scores to be clinically significant.

The PCIT evaluation (Bagner and Eyberg, 2007) also used the Eyberg Child Behaviour Inventory (ECBI) (Eyberg and Pincus, 1999) to measure changes in problem behaviour. On this measure, statistically significant improvements in problem intensity scores (that is, the frequency at which the problem occurs) at post-treatment were found for the intervention group but not the control group, and this difference was confirmed by an intent to treat analysis. However, the study did not find that the intervention resulted in parents finding behaviours less problematic (as indicated by the problem scale of the ECBI).

4.2.2 Parent-child interaction

Both studies used observational data to explore changes in parent-child interaction. Bagner and Eyberg (2007) found a statistically significant increase in positive parent behaviour ('Do skills') during parent-child interactions at post-treatment in the intervention group but not the control group. No intervention effects were found for

parents' 'Don't skills' or child compliance. McIntyre (2008a) report a significant decrease in negative or inappropriate parental behaviour among the intervention group at post-treatment compared to the control group. No intervention effect was found, however, for positive parent behaviour (child-directed praise).

4.2.3 Parental stress

Bagner and Eyberg (2007) used parental stress as another outcome, with the Parenting Stress Index (PSI) (Abidin, 1995) as their measure. Here they found that scores on the parental distress and parent-child dysfunctional interaction sub-scales did not differ between the intervention and control groups across time. However, on the difficult child subscale, significantly improved scores were found post-treatment among the intervention group compared to control group.

4.2.4 Child's impact on family life

McIntyre *et al.* (2008) used the Family Impact Questionnaire (Donenberg and Baker, 1993) to measure changes in the child's impact on family life. No significant intervention effects were found.

Table 4.2 Outcomes of interventions on behaviour management skills and the parent-child relationship

<i>Author and year</i>	<i>Design</i>	<i>Research quality</i>	<i>Sample size</i>	<i>Treatment completion rates</i>	<i>Outcomes⁹</i>
Bagner and Eyberg (2007)	RCT. Immediate treat (IT) vs Waiting list control (WLC). No follow-up.	Moderate	IT=15 WLC=15	47%	<p>CHILD BEHAVIOUR Child Behaviour Checklist (Achenbach and Rescorla, 2000): Externalising scale: IT<WLC Total scale: IT<WLC</p> <p>Eyberg Child Behaviour Inventory (Eyberg and Pincus, 1999): ECBI Intensity scale: IT<WLC (confirmed by intent-to-treat analysis). ECBI Problem Scale: IT=WLC</p> <p><i>Clinical significance¹⁰</i> CBCL externalising :70% (IT) vs 17% (WL); ECBI Intensity: 50% (IT); 8% (WL).</p> <p>PARENT-CHILD INTERACTION Dyadic Parent-Child Interaction Coding system (incl. child compliance) Eyberg et al., 2004): “Do skills”: IT>WLC “Don’t skills”: IT=WLC Child compliance: IT=WLC</p> <p>PARENTAL STRESS Parenting Stress Index – Short form (Abidin, 1995): Parental distress: IT=WL Parent-Child Dysfunctional Interaction: IT=WL Difficult Child sub-scale: IT<WL</p>

⁹ All changes found were in a positive direction.

¹⁰ Jacobson *et al.*'s (1999) Reliable Change Index.

<i>Author and year</i>	<i>Design</i>	<i>Research quality</i>	<i>Sample size</i>	<i>Treatment completion rates</i>	<i>Outcomes⁹</i>
McIntyre (2008a)	RCT Intervention (IG) vs usual care control (CG). No follow-up.	Moderate	I=21 C=23	Unclear ¹¹	<p>CHILD BEHAVIOUR Child Behaviour Checklist (ages 1.5-5 yrs) (Achenbach, 2000): Total problems: IG<CG; Internalising problems: IG<CG. Externalising behaviours: IG=CG. (Attendance significantly correlated with CBCL total problems change scores: better attendance was associated with decreases in children's problem behaviour.)</p> <p><i>Clinical significance:</i> No. children with stable scores¹²: IG<CG</p> <p>CHILD'S IMPACT ON FAMILY LIFE Family Impact Questionnaire –FIQ (Donenberg and Baker, 1993): Negative impact composite score: IG=CG Positive impact composite score: IG=CG</p> <p>PARENT-CHILD INTERACTION Parent-child interaction observation: (developed for the study): Parent inappropriate behaviour index: IG<CG Positive parent behaviour index: IG=CG Child directed praise: IG=CG</p> <p>CONSUMER SATISFACTION Consumer Satisfaction Questionnaire (Forehand and McMahon, 1981): Parents rated the program as somewhat to very useful. Parents who attended with someone else rated sessions more useful than those who went alone.</p>

¹¹ Average attendance rate reported as 88 per cent.

¹² Scores not changing by five or more points.

4.3 Interventions on behaviour management and teaching skills

Five included studies evaluated the effectiveness of interventions which sought to improve parents' behavioural problem behaviour management skills and teaching skills (for example, self-care, life skills, supporting language and development). Three investigated pre-existing parent training programmes: *Steps to Independence Programme* (Brightman *et al.*, 1982); *Stepping Stones Triple P* (Roberts *et al.*, 2006; Plant and Sanders, 2007) and *Parents as Teachers* (Prieto-Bayard and Baker, 1986). The fourth intervention, *Signposts for Building Better Behaviour*, had been developed by the authors as part of the study (Hudson *et al.*, 2003). Two studies were concerned only with the effectiveness of the intervention, one in its standard form (Roberts *et al.*, 2006), and the other once it had been modified for use with a particular group of parents (low income, Spanish speaking) (Prieto-Bayard and Baker, 1986). All the others also investigated the effectiveness of the intervention but, in addition, tested whether effectiveness differed according to the mode of delivery (Brightman *et al.*, 1982; Hudson *et al.*, 2003; Plant and Sanders, 2007). All but one (Hudson *et al.*, 2003) of the studies was a randomised controlled trial. All the RCTs were assessed as being of moderate research quality, and the quality of the controlled trial was assessed as weak.

Three of the interventions (*Steps to Independence Programme*, *Parents as Teachers*, *Signposts for Building Better Behaviour*) were delivered to parents with a wide age range of children. The fourth intervention, *Stepping Stones Triple P*, was delivered only to young children (less than 6 years).

Table 4.3 (pp 47-51) summarises the findings regarding outcomes of the interventions reported by these studies.

4.3.1 Child behaviour

Looking first at the three studies which investigated 'all-age' interventions. All the studies report positive changes on at least one measure of child behaviour at post-treatment in the intervention group which were not found in the control group.

Brightman *et al.* (1982), using a behaviour problem checklist developed for the study, found statistically significant improvements in checklist scores from pre- to post-treatment for both intervention groups (individual sessions, parent group) which were not found in the waiting list control group. Hudson *et al.* (2003) used the child behaviour subscale of the Parenting Hassles Scale (Gavidia-Payne *et al.*, 1997) and found no significant changes in scores pre- and post-treatment for any of the study groups (group delivery, individual telephone support, self-directed or waiting list control). However, on the antisocial behaviour sub-scale of the Developmental Behaviour Checklist (Einfield and Tonge, 1989) significant improvements in scores

from before treatment to follow-up were found in all the intervention groups but not the control group. This was not found for the disruptive behaviour sub-scale, however. Finally, Prieto-Bayard and Baker (1986) report a statistically significant improvement in intervention group scores at post-treatment on the child behaviour checklist developed for their study which was not found in the waiting list control sample. Neither the Brightman *et al.* (1982) study nor the Hudson *et al.* (2003) study report differences in effectiveness, in terms of improving child behaviour, between different delivery modes.

In terms of the intervention delivered only to young children, Roberts *et al.* (2006) and Plant and Sanders (2007) both investigated the effectiveness of *Stepping Stones Triple P (SSTP-S)* parent training programme. Plant and Sanders (2007) had two treatment arms – the standard programme (SSTP-S) and the enhanced programme (SSTP-E), which includes additional sessions on improving parental coping skills and resources. All parents in the intervention group in Roberts *et al.* (2006)'s study received SSTP-S with some families, at the clinician's judgement, also receiving additional sessions from the enhanced curriculum.

Both studies used the Developmental Behaviour Checklist (DBC) (Rinfield and Tonge, 1991) to investigate the effectiveness of the intervention in alleviating child behaviour problems. Roberts *et al.* (2006) report significant improvements in DBC scores among mothers in the intervention group which were not found among mothers in the control group. These improvements were found at post-treatment and at 6 month follow-up. Intention to treat analyses confirmed these significant effects which were also reported to be approaching clinical significance. In contrast, no significant differences in scores were found between fathers in the treatment and control groups. Plant and Sanders (2007) found that DBC scores improved significantly for the SSTP-S group only, with this improvement being maintained at follow-up. In terms of testing for clinical significance, significantly more children in both the intervention groups had reliably improved compared to children in the control group (with no difference found between parents receiving SSTP-S or SSTP-E). However, there were no significant differences in the number of children moving from clinical to normal range DBC scores between the two treatment arms and the control group.

Both studies also used an observational measure (Revised Family Observation Schedule (rFOS), Sanders *et al.*, 1996) to assess child behaviour in 'target' and 'generalisation' settings. Roberts *et al.* (2006) did not find the intervention changed levels of the child's appropriate behaviour or non-compliance as assessed by the rFOS), but statistically significant improvements were found in terms of oppositional behaviour in target settings among the intervention group but not the control group, with these improvements being maintained at six month follow-up and confirmed by intent to treat analysis. In generalisation settings, a different effect was found, with statistically significant improvements in non-compliance (but not oppositional

behaviour) being observed in the intervention group but not the control group. This improvement was maintained at six month follow-up and confirmed by intent to treat analysis. Plant and Sanders (2007) also found the intervention significantly improved observed child behaviour between pre- and post treatment, further statistically significant improvements being found at follow-up. They did not find differences in rFOS scores between the SSTP-S and SSTP-E groups. Tests confirmed the intervention effects found by Plant and Sanders (2007) were clinically significant.

Plant and Sanders (2007) developed a further measure of child behaviour which focused on care-giving activities and had two sub-scales: difficult child behaviour and problematic care-giving tasks. On these scales, statistically significant improvements were found for children in both the SSTP-S and SSTP-E groups, but not the control group, with these improvements being maintained at follow-up. In addition, on the 'difficult child behaviour subscale', the SSTP-E group had significantly better scores at post-treatment and follow-up than the SSTP-S group.

4.3.2 Parenting stress and mental health

Among the 'all-age' interventions, Hudson *et al.* (2003) was the only study to look at the impact of the intervention on parental stress (as measured on the stress subscale of Lovibond and Lovibond's (1995) Depression, Anxiety and Stress Scale (DASS)) and the Parenting Hassles Scale (PHS), Gavidia-Payne *et al.*, 1997). They found that the intervention, in whatever delivery mode, had a significant effect on parents' scores on the DAS and PHS which were not found in the control group, and that these improvements were maintained at 4-6 month follow-up.

The two evaluations of SSTP (REFS) also used the DASS but found no effect of the intervention on parental stress apart from a clinically significant positive effect on mothers receiving the intervention in Roberts *et al.*'s (2006) study.

4.3.3 Parental knowledge and implementation of behaviour modification principles

Two of the 'all-age' intervention studies (Brightman *et al.*, 1982; Prieto-Bayard and Baker, 1986) used parental knowledge (as measured using Heifetz *et al.*'s (1981) Vignettes Test) and implementation of (ascertained using a structured interview) behaviour modification principles as outcome measures. Both found a statistically significant improvement in parental knowledge of behaviour modification principles among the intervention groups which was not found in the control groups. In addition, Brightman *et al.* (1982) found intervention delivery mode (group vs individual format) did not effect parental knowledge. Similarly, Brightman *et al.* (1982) found no differences in the extent to which behaviour modification principles were being

implemented between parents who had received the group intervention compared to those who had received the individual intervention. Prieto-Bayard and Baker (1986) report a statistically significant improvement on the sophistication of behaviour management strategies employed by parents in the intervention group compared to the control group, but no statistically significant improvement in the extent to which behaviour modification strategies were being used. Looking at the intervention group only, the authors report statistically significant improvements in both the extent of use and sophistication of behaviour management strategies from pre- to post treatment, with these improvements being maintained to some extent at 6 month follow-up.

4.3.4 Parenting skills

The SSTP (Roberts *et al.*, 2006; Plant and Sanders, 2007) evaluations did not look specifically at changes in parental knowledge and implementation of behaviour modification principles, but instead used a generic measure of parenting skills (Parenting Scale, Arnold *et al.*, 1993) and an observational tool (rFOS (negative parent behaviour score), Sanders *et al.*, 1996) to explore the effect of the intervention on parenting behaviours.

Plant and Sanders (2007) report a statistically significant improvement in parenting skills as measured by the Parenting Scale within the intervention groups which was not found in the control group. Roberts *et al.* (2006) also found statistically significant improvements in parenting skills in the intervention group but not the control group. Specifically, statistically and clinically significant improvements were found in mothers' over-reactivity (though this effect was not confirmed by intent to treat analysis), and fathers' laxness and verbosity (confirmed by intent to treat analysis). In all instances, these improvements were maintained at six month follow-up. However, in terms of observational data on negative parent behaviour, neither study found significant intervention effects. In addition, Roberts *et al.* (2006) reports a statistically significant improvement in parental use of praise in target (but not generalisation) settings among the intervention group that was not found in the control group. This improvement was maintained at six month follow-up and confirmed by intent to treat analysis.

4.3.5 Parental sense of competence

Two studies (one looking at an 'all-age' intervention (Hudson *et al.*, 2003)), and one of the SSTP evaluations (Plant and Sanders, 2007)) used a measure of parental sense of competence as an outcome measure (Parenting Sense of Competence Scale (PSOC), Johnson and Mash, 1989; Gibaud-Wallston and Wandersman, 1978). Hudson *et al.* (2003) used the efficacy subscale only and found a statistically significant improvement in efficacy scores for the intervention group but not the

control group which was maintained at 4-6 month follow-up. The mode of delivery of the intervention was not found to affect changes in parenting efficacy scores. Plant and Sanders (2007) used the PSOC total score and found statistically significant improvements in scores both intervention groups compared to the control group. There was, however, no statistical difference between the scores of parents in the SSTP-S group and those in the SSTP-E group. The improvements found in parental competence in the intervention groups were maintained at 12 month follow-up.

Table 4.3 Outcomes of interventions on behaviour management and teaching skills

<i>Author and year</i>	<i>Design</i>	<i>Research quality</i>	<i>Sample size</i>	<i>Treatment completion rates</i>	<i>Outcomes¹³</i>
Brightman <i>et al.</i> (1982)	RCT. Individual treatment format (ITF) vs Group treatment format (GTF) vs Wait list control (WLC). 6 month follow up (T3) (ITF and GTF only)	Moderate	ITF=16 GTF=37 WLC=13	ITF=87% GTF=86%	CHILD BEHAVIOUR Behaviour Problem Checklist (developed for the study): ITF=GTF<WLC PARENTAL KNOWLEDGE OF BEHAVIOUR MODIFICATION PRINCIPLES Behavioural Vignettes Test (Heifetz et al, 1981): ITF=GTF>WLC IMPLEMENTATION OF BEHAVIOUR MODIFICATION PRINCIPLES Researcher rated interview at 6 month follow-up (developed for study): Extent of continued use of behaviour management: ITF=GTF Appropriateness of behavioural techniques employed ITF=GTF.
Hudson <i>et al.</i> (2003)	Controlled trial. Group support (GS) vs telephone support (TS) vs self-directed (SD) vs wait list control (WLC) 4-6 month follow-up (GS, TS and SD only).	Weak	GS=46 TS=13 SD=29	57% ¹⁴	CHILD BEHAVIOUR Parenting Hassles Scale (PHS, Gavidia-Payne et al., 1997): child behaviour subscale: GS=TS=SD=WLC Developmental Behaviour Checklist (DBS, Einfield and Tonge, 1989): disruptive and anti-social subscales only: Follow-up (T3): Antisocial behaviour sub-scale: T1>T3 (GS=TS= SD). Follow-up (T3): Disruptive subscale: T1=T3 (GS=TS= SD). PARENTAL STRESS Depression Anxiety and Stress Scale (DASS, Lovibond and Lovibond, 1995): stress subscale only: GS=TS=SD<WLC Follow-up (GS, TS, SD only): changes in scores maintained PARENTAL SENSE OF COMPETENCY Parenting Sense of Competence Scale (PSOC) (Johnson and Mash, 1989) efficacy subscale only): GS=TS=SD>WLC Follow-up: changes in scores maintained PARENTING HASSLES Parenting Hassles Scale (PHS, Gavidia-Payne et al., 1997): parental needs subscale only: GS=TS=SD<WLC Follow-up : changes in scores maintained

¹³ All changes found were in a positive direction.

¹⁴ The study does not report separate treatment and study completion rates.

Author and year	Design	Research quality	Sample size	Treatment completion rates	Outcomes ¹³
Plant and Sanders (2007)	RCT SSTP-S vs SSTP-E vs Waiting list control (WLC). 12 month follow-up (SSTP-S and SSTP-E only)	Moderate	SSTP-S=24 SSTP-E=16 WLC=28	Unclear. SSTP-S: 40% 5 sessions; 60%; 4 or fewer sessions. SSTP-E: 22% 7 sessions; 96% >5 sessions	CHILD BEHAVIOUR: Developmental Behaviour Checklist – Parent Version (DBC, Rinfield and Tonge, 1991): SSTP-S<SSTP-E=WLC Follow-up (T3): T3=T2 <i>Clinical significance</i> ¹⁵ : i) RCI at post-intervention: significantly greater proportion of children in the SSTP-E and SSTP-S conditions behaviour had reliably improved when compared to the WL condition. NS between SSTP-S and SSTP-E. ii) Movement from clinical to normal range on DBC total score: ns between groups. Care-giving problem checklist (CPC): difficult child behaviour (developed for study): SSTP-E<SSTP-S<WLC Follow-up (T3): T3=T2; SSTP-E<SSTP-S Care-giving problem checklist (CPC): problematic care-giving tasks (dev. for study): SSTP-E=SSTP-S<WLC Follow-up (T3): T3=T2 Revised Family Observation Schedule (Sanders et al., 1996): negative child behaviour composite score: SSTP-E=SSTP-C<WLC Follow-up (T3): T3<T2 <i>Clinical significance</i> ¹⁶ A greater proportion of children in SSTP-S and SSTP-E showed significant change in the FOS-NCB score compared to children in the WL condition. NS between SSTP-S and SSTP-E. Follow-up: 72% of children across the two intervention conditions had achieved 30% reduction in negative behaviour PARENTING SKILLS Parenting Scale (Arnold et al., 1993): SSTP-S>SSTP-E=WLC Revised Family Observation Schedule (Sanders et al., 1996): negative parent behaviour composite score: SSTP-S=SSTP-E=WLC Follow-up: T3=T2 PARENTAL SENSE OF COMPETENCE Parenting Sense of Competence Scale (PSOC) (Gibaud-Wallston and Wandersman, 1978): SSTP-S=SSTP-E>WLC Follow-up: T3=T2

¹⁵ Used the *reliable change index* (RCI, Jacobson and Truax, 1991).

¹⁶ Thirty per cent reduction in score used as criteria for significant change (Webster-Stratton *et al.*, 1989).

Author and year	Design	Research quality	Sample size	Treatment completion rates	Outcomes ¹³
Plant and Sanders (2007) (cont'd)					PARENTAL STRESS/MENTAL HEALTH Depression, anxiety, and stress scales (DASS) (Lovibond and Lovibond, 1995). SSTP-E=SSTP-S=WLC Follow-up: T3=T2
Prieto-Bayard and Baker, 1986	RCT Intervention Group (IG) vs Waiting List Control (WLC) 6 month follow-up (T3) (IG only).	Moderate	I=9 WLC=11	78%	CHILD BEHAVIOUR Child Behaviour Checklist (CBC) (developed for the study): IG<WLC PARENTAL KNOWLEDGE OF BEHAVIOUR MODIFICATION PRINCIPLES Verbal Behavioural Vignettes Test (Baker and Heifetz, 1976): IG>WLC IMPLEMENTATION OF BEHAVIOUR MODIFICATION PRINCIPLES Structured interview (developed for study): Extent of teaching and behaviour problem management: IG=WLC Sophistication of behaviour methods employed: IG>WLC Follow-up (T3): Extent of teaching and behaviour problem management: T2>T3>T1 Sophistication of behaviour methods employed T2>T3>T1.
Roberts et al. (2006)	RCT. Intervention (IG) vs Wait List Control (WLC). 6 month follow-up (T3) (IG only)	Moderate	I=24 families; WLC=20 families.	67%	CHILD BEHAVIOUR Developmental Behaviour Checklist Parent Version (Einfield and Tonge, 1992): <i>Mothers:</i> IG<WLC; T1>T2; T1>T3. (Both confirmed by intent to treat analysis). Reliable change ¹⁷ : IG<WLC (approaching significance p<0.05 ¹⁸). <i>Fathers:</i> IG=WLC Family Observation Schedule – Revised III: (Sanders et al., 1996): <i>Target setting:</i> Non-compliance: IG=WLC Oppositional behaviour: IG<WLC; T1>T2; T1>T3. (Both confirmed by intent to treat analysis). Appropriate behaviour: IG=WLC <i>'Generalisation' setting:</i> Non-compliance: IG<WLC (confirmed by intent to treat analysis); T1>T2, T1>T3. Oppositional behaviour: IG=WLC Appropriate behaviour: IG=WLC

¹⁷ A change score of 17 or more used to assess reliable change.

¹⁸ Authors using conservative p<0.01.

Author and year	Design	Research quality	Sample size	Treatment completion rates	Outcomes ¹³
Roberts <i>et al.</i> (2006) (cont'd)					<p>PARENTING Family Observation Schedule – Revised III: (Sanders et al., 1996): <i>Target setting</i> Negative behaviours: IG=WLC Positive antecedent behaviours: IG=WLC Social attention: IG=WLC Praise: I>WLC; T1<T2, T1<T3 (both confirmed by intent to treat analysis)</p> <p><i>'Generalisation' setting</i> Negative behaviours: IG=WLC Positive antecedent behaviours: IG=WLC Social attention: IG=WLC Praise IG=WLC</p> <p>Parenting Scale (Arnold et al., 1993): <i>Mothers</i> Laxness: I=WLC Over-reactivity: I<WLC (Not confirmed by intent to treat analysis) Verbosity: I=WLC <i>Clinical significance:</i> Reliable change¹⁹: Over-reactivity: I<WLC (maintained at T3)</p> <p><i>Fathers</i> Laxness: I<WLC; T1<T2, T<T3 (Confirmed by intent to treat analysis) Over-reactivity: I=WLC Verbosity: I<WLC; T1<T2, T<T3 (Confirmed by intent to treat analysis) <i>Clinical significance:</i> Reliable change: Laxness: I<WLC (maintained at T3); verbosity: I>WLC; (maintained at T3)</p> <p>PARENTAL STRESS/MENTAL HEALTH Depression-anxiety-stress scale (Lovibond and Lovibond, 1995) Mothers: IG=WLC Fathers: IG=WLC <i>Clinical significance:</i> Nos. reporting reliable reductions (mothers only): I>WLC. (T2=T3)</p>

¹⁹ Used the Reliable Change Index (Jacobson and Truax, 1991).

4.4 Interventions on behaviour management skills and understanding of the condition

Two of the included studies were evaluations of an intervention designed for parents of primary school aged children recently diagnosed with Asperger's syndrome (Sofronoff and Farbotko, 2002; Sofronoff *et al.*, 2004). The purpose of the intervention is two-fold: to improve parents' understanding of Asperger's syndrome, and to improve their skills in managing problem behaviour. Both studies were comparing different modes of delivering the intervention (a single day workshop versus six individual weekly sessions) and also had a waiting list control group. One study was an RCT, the other a controlled trial; both were assessed to be of moderate research quality. Table 4.4 (p 53) provides an overview of findings on the outcomes of these interventions.

4.4.1 Child behaviour outcomes

Both studies used Eyberg's Child Behaviour Inventory (ECBI) (Eyberg and Pincus, 1999) to measure child behaviour outcomes. Sofronoff and Farbotko (2002) report statistically significant improvements in total score on the ECBI in the intervention groups compared to the control group, with these improvements being maintained at three month follow-up. There were no significant differences between different delivery modes. Sofronoff *et al.* (2004) also report statistically significant improvements in terms of the number of problem behaviours reported by parents in the intervention groups compared to the control group. These effects were maintained at three month follow-up and no differences were found between delivery modes. However, in terms of ECBI's measure of frequency of problem behaviours (intensity sub-scale), it was only parents in the individual treatment group where a statistically significant improvement was found at post-treatment, and this was also found at follow-up.

4.4.2 Parents' self-efficacy in managing Asperger's syndrome

Sofronoff and Farbutko (2002) developed a measure of parental self-efficacy in managing Asperger's syndrome which included managing problem behaviour. Statistically significant improvement in scores on this measure were found for the intervention groups which were not found in the control group. Further analysis revealed the source of this effect lay in significant changes in mothers' self-efficacy scores but not fathers' self-efficacy scores. (The authors also report that at pre-treatment mothers scores were lower than fathers' scores but at post-treatment mothers' scores were higher than fathers' scores.) No significant differences were found between delivery modes.

Table 4.4 Outcomes of interventions on behaviour management skills and understanding of the child's condition

<i>Author and year</i>	<i>Design</i>	<i>Research quality</i>	<i>Sample size</i>	<i>Treatment completion rates</i>	<i>Outcomes²⁰</i>
Sofronoff and Farbotko, (2002)	Controlled trial. Workshop (WTF) vs individual treatment format (ITF) vs waiting list control (WLC) 3 month follow-up (T3) (W and I only) (WLC T2 scores carried forward to Time 3 in an intention to treat analysis)	Moderate	WTF=32 (17 mos; 16 fas); ITF=36 (18 mos, 18 fas); WLC=20 (10 mos; 10 fas)	100%	CHILD BEHAVIOUR Eyberg Child Behaviour Inventory (Eyberg and Pincus, 1999): T2: WTF=ITF<WLC Follow-up (T3): WTF=ITF<WLC PARENT SENSE OF COMPETENCE/SELF-EFFICACY 'Parental Efficacy in the management of Asperger Syndrome' (developed for project): WTF=ITF>WLC <i>Mothers:</i> sig. increase; <i>Fathers:</i> little change. (Mos scores started with lower scores but ended higher than fas).
Sofronoff <i>et al.</i> (2004)	RCT. Workshop (WTF) vs individual treatment format (ITF) vs waiting list control (WLC) 3 month follow-up (T3).	Moderate	WTF=18; ITF=18 WLC=	Unclear	CHILD BEHAVIOUR Eyberg Child Behaviour Inventory (Eyberg and Pincus, 1999): Number of problem behaviours: WTF=ITF<WLC Follow-up (T3): WTF=ITF<WLC Intensity of problem behaviours: ITF<GTF=WLC Follow-up (T3): ITF<GTF=WLC

²⁰ All changes found were in a positive direction.

Chapter 5 Discussion

5.1 The evidence on effectiveness

Table 5.1 provides a summary of the findings from the included studies. Only outcomes measured in at least two studies are displayed in the table.

Overall, this table shows that in 11 of the 13 included studies at least one positive effect on child behaviour was found. Four studies used a measure of parental self-competence or self-efficacy and all report positive effects on this outcome. Three studies assessed parental knowledge of behaviour modification principles and all report positive changes in the intervention group(s) when tested post-intervention. Two studies explored parents' implementation of behavioural problem behaviour strategies. One study found significant improvements for the intervention group. The findings from the other study are less clear as this outcome was only compared between parents receiving behaviour modification or non-behaviour modification training. Here, parents who had received behaviour modification training were significantly more likely to be implementing behaviour modification principles compared to the other training group. Two studies measured changes in parenting skills and both report positive effects of the intervention on this outcome. Finally, two studies looked for changes in parent-child interaction as a result of an intervention. In both cases, the intervention resulted in improvements in one or more aspects of parent-child interaction. Two out of the six studies which used parental stress or mental health as a treatment outcome found the intervention significantly impacted on this outcome. This was the outcome area where findings across the included studies are most equivocal.

A key issue which needs to be considered when reviewing the findings of these studies is that most studies only used parents' reports of child behaviour or parenting as outcome measures. Parents undertaking these interventions, as well as learning about behavioural principles of managing difficult behaviour, are likely to improve their understanding of their child's behaviour, their child's condition and/or parenting *per se*. This change in understanding alone may affect how parents report their child's behaviour or their parenting. Collecting observational data, ideally by someone blind to the treatment arm, is one way to address this issue. Just two studies (Plant and Sanders, 2007; Roberts *et al.*, 2006) used observational data on child behaviour and parenting skills as well as parent-completed measures and, typically, observational data corroborated parent-completed measures. In addition, observational data collected by Bagner and Eyberg (2007) and McIntyre (2008a) on parent-child interaction can be taken to support parent-reported changes in child behaviour.

Table 5.1 Overview of significant effects for each intervention

	<i>Intervention</i>	<i>Mode</i> ²¹	<i>Res. qual</i> ²²	<i>Child b'viour</i>	<i>Stress/ MH</i>	<i>Parenting skills</i>	<i>Self - efficacy /competence</i>	<i>Knowledge BM</i>	<i>Implement BM</i>	<i>Par.– chi. i'action</i>
Chadwick <i>et al.</i> (2001)	Developed by authors	G / I	W	• ²³ Mode	X ²⁴					
Gates <i>et al.</i> (2001)	Developed by authors	WS	W	X						
Hornby and Singh (1984)	Developed by authors	G	W	X				•		
Quinn <i>et al.</i> (2007)	Parent Plus (not modified)	G	M	•	X		•			
Bagner and Eyberg (2007)	PCIT(not modified)	I	M	•	•					♦ ²⁵
McIntyre (2008a)	IYPT (modified)	G	M	•						♦
Brightman <i>et al.</i> (1982)	Steps to Ind'ence (for LD)	G / I	M	•-Mode ²⁶				• Mode	Mode ⁻²⁷	
Hudson <i>et al.</i> (2003)	Developed by authors	G / I / SD	W	•-Mode	•-Mode		•-Mode			
Plant and Sanders (2007)	SSTP (for LD)	I S / E	M	• Mode ♦	X	• ♦	• Mode			
Prieto-Bayard and Baker (1986)	Parents as Teachers (for LD)	G	M	•				•	•	
Roberts <i>et al.</i> (2006)	SSTP (for LD)	I	M	•mos ²⁸ ♦	X	•mos/fas ²⁹ ♦				
Sofronoff and Farbotko (2002)	Developed by authors	WS / I	M	•-Mode			•-Mode			
Sofronoff <i>et al.</i> (2004)	Developed by authors	WS / I	M	• Mode						

²¹ G=group; I=individual; WS=single day workshop; SD=self-directed (information only; S=standard; E=enhanced.

²² S=strong (not achieved by any included study); M=moderate; W=weak.

²³ •=significant effect(s) for intervention found on parent-report outcome measure.

²⁴ X=no significant effect(s) for intervention found on parent-report outcome measure.

²⁵ ♦=significant effect(s) for intervention found on observational outcome measure; ◇= significant effect(s) for intervention not found on observational outcome measure.

²⁶ Mode = significant effect for mode of delivery found; ~~mode~~ = mode of delivery did not differentially effect outcome.

²⁷ Mode effect only reported as this outcome only measured in intervention groups.

²⁸ The significant intervention effect found only for mothers.

²⁹ Significant intervention effect for mother and fathers but specific effects different.

Taken together, and bearing in mind the various weaknesses of study design and research quality, these findings suggest that interventions to improve parents' skills in managing problem behaviours using principles of behaviour modification appear to be a promising intervention approach. The evidence reviewed shows they can have a positive impact on child behaviour and parent outcomes for at some parents of children with learning difficulties.

The current state of the evidence about behavioural interventions for families with a disabled children with problem behaviours is not only limited by the quality of the evidence but also by the fact that the behaviour management interventions have usually been investigated within the context of wider interventions (for example, improving parents' teaching skills, parent-child interaction or parental understanding of the condition). These may, or may not, have an indirect impact on the effectiveness of the behaviour management aspect of the intervention. For this reason it is not possible to treat the included studies as a single group.

The included studies in this review were therefore grouped according to the overall focus of the intervention. The evidence is weakest and most equivocal with respect to interventions on behaviour management skills only. Quinn *et al.*'s (2007) study of a pre-existing parent training programme (*Parent Plus*) is the best quality study. Here the findings suggest *Parent Plus* looks promising as an intervention which would improve the behaviour management skills of, at least, some parents of children with learning difficulties. The fact that statistically significant changes in scores were found to be clinically significant supports this view. Chadwick *et al.*'s (2001) findings with respect to delivery mode, specifically that the individual treatment mode was associated with better child behaviour outcomes than group treatment mode are of interest (though it is impossible to gauge the extent of their significance).

Two included studies (Bagner and Eyberg, 2007; McIntyre, 2008a) concerned interventions which seek to improve the parent-child relationship and the parents' behaviour management skills. The studies investigated *Parent Child Interaction Therapy (PCIT)* and a modified version of the *Incredible Years Training Programme (IYPT)*. Both studies report significant positive intervention effects on child behaviour and parent-child interaction, with the effects on child behaviour reaching clinical significance in both studies. Both these studies were RCT's of moderate quality. However, high treatment drop rates not only compromise the strength of the data in the Bagner and Eyberg (2007) study but also call into question the acceptability of the intervention and its suitability for all parents of young children with learning disabilities. The main weakness in the McIntyre (2008a) study is that the sample was self-selected which means the ability to generalise the findings is highly limited.

The set of interventions where there is most evidence concerns interventions on parents' behaviour management and teaching skills. The included studies here concern four interventions, three of which were pre-existing manual or curriculum

based interventions (*Steps to Independence*, *Stepping Stones Triple P* and *Parents as Teachers*). All the interventions were developed specifically for use with children with learning disabilities or, in the case of *Stepping Stones Triple P* (SSTP) had previously been modified from a generic parent training intervention (*Triple P – Positive Parenting Programme*). Four of the studies were assessed to be of moderate research quality and one of weak quality. The common key area of design weakness was that samples were self-selected. The only area where hypothesised positive outcomes were not achieved was with respect to parental stress. Only two of the studies (both evaluating SSTP) report the clinical significance of statistically significant results. Here changes in scores on child behaviour measures were found to be clinically significant (Plant and Sanders, 2007) or approaching clinical significance (Roberts *et al.*, 2006). Roberts *et al.* (2006) also report clinically significant changes in parenting skills. This set of evidence suggests that, at least among some parents of children with learning difficulties, interventions which are developed specifically for parents of children with learning difficulties and which incorporate training on behaviour management and teaching skills can be effective in improving child behaviour and various parent outcomes.

A different and very specific intervention was the focus of the final set of included studies (Sofronoff and Farbotko, 2002; Sofronoff *et al.*, 2004). Here an intervention developed parents of primary school aged children recently diagnosed with Asperger's syndrome was tested for its effectiveness. Both the studies were of moderate research quality with, again, the fact that the samples were self-selected being the key area of design weakness. In addition, the authors do not report clinical significance. The findings, though promising, are therefore limited in terms of their generalisability and extent to which conclusions can be drawn about effectiveness.

Table 5.1 can also be examined for evidence about the effectiveness of different modes of delivering parent training interventions. Six studies compared two or more intervention delivery modes. In terms of child behaviour outcomes, three report an effect for delivery mode and three do not. A similar pattern is found with respect to two other outcomes: parental self-competence/self-efficacy and knowledge of behaviour modification principles. Hudson *et al.*'s (2003) finding that self-directed training (in this case, providing written and video information in a staged process) was found to be as effective in their study as group training or individual, telephone support is interesting. Understanding the differential impacts of receiving a group intervention versus an individual intervention is complicated because in all cases the delivery of the intervention in the two modes was quite different. Group training tends to be more didactic but has the known benefit (Solomon, Pistrang, and Barker, 2001) of working in and being supported by a group of parents. In contrast, delivering the intervention individually meant the focus can be much more on the specific behavioural issues faced by each parent. Thus, although intervention adherence rates are typically reported as being very high across the included studies, the extent to which the intervention was individualised will differ across different delivery modes.

This means it is not possible, on the basis of the studies included in this review, to draw any conclusions about the impact of delivery mode on effectiveness.

Two of the included studies (Quinn *et al.*, 2007; Bagner and Eyberg, 2007) investigated the effectiveness of generic parent training interventions (*Parent Plus*; *Parent Child Interaction Therapy*) which had not been modified for use with parents of children with a learning disability. Both found evidence for their effectiveness in improving child behaviour and, in both cases, the improvements were of clinical significance. Taking account of both studies moderate research quality, these studies provide evidence which suggests that the content and structure of generic parent training interventions may be appropriate for using with some parents of some children with learning difficulties. However, no studies comparing generic and specific interventions were identified for inclusion in the review and, thus, there is no evidence on the *relative* effectiveness of generic compared to interventions modified or developed for parents of children with learning difficulties.

An important issue to draw from this synthesis of the research evidence concerns the effectiveness of these interventions for mothers and fathers. Just one study (Roberts *et al.*, 2006) explores mothers' and fathers' outcomes separately. The main reason for this is because in most studies mothers were the sole recipients of the intervention. What is interesting in the Roberts *et al.* (2006) study is the findings suggest that the intervention affected parents' parenting skills differently and, in addition, at pre-intervention mothers' levels of parenting self-efficacy are poorer than fathers. This, in itself may impact on the effectiveness of a parent training intervention.

5.2 Gaps in the evidence and implications for future research

More UK research on the effectiveness of behavioural approaches to managing behaviour problems among disabled children is needed. In order to improve the evidence base a number of different issues need to be addressed. These concern both research design and research topic or research questions.

1. All studies should explore and report the clinical significance of the research findings. It should be remembered that evidence is needed on interventions which make a difference to families. Including a measure of the extent to which parent-set targets for behavioural change have been achieved is also important.
2. Studies should seek to incorporate within their designs some means of triangulating evidence with regard to changes in child behaviour and, ideally, parenting skills. This would help to overcome the limitation noted above concerning possible confounding effects of the intervention on parents'

perceptions and understanding of their child's behaviour and hence their reports of behaviour and parenting.

3. The key difficulty with much of the research reviewed in this report is that the samples were self-selected. This imposes severe restrictions on the generalisability of the research findings. Future research should therefore look for ways by which the issue of selection bias can be addressed.
4. Mode of delivery is a key factor in costs of service delivery. Evidence to date on the impact on mode of delivery on effectiveness is unclear and studies are needed which will allow this issue to be investigated. More generally, where future research takes place in service settings, collecting data on costs should be part of the project.
5. An issue linked to mode of delivery and costs is that the interventions typically include a number of different ways both to train parents in behaviour modification principles and techniques, and to support them as they implement these skills. There is extremely limited evidence, however, on which elements of the interventions are necessary to achieving positive changes.
6. From the evidence reviewed, it would seem that generic parenting interventions can be effective in addressing behaviour problems for some families with a child with learning difficulties. What is not clear is whether they are more or less effective than interventions which are modified or developed specifically for children with learning difficulties. Research which explores this, and which also identifies ways in which generic parenting programmes need to be adapted to make them effective when used with families with a child with learning difficulties, is therefore required.
7. Most of the studies were not concerned with children with behavioural difficulties who had already been referred to a secondary or tertiary service for intervention. This may be an indication of a lack of services as opposed to severity of the behaviour problem. Alternatively, it may be that parents do not play an active role in modifying very severe behaviour problems, in which case such evaluations would have been excluded from this review. Thus this apparent gap in the evidence may be spurious. However, a clearer understanding of this issue would be helpful.
8. A number of studies highlight the difficulty of maintaining change in child behaviour and/or parenting strategies. Including a follow-up stage in research in this field is highly desirable. Research which, in addition, identifies the most effective ways to support or maintain improvements gained from an intervention would be extremely valuable.

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Appendix A

Search Strategy

Search strategies

The search strategies used to search the databases are described in detail below.

Cochrane Database of Systematic Reviews (CDSR), DARE and CENTRAL

- #1 (infant* or baby or babies or toddler* or child* or preschool* or adolescen*):ti,ab,kw
- #2 MeSH descriptor Disabled Persons explode all trees
- #3 MeSH descriptor Child Development Disorders, Pervasive explode all trees
- #4 MeSH descriptor Communication Disorders explode all trees
- #5 MeSH descriptor Developmental Disabilities explode all trees
- #6 MeSH descriptor Learning Disorders explode all trees
- #7 MeSH descriptor Mental Retardation explode all trees
- #8 MeSH descriptor Motor Skills Disorders explode all trees
- #9 (#2 OR #3 OR #4 OR #5 OR #6 OR #7 OR #8)
- #10 ((disabled or disability or disabilities or handicap* or retard*) near/3 (infant* or baby or babies or toddler* or child or children or preschool* or teenager* or adolescent* or pupil* or "school student*")):ti,ab
- #11 (intellectual* impair* near/3 (infant* or baby or babies or toddler* or child or children or preschool* or teenager* or adolescent* or pupil* or "school student*")):ti,ab
- #12 ((complex or special) near/3 needs near (infant* or baby or babies or toddler* or child or children or preschool* or teenager* or adolescent* or pupil* or "school student*")):ti,ab
- #13 ("life limit*" or "life threaten*") near (infant* or baby or babies or toddler* or child or children or preschool* or teenager* or adolescent* or pupil* or "school student*"):ti,ab
- #14 (learning near/2 disorder* near/3 (infant* or baby or babies or toddler* or child or children or preschool* or teenager* or adolescent* or pupil* or "school student*")):ti,ab
- #15 (learning near/2 difficult* near/3 (infant* or baby or babies or toddler* or child or children or preschool* or teenager* or adolescent* or pupil* or "school student*")):ti,ab
- #16 (development* near/5 (disorder* or delay*) near/5 (infant* or baby or babies or toddler* or child or children or preschool* or teenager* or adolescent* or pupil* or "school student*")):ti,ab
- #17 (technolog* depend* near/3 (infant* or baby or babies or toddler* or child or children or preschool* or teenager* or adolescent* or pupil* or "school student*")):ti,ab
- #18 ((cerebral palsy or down*2 syndrome) near/3 (infant* or baby or babies or toddler* or child or children or preschool* or teenager* or adolescent* or pupil* or "school student*")):ti,ab
- #19 ((autist* or asperger* or blindness or deaf or deafness or adhd or attention deficit) near/3 (infant* or baby or babies or toddler* or child or children or preschool* or teenager* or adolescent* or pupil* or "school student*")):ti,ab
- #20 (blind near/1 (infant* or baby or babies or toddler* or child or children or preschool* or teenager* or adolescent* or "school student*")):ti,ab
- #21 (#10 OR #11 OR #12 OR #13 OR #14 OR #15 OR #16 OR #17 OR #18 OR #19 OR #20)
- #22 ((#1 AND #9) OR #21)
- #23 MeSH descriptor Behavior Therapy explode all trees
- #24 MeSH descriptor Reinforcement (Psychology) explode all trees
- #25 MeSH descriptor Relaxation Techniques explode all trees
- #26 MeSH descriptor Relaxation explode all trees
- #27 (antecedent or abc or punishment* or punishing or punitive or "early intervention"):ti,ab
- #28 "applied behav* analysis":ti,ab
- #29 (negative near/3 (technique* or consequence* or reinforcement)):ti,ab
- #30 (behav* near/3 (approach* or intervention* or program* or therap* or treatment* or skills or modification or prompt*)):ti,ab
- #31 (behav* near/3 (shaping or strateg* or technique* or support or observation or function* or training or management or managing)):ti,ab

- #32 (biofeedback or chaining or "contingency management" or desensiti* or extinction or faded or fading or fct):ti,ab
- #33 (communication near/3 intervention*):ti,ab
- #34 ("functional analysis" or "functional communication training"):ti,ab
- #35 (negative near/3 (technique* or consequence* or reinforcement)):ti,ab
- #36 ("non aversive" or nonaversive or "omission training"):ti,ab
- #37 (parent* near/3 (management or training or skill*)):ti,ab
- #38 ("positive behav*" or "positive intervention*" or "positive programming" or "positive reinforcement"):ti,ab
- #39 ("psychological methods" or reinforce* or relaxation or "response cost*" or seclusion):ti,ab
- #40 (skills near/3 (training or teaching or program*)):ti,ab
- #41 ("social learning") near/3 (intervention* or therap* or treatment* or program* or approach* or technique* or strateg*):ti,ab
- #42 (snoezelen or "social problem solving" or "time out*" or timeout*):ti,ab
- #43 (#23 OR #24 OR #25 OR #26 OR #27 OR #28 OR #29 OR #30 OR #31 OR #32 OR #33 OR #34 OR #35 OR #36 OR #37 OR #38 OR #39 OR #40 OR #41 OR #42)
- #44 (#22 AND #43)
- #45 MeSH descriptor Anxiety, Separation explode all trees
- #46 MeSH descriptor Impulse Control Disorders explode all trees
- #47 MeSH descriptor Personality Disorders explode all trees
- #48 MeSH descriptor Impulsive Behavior explode all trees
- #49 MeSH descriptor Aggression explode all trees
- #50 MeSH descriptor Anger explode all trees
- #51 MeSH descriptor Attention Deficit and Disruptive Behavior Disorders explode all trees
- #52 MeSH descriptor Child Behavior Disorders explode all trees
- #53 MeSH descriptor Elimination Disorders explode all trees
- #54 MeSH descriptor Feeding and Eating Disorders of Childhood explode all trees
- #55 MeSH descriptor Mutism explode all trees
- #56 (noncompliant* or "non compliant*"):ti,ab
- #57 ((challenging* or problem* or destructive or maladaptive or inappropriate or disorder*) near/3 (behav* or conduct)):ti,ab
- #58 (anger or aggressi* or oppositional):ti,ab
- #59 (#45 OR #46 OR #47 OR #48 OR #49 OR #50 OR #51 OR #52 OR #53 OR #54 OR #55 OR #56 OR #57 OR #58)
- #60 (#44 AND #59)
- #61 (disabled or disability or disabilities or handicap* or retard*):ti,ab
- #62 "intellectual* impair*":ti,ab
- #63 ((complex or special) near/3 needs):ti,ab
- #64 ("life limit*" or "life threaten*"):ti,ab
- #65 ("learning disorder*" or "learning difficult*"):ti,ab
- #66 (development* near/5 (disorder* or delay*)):ti,ab
- #67 (technolog* near/2 depend*):ti,ab
- #68 ("cerebral palsy" or "down* syndrome"):ti,ab
- #69 (autist* or asperger* or blindness or deaf or deafness or adhd or "attention deficit"):ti,ab
- #70 (blind) near/1 (people or person or persons or individual or individuals):ti,ab
- #71 (#61 OR #62 OR #63 OR #64 OR #65 OR #66 OR #67 OR #68 OR #69 OR #70)
- #72 (#43 AND #59 AND #71)
- #73 (#72 AND NOT #60)
- #74 (#72 AND NOT #60)
- #75 review*:ti
- #76 (#73 AND #75)

The results of set 60 (disabled children) and set 76 (disabled people) were downloaded.

MEDLINE, Ovid MEDLINE(R) In-Process & Other Non-Indexed Citations and Ovid MEDLINE(R) <1950 to Present>

- 1 adolescent/ or exp child/ or infant/ (2121808)
- 2 exp disabled persons/ (36004)
- 3 exp child development disorders, pervasive/ (14392)
- 4 exp communication disorders/ (43636)
- 5 developmental disabilities/ (10336)
- 6 exp learning disorders/ (15633)
- 7 mental retardation/ (42249)
- 8 motor skills disorder/ (1207)
- 9 ((disabled or disability or disabilities or handicap\$ or retard\$) adj3 (infant\$ or baby or babies or toddler\$ or child or children or preschool\$ or teenager\$ or adolescent\$ or pupil\$ or high school student\$)).ti,ab. (14958)
- 10 (intellectual\$ impair\$ adj3 (infant\$ or baby or babies or toddler\$ or child or children or preschool\$ or teenager\$ or adolescent\$ or pupil\$ or high school student\$)).ti,ab. (52)
- 11 ((complex or special) adj3 needs adj3 (infant\$ or baby or babies or toddler\$ or child or children or preschool\$ or teenager\$ or adolescent\$ or pupil\$ or high school student\$)).ti,ab. (1171)
- 12 (life adj (limit\$ or threaten\$) adj3 (infant\$ or baby or babies or toddler\$ or child or children or preschool\$ or teenager\$ or adolescent\$ or pupil\$ or high school student\$)).ti,ab. (690)
- 13 (learning disorder\$ adj3 (infant\$ or baby or babies or toddler\$ or child or children or preschool\$ or teenager\$ or adolescent\$ or pupil\$ or high school student\$)).ti,ab. (122)
- 14 (learning difficult\$ adj3 (infant\$ or baby or babies or toddler\$ or child or children or preschool\$ or teenager\$ or adolescent\$ or pupil\$ or high school student\$)).ti,ab. (234)
- 15 (development\$ adj5 (disorder\$ or delay\$) adj5 (infant\$ or baby or babies or toddler\$ or child or children or preschool\$ or teenager\$ or adolescent\$ or pupil\$ or high school student\$)).ti,ab. (3222)
- 16 (technolog\$ depend\$ adj3 (infant\$ or baby or babies or toddler\$ or child or children or preschool\$ or teenager\$ or adolescent\$ or pupil\$ or high school student\$)).ti,ab. (89)
- 17 ((cerebral palsy or down\$2 syndrome) adj3 (infant\$ or baby or babies or toddler\$ or child or children or preschool\$ or teenager\$ or adolescent\$ or pupil\$ or high school student\$)).ti,ab. (6702)
- 18 ((autist\$ or asperger\$ or blindness or deaf or deafness or adhd or attention deficit) adj3 (infant\$ or baby or babies or toddler\$ or child or children or preschool\$ or teenager\$ or adolescent\$ or pupil\$ or high school student\$)).ti,ab. (9770)
- 19 (blind adj (infant\$ or baby or babies or toddler\$ or child or children or preschool\$ or teenager\$ or adolescent\$ or high school student\$)).ti,ab. (459)
- 20 or/9-19 (35613)
- 21 (1 and (2 or 3 or 4 or 5 or 6 or 7 or 8)) or 20 (93759)
- 22 abc.ti,ab. (12033)
- 23 antecedent.ti,ab. (5249)
- 24 early intervention\$.ti,ab. (6373)
- 25 (punishment\$ or punishing or punitive).ti,ab. (4091)
- 26 Applied behav\$ analysis.ti,ab. (121)
- 27 (Aversive adj3 (consequence\$ or intervention\$ or technique\$ or therap\$ or treatment\$)).ti,ab. (272)
- 28 (Behav\$ adj3 (approach\$ or intervention\$ or program\$ or therap\$ or treatment\$ or Skills or modification or prompt\$)).ti,ab. (29353)
- 29 exp Behavior Therapy/ (37634)
- 30 (Behav\$ adj3 (shaping or strateg\$ or technique\$ or support or observation or function\$ or training or management or managing)).ti,ab. (19628)
- 31 biofeedback.ti,ab. (4050)
- 32 exp "Reinforcement (Psychology)"/ (30025)

33 chaining.ti,ab. (246)
 34 (Communication adj3 intervention\$.ti,ab. (473)
 35 contingency management.ti,ab. (386)
 36 desensiti\$.ti,ab. (20498)
 37 extinction.ti,ab. (12570)
 38 (faded or fading).ti,ab. (2705)
 39 fct.ti,ab. (232)
 40 Functional analysis.ti,ab. (10488)
 41 Functional communication training.ti,ab. (54)
 42 (Negative adj3 (technique\$ or consequence\$ or reinforcement)).ti,ab. (4481)
 43 Non aversive.ti,ab. (81)
 44 nonaversive.ti,ab. (107)
 45 Omission training.ti,ab. (11)
 46 (Parent\$ adj3 (management or training or skill\$)).ti,ab. (1886)
 47 Positive behav\$.ti,ab. (480)
 48 Positive intervention\$.ti,ab. (90)
 49 Positive programming.ti,ab. (6)
 50 Positive reinforcement.ti,ab. (858)
 51 Psychological methods.ti,ab. (263)
 52 (Reinforcement or reinforcing or reinforcer\$.ti,ab. (24141)
 53 Relaxation Techniques/ (5011)
 54 Relaxation/ (1531)
 55 relaxation.ti,ab. (66385)
 56 Response cost\$.ti,ab. (177)
 57 Seclusion.ti,ab. (661)
 58 (skills adj3 (training or teaching or program\$)).ti,ab. (5732)
 59 Snoezelen.ti,ab. (59)
 60 (Social learning adj3 (intervention\$ or therap\$ or treatment\$ or program\$ or approach\$ or technique\$ or strateg\$)).ti,ab. (112)
 61 Social problem solving.ti,ab. (252)
 62 (Time out or time outs or timeout\$ or stimulat\$.ti,ab. (751029)
 63 or/22-62 (981483)
 64 21 and 63 (7496)
 65 limit 64 to (english language and yr="1980 - 2008") (5685)
 66 Case Reports/ (1417431)
 67 (letter or note or editorial or comment).pt. (995913)
 68 65 not (66 or 67) (4798)
 69 anxiety, separation/ (1605)
 70 exp impulse control disorders/ (3697)
 71 exp personality disorders/ (26442)
 72 exp impulsive behavior/ (6634)
 73 aggression/ or exp anger/ (25236)
 74 exp "attention deficit and disruptive behavior disorders"/ (14488)
 75 child behavior disorders/ (15648)
 76 exp elimination disorders/ (4427)
 77 exp "feeding and eating disorders of childhood"/ (972)
 78 mutism/ (759)
 79 (noncompliant\$ or non compliant\$.ti,ab. (7626)
 80 ((challenging\$ or problem\$ or destructive or maladaptive or inappropriate) adj3 behav\$.ti,ab. (14723)
 81 ((challenging\$ or problem\$ or destructive or maladaptive or inappropriate) adj3 conduct).ti,ab. (1252)
 82 (anger or aggressi\$.ti,ab. (97360)
 83 ((conduct or behav\$) adj3 disorder\$.ti,ab. (9990)
 84 oppositional.ti,ab. (1386)

85 or/69-84 (194499)
 86 68 and 85 (1511)
 87 ((disabled or disability or disabilities or handicap\$ or retard\$) adj3 (people or person or persons or individual or individuals)).ti,ab. (10779)
 88 (intellectual\$ impair\$ adj3 (people or person or persons or individual or individuals)).ti,ab. (24)
 89 ((complex or special) adj3 needs adj3 (people or person or persons or individual or individuals)).ti,ab. (277)
 90 (life adj (limit\$ or threaten\$) adj3 (people or person or persons or individual or individuals)).ti,ab. (218)
 91 (learning disorder\$ adj3 (people or person or persons or individual or individuals)).ti,ab. (1)
 92 (learning difficult\$ adj3 (people or person or persons or individual or individuals)).ti,ab. (85)
 93 (development\$ adj5 (disorder\$ or delay\$) adj5 (people or person or persons or individual or individuals)).ti,ab. (299)
 94 (technolog\$ depend\$ adj3 (people or person or persons or individual or individuals)).ti,ab. (6)
 95 ((cerebral palsy or down\$2 syndrome) adj3 (people or person or persons or individual or individuals)).ti,ab. (1229)
 96 ((autist\$ or asperger\$ or blindness or deaf or deafness or adhd or attention deficit) adj3 (people or person or persons or individual or individuals)).ti,ab. (1796)
 97 (blind adj (people or person or persons or individual or individuals)).ti,ab. (565)
 98 or/87-97 (14897)
 99 review.ti. or review.pt. (1505874)
 100 98 and 99 (1886)
 101 limit 100 to (english language and yr="1980 - 2008") (1703)
 102 101 and 63 and 85 (79)

Records from set 86 and set 103 were downloaded.

EMBASE, OvidSP, <1980 to 2008 Week 38>

1 exp adolescent/ or exp child/ or exp infant/ (832347)
 2 exp autism/ or exp behavior disorder/ or exp learning disorder/ or exp mental deficiency/ or exp developmental disorder/ or exp disabled person/ or exp handicapped child/ (251930)
 3 ((disabled or disability or disabilities or handicap\$ or retard\$) adj3 (infant\$ or baby or babies or toddler\$ or child or children or preschool\$ or teenager\$ or adolescent\$ or pupil\$ or high school student\$)).ti,ab. (8390)
 4 (intellectual\$ impair\$ adj3 (infant\$ or baby or babies or toddler\$ or child or children or preschool\$ or teenager\$ or adolescent\$ or pupil\$ or high school student\$)).ti,ab. (43)
 5 ((complex or special) adj3 needs adj3 (infant\$ or baby or babies or toddler\$ or child or children or preschool\$ or teenager\$ or adolescent\$ or pupil\$ or high school student\$)).ti,ab. (701)
 6 (life adj (limit\$ or threaten\$) adj3 (infant\$ or baby or babies or toddler\$ or child or children or preschool\$ or teenager\$ or adolescent\$ or pupil\$ or high school student\$)).ti,ab. (573)
 7 (learning disorder\$ adj3 (infant\$ or baby or babies or toddler\$ or child or children or preschool\$ or teenager\$ or adolescent\$ or pupil\$ or high school student\$)).ti,ab. (82)
 8 (learning difficult\$ adj3 (infant\$ or baby or babies or toddler\$ or child or children or preschool\$ or teenager\$ or adolescent\$ or pupil\$ or high school student\$)).ti,ab. (184)
 9 (development\$ adj5 (disorder\$ or delay\$) adj5 (infant\$ or baby or babies or toddler\$ or child or children or preschool\$ or teenager\$ or adolescent\$ or pupil\$ or high school student\$)).ti,ab. (2598)

- 10 (technolog\$ depend\$ adj3 (infant\$ or baby or babies or toddler\$ or child or children or preschool\$ or teenager\$ or adolescent\$ or pupil\$ or high school student\$)).ti,ab. (31)
- 11 ((cerebral palsy or down\$2 syndrome) adj3 (infant\$ or baby or babies or toddler\$ or child or children or preschool\$ or teenager\$ or adolescent\$ or pupil\$ or high school student\$)).ti,ab. (4920)
- 12 ((autist\$ or asperger\$ or blindness or deaf or deafness or adhd or attention deficit) adj3 (infant\$ or baby or babies or toddler\$ or child or children or preschool\$ or teenager\$ or adolescent\$ or pupil\$ or high school student\$)).ti,ab. (6933)
- 13 (blind adj (infant\$ or baby or babies or toddler\$ or child or children or preschool\$ or teenager\$ or adolescent\$ or high school student\$)).ti,ab. (325)
- 14 or/3-13 (23380)
- 15 (1 and 2) or 14 (86977)
- 16 abc.ti,ab. (9175)
- 17 antecedent.ti,ab. (3942)
- 18 early intervention\$.ti,ab. (5309)
- 19 (punishment\$ or punishing or punitive).ti,ab. (2615)
- 20 applied behav\$ analysis.ti,ab. (91)
- 21 (aversive adj3 (consequence\$ or intervention\$ or technique\$ or therap\$ or treatment\$)).ti,ab. (222)
- 22 (behav\$ adj3 (approach\$ or intervention\$ or program\$ or therap\$ or treatment\$ or Skills or modification or prompt\$)).ti,ab. (25530)
- 23 exp aversion therapy/ or exp behavior therapy/ or exp cognitive behavioral stress management/ or exp cognitive rehabilitation/ or exp cognitive therapy/ or exp relaxation training/ (28761)
- 24 (behav\$ adj3 (shaping or strateg\$ or technique\$ or support or observation or function\$ or training or management or managing)).ti,ab. (15141)
- 25 biofeedback.ti,ab. (3317)
- 26 exp reinforcement/ (9628)
- 27 chaining.ti,ab. (155)
- 28 (Communication adj3 intervention\$).ti,ab. (325)
- 29 contingency management.ti,ab. (316)
- 30 (desensiti\$ or extinction or faded or fading or fct).ti,ab. (27385)
- 31 functional analysis.ti,ab. (7901)
- 32 functional communication training.ti,ab. (19)
- 33 (Negative adj3 (technique\$ or consequence\$ or reinforcement)).ti,ab. (3257)
- 34 (non aversive or nonaversive).ti,ab. (157)
- 35 omission training.ti,ab. (11)
- 36 (parent\$ adj3 (management or training or skill\$)).ti,ab. (1377)
- 37 positive behav\$.ti,ab. (324)
- 38 positive intervention\$.ti,ab. (72)
- 39 positive programming.ti,ab. (5)
- 40 positive reinforcement.ti,ab. (534)
- 41 psychological methods.ti,ab. (147)
- 42 (reinforcement or reinforcing or reinforcer\$).ti,ab. (15898)
- 43 relaxation/ (6575)
- 44 relaxation.ti,ab. (50427)
- 45 response cost\$.ti,ab. (137)
- 46 Seclusion.ti,ab. (382)
- 47 (skills adj3 (training or teaching or program\$)).ti,ab. (4292)
- 48 Snoezelen.ti,ab. (33)
- 49 (social learning adj3 (intervention\$ or therap\$ or treatment\$ or program\$ or approach\$ or technique\$ or strateg\$)).ti,ab. (102)
- 50 social problem solving.ti,ab. (247)
- 51 (time out or time outs or timeout\$ or stimulat\$).ti,ab. (599007)
- 52 or/16-51 (767484)

53 exp attention deficit disorder/ or exp disruptive behavior/ or exp oppositional defiant disorder/ or exp eating disorder/ or exp impulse control disorder/ or exp psychomotor disorder/ (56641)

54 exp Separation Anxiety/ (1370)

55 exp Impulsiveness/ (4528)

56 aggression/ or exp anger/ (20643)

57 exp Incontinence/ (28884)

58 mutism/ (824)

59 (noncompliant\$ or non compliant\$).ti,ab. (6496)

60 ((challenging\$ or problem\$ or destructive or maladaptive or inappropriate) adj3 behav\$).ti,ab. (11458)

61 ((challenging\$ or problem\$ or destructive or maladaptive or inappropriate) adj3 conduct).ti,ab. (911)

62 (anger or aggressi\$).ti,ab. (77094)

63 ((conduct or behav\$) adj3 disorder\$).ti,ab. (8362)

64 oppositional.ti,ab. (1135)

65 or/53-64 (189720)

66 ((disabled or disability or disabilities or handicap\$ or retard\$) adj3 (people or person or persons or individual or individuals)).ti,ab. (9150)

67 (intellectual\$ impair\$ adj3 (people or person or persons or individual or individuals)).ti,ab. (22)

68 ((complex or special) adj3 needs adj3 (people or person or persons or individual or individuals)).ti,ab. (151)

69 (life adj (limit\$ or threaten\$) adj3 (people or person or persons or individual or individuals)).ti,ab. (159)

70 (learning disorder\$ adj3 (people or person or persons or individual or individuals)).ti,ab. (2)

71 (learning difficult\$ adj3 (people or person or persons or individual or individuals)).ti,ab. (77)

72 (development\$ adj5 (disorder\$ or delay\$) adj5 (people or person or persons or individual or individuals)).ti,ab. (260)

73 (technolog\$ depend\$ adj3 (people or person or persons or individual or individuals)).ti,ab. (6)

74 ((cerebral palsy or down\$2 syndrome) adj3 (people or person or persons or individual or individuals)).ti,ab. (1030)

75 ((autist\$ or asperger\$ or blindness or deaf or deafness or adhd or attention deficit) adj3 (people or person or persons or individual or individuals)).ti,ab. (1372)

76 (blind adj (people or person or persons or individual or individuals)).ti,ab. (548)

77 or/66-76 (12420)

78 review.ti. or review.pt. (957656)

79 77 and 78 (2035)

80 15 and 52 and 65 (3510)

81 Case Report/ (1006507)

82 (letter or note or editorial or comment).pt. (877963)

83 80 not (81 or 82) (2957)

84 limit 83 to (english language and yr="1980 - 2008") (2668)

85 52 and 65 and 79 (90)

86 limit 85 to (english language and yr="1980 - 2008") (88)

87 86 not 84 (75)

Records from set 84 and set 87 were downloaded.

PsycINFO, OvidSP, <1806 to September Week 2 2008>

- 1 ("180" or "120" or "160" or "100" or "140" or "200").ag. (467558)
- 2 exp movement disorders/ or exp neuromuscular disorders/ or exp paralysis/ or paraplegia/ or poliomyelitis/ or quadriplegia/ or exp hearing disorders/ or exp vision disorders/ or chronic pain/ or exp head injuries/ or exp spinal cord injuries/ (47571)
- 3 exp communication disorders/ or exp congenital disorders/ or exp learning disorders/ or exp autism/ or exp brain damage/ or exp mental retardation/ or exp special needs/ or exp developmental disabilities/ or exp disabilities/ (134917)
- 4 1 and (2 or 3) (62854)
- 5 ((disabled or disability or disabilities or handicap\$ or retard\$) adj3 (infant\$ or baby or babies or toddler\$ or child or children or preschool\$ or teenager\$ or adolescent\$ or pupil\$ or high school student\$)).ti,ab. (25267)
- 6 (intellectual\$ impair\$ adj3 (infant\$ or baby or babies or toddler\$ or child or children or preschool\$ or teenager\$ or adolescent\$ or pupil\$ or high school student\$)).ti,ab. (50)
- 7 (life adj (limit\$ or threaten\$) adj3 (infant\$ or baby or babies or toddler\$ or child or children or preschool\$ or teenager\$ or adolescent\$ or pupil\$ or high school student\$)).ti,ab. (136)
- 8 (learning disorder\$ adj3 (infant\$ or baby or babies or toddler\$ or child or children or preschool\$ or teenager\$ or adolescent\$ or pupil\$ or high school student\$)).ti,ab. (206)
- 9 (learning difficult\$ adj3 (infant\$ or baby or babies or toddler\$ or child or children or preschool\$ or teenager\$ or adolescent\$ or pupil\$ or high school student\$)).ti,ab. (610)
- 10 (development\$ adj5 (disorder\$ or delay\$) adj5 (infant\$ or baby or babies or toddler\$ or child or children or preschool\$ or teenager\$ or adolescent\$ or pupil\$ or high school student\$)).ti,ab. (3213)
- 11 (technolog\$ depend\$ adj3 (infant\$ or baby or babies or toddler\$ or child or children or preschool\$ or teenager\$ or adolescent\$ or pupil\$ or high school student\$)).ti,ab. (32)
- 12 ((cerebral palsy or down\$2 syndrome) adj3 (infant\$ or baby or babies or toddler\$ or child or children or preschool\$ or teenager\$ or adolescent\$ or pupil\$ or high school student\$)).ti,ab. (2930)
- 13 ((autist\$ or asperger\$ or blindness or deaf or deafness or adhd or attention deficit) adj3 (infant\$ or baby or babies or toddler\$ or child or children or preschool\$ or teenager\$ or adolescent\$ or pupil\$ or high school student\$)).ti,ab. (12830)
- 14 (blind adj (infant\$ or baby or babies or toddler\$ or child or children or preschool\$ or teenager\$ or adolescent\$ or high school student\$)).ti,ab. (1107)
- 15 or/5-14 (44019)
- 16 4 or 15 (85555)
- 17 exp reinforcement/ (36237)
- 18 exp behavior analysis/ (7584)
- 19 stimulation/ or aversive stimulation/ (4883)
- 20 aversion/ or exp aversion conditioning/ or exp aversion therapy/ (4805)
- 21 exp behavior therapy/ (15635)
- 22 behavior modification/ (9998)
- 23 cognitive behavior therapy/ (4687)
- 24 parent training/ (4612)
- 25 biofeedback/ or biofeedback training/ (4335)
- 26 communication skills training/ (1728)
- 27 contingency management/ (1467)
- 28 "extinction (learning)"/ (5469)
- 29 functional analysis/ (526)
- 30 "fading (conditioning)"/ (167)
- 31 omission training/ (24)
- 32 progressive relaxation therapy/ or exp relaxation therapy/ (3402)
- 33 exp skill learning/ (3665)
- 34 exp social learning/ (8412)

35 social skills training/ (3388)
 36 time out/ (223)
 37 abc.ti,ab. (1058)
 38 antecedent.ti,ab. (4213)
 39 early intervention\$.ti,ab. (5411)
 40 (punishment\$ or punishing or punitive).ti,ab. (13711)
 41 Applied behav\$ analysis.ti,ab. (872)
 42 (Aversive adj3 (consequence\$ or intervention\$ or technique\$ or therap\$ or treatment\$)).ti,ab. (650)
 43 (Behav\$ adj3 (approach\$ or intervention\$ or program\$ or therap\$ or treatment\$ or Skills or modification or prompt\$)).ti,ab. (51855)
 44 (Behav\$ adj3 (shaping or strateg\$ or technique\$ or support or observation or function\$ or training or management or managing)).ti,ab. (29618)
 45 biofeedback.ti,ab. (4273)
 46 chaining.ti,ab. (540)
 47 (Communication adj3 intervention\$).ti,ab. (603)
 48 contingency management.ti,ab. (852)
 49 desensiti\$.ti,ab. (4644)
 50 extinction.ti,ab. (12954)
 51 (faded or fading).ti,ab. (1655)
 52 fct.ti,ab. (77)
 53 Functional analysis.ti,ab. (1609)
 54 Functional communication training.ti,ab. (125)
 55 (Negative adj3 (technique\$ or consequence\$ or reinforcement)).ti,ab. (5261)
 56 Non aversive.ti,ab. (72)
 57 nonaversive.ti,ab. (275)
 58 Omission training.ti,ab. (83)
 59 (Parent\$ adj3 (management or training or skill\$)).ti,ab. (4890)
 60 Positive behav\$.ti,ab. (1559)
 61 Positive intervention\$.ti,ab. (111)
 62 Positive programming.ti,ab. (14)
 63 Positive reinforcement.ti,ab. (2115)
 64 Psychological methods.ti,ab. (715)
 65 (Reinforcement or reinforcing or reinforcer\$).ti,ab. (41195)
 66 relaxation.ti,ab. (10865)
 67 Response cost\$.ti,ab. (502)
 68 Seclusion.ti,ab. (697)
 69 (skills adj3 (training or teaching or program\$)).ti,ab. (10526)
 70 Snoezelen.ti,ab. (49)
 71 (Social learning adj3 (intervention\$ or therap\$ or treatment\$ or program\$ or approach\$ or technique\$ or strateg\$)).ti,ab. (546)
 72 Social problem solving.ti,ab. (1050)
 73 (Time out or time outs or timeout\$ or stimulat\$).ti,ab. (73072)
 74 or/17-73 (282634)
 75 16 and 74 (13428)
 76 limit 75 to (english language and yr="1980 - 2009") (10525)
 77 clinical case study.md. (45481)
 78 letter.dt. (8041)
 79 editorial.dt. (13212)
 80 or/77-79 (63735)
 81 76 not 80 (9803)
 82 exp anger/ or exp anxiety/ (47894)
 83 anxiety disorders/ or separation anxiety/ (10947)
 84 exp impulse control disorders/ or exp conduct disorder/ or exp impulsiveness/ (6903)
 85 exp personality disorders/ (16788)

86 aggressive behavior/ (17249)
 87 violence/ (16547)
 88 aggressiveness/ (2908)
 89 exp behavior problems/ (19096)
 90 behavior disorders/ (7149)
 91 exp eating disorders/ (17707)
 92 (noncompliant\$ or non compliant\$).ti,ab. (3148)
 93 ((challenging\$ or problem\$ or destructive or maladaptive or inappropriate) adj3
 behav\$).ti,ab. (31505)
 94 ((challenging\$ or problem\$ or destructive or maladaptive or inappropriate) adj3
 conduct).ti,ab. (2205)
 95 (anger or aggressi\$).ti,ab. (63916)
 96 ((conduct or behav\$) adj3 disorder\$).ti,ab. (15567)
 97 oppositional.ti,ab. (2653)
 98 exp mutism/ (638)
 99 or/82-98 (212366)
 100 81 and 99 (2190)
 101 ((disabled or disability or disabilities or handicap\$ or retard\$) adj3 (people or person
 or persons or individual or individuals)).ti,ab. (17418)
 102 (intellectual\$ impair\$ adj3 (people or person or persons or individual or
 individuals)).ti,ab. (38)
 103 ((complex or special) adj3 needs adj3 (people or person or persons or individual or
 individuals)).ti,ab. (253)
 104 (life adj (limit\$ or threaten\$) adj3 (people or person or persons or individual or
 individuals)).ti,ab. (101)
 105 (learning disorder\$ adj3 (people or person or persons or individual or
 individuals)).ti,ab. (12)
 106 (learning difficult\$ adj3 (people or person or persons or individual or individuals)).ti,ab.
 (275)
 107 (development\$ adj5 (disorder\$ or delay\$) adj5 (people or person or persons or
 individual or individuals)).ti,ab. (366)
 108 (technolog\$ depend\$ adj3 (people or person or persons or individual or
 individuals)).ti,ab. (0)
 109 ((cerebral palsy or down\$2 syndrome) adj3 (people or person or persons or individual
 or individuals)).ti,ab. (899)
 110 ((autist\$ or asperger\$ or blindness or deaf or deafness or adhd or attention deficit)
 adj3 (people or person or persons or individual or individuals)).ti,ab. (2548)
 111 (blind adj (people or person or persons or individual or individuals)).ti,ab. (853)
 112 or/101-111 (22165)
 113 (2 or 3) and (people or person or persons or individual or individuals).ti,ab. (39203)
 114 112 or 113 (46509)
 115 from 100 keep 1-2000 (2000)
 116 from 100 keep 2001-2190 (190)
 117 114 and 74 and 99 (1544)
 118 limit 117 to (english language and yr="1980 - 2009") (1422)
 119 "literature review"/ (24189)
 120 ("800" or "830" or "1200").md. (7526)
 121 review.ti. (76863)
 122 or/119-121 (101078)
 123 118 and 122 (114)
 124 from 123 keep 1-114 (114)

Records from set 100 and set 124 were downloaded.

CINAHL, OvidSP, <1982 to September Week 3 2008>

- 1 exp adolescent/ or exp child/ or exp infant/ (241149)
- 2 exp Mental Disorders Diagnosed in Childhood/ (20793)
- 3 exp Mental Retardation/ (7952)
- 4 exp Developmental Disabilities/ (2337)
- 5 exp Communicative Disorders/ (11110)
- 6 exp Child, Disabled/ (4146)
- 7 ((disabled or disability or disabilities or handicap\$ or retard\$) adj3 (infant\$ or baby or babies or toddler\$ or child or children or preschool\$ or teenager\$ or adolescent\$ or pupil\$ or high school student\$)).ti,ab. (2899)
- 8 (intellectual\$ impair\$ adj3 (infant\$ or baby or babies or toddler\$ or child or children or preschool\$ or teenager\$ or adolescent\$ or pupil\$ or high school student\$)).ti,ab. (19)
- 9 ((complex or special) adj3 needs adj3 (infant\$ or baby or babies or toddler\$ or child or children or preschool\$ or teenager\$ or adolescent\$ or pupil\$ or high school student\$)).ti,ab. (1077)
- 10 (life adj (limit\$ or threaten\$) adj3 (infant\$ or baby or babies or toddler\$ or child or children or preschool\$ or teenager\$ or adolescent\$ or pupil\$ or high school student\$)).ti,ab. (171)
- 11 (learning disorder\$ adj3 (infant\$ or baby or babies or toddler\$ or child or children or preschool\$ or teenager\$ or adolescent\$ or pupil\$ or high school student\$)).ti,ab. (17)
- 12 (learning difficult\$ adj3 (infant\$ or baby or babies or toddler\$ or child or children or preschool\$ or teenager\$ or adolescent\$ or pupil\$ or high school student\$)).ti,ab. (65)
- 13 (development\$ adj5 (disorder\$ or delay\$) adj5 (infant\$ or baby or babies or toddler\$ or child or children or preschool\$ or teenager\$ or adolescent\$ or pupil\$ or high school student\$)).ti,ab. (788)
- 14 (technolog\$ depend\$ adj3 (infant\$ or baby or babies or toddler\$ or child or children or preschool\$ or teenager\$ or adolescent\$ or pupil\$ or high school student\$)).ti,ab. (89)
- 15 ((cerebral palsy or down\$2 syndrome) adj3 (infant\$ or baby or babies or toddler\$ or child or children or preschool\$ or teenager\$ or adolescent\$ or pupil\$ or high school student\$)).ti,ab. (1692)
- 16 ((autist\$ or asperger\$ or blindness or deaf or deafness or adhd or attention deficit) adj3 (infant\$ or baby or babies or toddler\$ or child or children or preschool\$ or teenager\$ or adolescent\$ or pupil\$ or high school student\$)).ti,ab. (1839)
- 17 (blind adj (infant\$ or baby or babies or toddler\$ or child or children or preschool\$ or teenager\$ or adolescent\$ or high school student\$)).ti,ab. (67)
- 18 or/7-17 (8222)
- 19 (1 and (or/2-6)) or 18 (22758)
- 20 (abc or antecedent).ti,ab. (1410)
- 21 early intervention\$.ti,ab. (2362)
- 22 (punishment\$ or punishing or punitive).ti,ab. (759)
- 23 applied behav\$ analysis.ti,ab. (40)
- 24 (aversive adj3 (consequence\$ or intervention\$ or technique\$ or therap\$ or treatment\$)).ti,ab. (26)
- 25 (behav\$ adj3 (approach\$ or intervention\$ or program\$ or therap\$ or treatment\$ or Skills or modification or prompt\$)).ti,ab. (6633)
- 26 (behav\$ adj3 (shaping or strateg\$ or technique\$ or support or observation or function\$ or training or management or managing)).ti,ab. (3850)
- 27 (biofeedback or chaining).ti,ab. (788)
- 28 (Communication adj3 intervention\$.ti,ab. (296)
- 29 contingency management.ti,ab. (101)
- 30 (desensiti\$ or extinction or faded or fading or fct).ti,ab. (712)
- 31 functional analysis.ti,ab. (110)
- 32 functional communication training.ti,ab. (7)
- 33 (Negative adj3 (technique\$ or consequence\$ or reinforcement)).ti,ab. (871)

34 (non aversive or nonaversive).ti,ab. (15)
 35 omission training.ti,ab. (0)
 36 (parent\$ adj3 (management or training or skill\$)).ti,ab. (808)
 37 positive behav\$.ti,ab. (205)
 38 positive intervention\$.ti,ab. (32)
 39 positive programming.ti,ab. (1)
 40 positive reinforcement.ti,ab. (113)
 41 psychological methods.ti,ab. (11)
 42 (reinforcement or reinforcing or reinforcer\$).ti,ab. (1555)
 43 relaxation.ti,ab. (2702)
 44 response cost\$.ti,ab. (15)
 45 seclusion.ti,ab. (342)
 46 (skills adj3 (training or teaching or program\$)).ti,ab. (2143)
 47 Snoezelen.ti,ab. (55)
 48 (social learning adj3 (intervention\$ or therap\$ or treatment\$ or program\$ or approach\$ or technique\$ or strateg\$)).ti,ab. (29)
 49 social problem solving.ti,ab. (82)
 50 (time out or time outs or timeout\$ or stimulat\$).ti,ab. (14230)
 51 exp Behavior Modification/ (11430)
 52 exp "Reinforcement (Psychology)"/ (1263)
 53 or/20-52 (44655)
 54 exp attention deficit hyperactivity disorder/ or exp child behavior disorders/ (5053)
 55 exp Separation Anxiety/ (198)
 56 exp Eating Disorders/ (5004)
 57 exp Impulse Control Disorders/ (677)
 58 exp Social Behavior Disorders/ (26602)
 59 exp Incontinence/ (5358)
 60 exp mutism/ (77)
 61 (noncompliant\$ or non compliant\$).ti,ab. (1421)
 62 ((challenging\$ or problem\$ or destructive or maladaptive or inappropriate) adj3 behav\$).ti,ab. (3720)
 63 ((challenging\$ or problem\$ or destructive or maladaptive or inappropriate) adj3 conduct).ti,ab. (207)
 64 (anger or aggressi\$).ti,ab. (9263)
 65 ((conduct or behav\$) adj3 disorder\$).ti,ab. (1283)
 66 oppositional.ti,ab. (196)
 67 or/54-66 (53483)
 68 ((disabled or disability or disabilities or handicap\$ or retard\$) adj3 (people or person or persons or individual or individuals)).ti,ab. (6314)
 69 (intellectual\$ impair\$ adj3 (people or person or persons or individual or individuals)).ti,ab. (17)
 70 ((complex or special) adj3 needs adj3 (people or person or persons or individual or individuals)).ti,ab. (225)
 71 (life adj (limit\$ or threaten\$) adj3 (people or person or persons or individual or individuals)).ti,ab. (88)
 72 (learning disorder\$ adj3 (people or person or persons or individual or individuals)).ti,ab. (1)
 73 (learning difficult\$ adj3 (people or person or persons or individual or individuals)).ti,ab. (183)
 74 (development\$ adj5 (disorder\$ or delay\$) adj5 (people or person or persons or individual or individuals)).ti,ab. (63)
 75 (technolog\$ depend\$ adj3 (people or person or persons or individual or individuals)).ti,ab. (4)
 76 ((cerebral palsy or down\$2 syndrome) adj3 (people or person or persons or individual or individuals)).ti,ab. (323)

- 77 ((autist\$ or asperger\$ or blindness or deaf or deafness or adhd or attention deficit) adj3 (people or person or persons or individual or individuals)).ti,ab. (500)
- 78 (blind adj (people or person or persons or individual or individuals)).ti,ab. (88)
- 79 or/68-78 (7639)
- 80 limit 79 to "review articles" (493)
- 81 review.ti. or review.pt. (85821)
- 82 (79 and 81) or 80 (550)
- 83 19 and 53 and 67 (880)
- 84 limit 83 to (anecdote or case study or editorial or letter) (126)
- 85 83 not 84 (754)
- 86 limit 85 to (english and yr="1980 - 2008") (744)
- 87 53 and 67 and 82 (17)
- 88 limit 87 to (english and yr="1980 - 2008") (17)
- 89 from 86 keep 1-744 (744)
- 90 from 88 keep 1-17 (17)

Records from set 86 and set 88 were downloaded.

SPECTR and C2-RIPE (Campbell Collaboration),
http://www.campbellcollaboration.org/campbell_library/index.php

The Campbell Library was searched using the following terms:

'Behav aggress challen' (any) in C2 domains 'education' and 'social justice'

SPECTR was searched at <http://geb9101.gse.upenn.edu/RIS/RISWEB.ISA>

Search terms (automatically truncated) :

disab or handicap or retard (in all indexed fields)

HMIC, OvidSP, <September 2008 >

- 1 (abc or antecedent).ti,ab. (120)
- 2 early intervention\$.ti,ab. (239)
- 3 (punishment\$ or punishing or punitive).ti,ab. (271)
- 4 applied behav\$ analysis.ti,ab. (3)
- 5 (aversive adj3 (consequence\$ or intervention\$ or technique\$ or therap\$ or treatment\$)).ti,ab. (7)
- 6 (behav\$ adj3 (approach\$ or intervention\$ or program\$ or therap\$ or treatment\$ or Skills or modification or prompt\$)).ti,ab. (1048)
- 7 (behav\$ adj3 (shaping or strateg\$ or technique\$ or support or observation or function\$ or training or management or managing)).ti,ab. (616)
- 8 (biofeedback or chaining).ti,ab. (7)
- 9 (Communication adj3 intervention\$).ti,ab. (45)
- 10 contingency management.ti,ab. (5)
- 11 (desensiti\$ or extinction or faded or fading or fct).ti,ab. (46)
- 12 functional analysis.ti,ab. (12)
- 13 functional communication training.ti,ab. (1)
- 14 (Negative adj3 (technique\$ or consequence\$ or reinforcement)).ti,ab. (132)
- 15 (non aversive or nonaversive).ti,ab. (0)
- 16 omission training.ti,ab. (1)
- 17 (parent\$ adj3 (management or training or skill\$)).ti,ab. (229)

18 positive behav\$.ti,ab. (15)
19 positive intervention\$.ti,ab. (15)
20 positive programming.ti,ab. (0)
21 positive reinforcement.ti,ab. (9)
22 psychological methods.ti,ab. (6)
23 (reinforcement or reinforcing or reinforcer\$.ti,ab. (254)
24 relaxation.ti,ab. (141)
25 response cost\$.ti,ab. (4)
26 seclusion.ti,ab. (58)
27 (skills adj3 (training or teaching or program\$)).ti,ab. (808)
28 Snoezelen.ti,ab. (12)
29 (social learning adj3 (intervention\$ or therap\$ or treatment\$ or program\$ or approach\$ or technique\$ or strateg\$)).ti,ab. (9)
30 social problem solving.ti,ab. (2)
31 (time out or time outs or timeout\$ or stimulat\$).ti,ab. (17495)
32 exp behavioural control/ (441)
33 exp psychotherapy/ (1962)
34 or/1-33 (22564)
35 exp behaviour disorders/ (6026)
36 exp impulse disorders/ (10)
37 exp aggressive behaviour/ or exp anger/ (182)
38 exp Incontinence/ (313)
39 exp mutism/ (2)
40 (noncompliant\$ or non compliant\$).ti,ab. (170)
41 ((challenging\$ or problem\$ or destructive or maladaptive or inappropriate) adj3 behav\$).ti,ab. (810)
42 ((challenging\$ or problem\$ or destructive or maladaptive or inappropriate) adj3 conduct).ti,ab. (40)
43 (anger or aggressi\$).ti,ab. (694)
44 ((conduct or behav\$) adj3 disorder\$).ti,ab. (192)
45 oppositional.ti,ab. (16)
46 ((disabled or disability or disabilities or handicap\$ or retard\$) adj3 (people or person or persons or individual or individuals)).ti,ab. (5119)
47 (intellectual\$ impair\$ adj3 (people or person or persons or individual or individuals)).ti,ab. (2)
48 ((complex or special) adj3 needs adj3 (people or person or persons or individual or individuals)).ti,ab. (191)
49 (life adj (limit\$ or threaten\$) adj3 (people or person or persons or individual or individuals)).ti,ab. (20)
50 (learning disorder\$ adj3 (people or person or persons or individual or individuals)).ti,ab. (0)
51 (learning difficult\$ adj3 (people or person or persons or individual or individuals)).ti,ab. (906)
52 (development\$ adj5 (disorder\$ or delay\$) adj5 (people or person or persons or individual or individuals)).ti,ab. (20)
53 (technolog\$ depend\$ adj3 (people or person or persons or individual or individuals)).ti,ab. (1)
54 ((cerebral palsy or down\$2 syndrome) adj3 (people or person or persons or individual or individuals)).ti,ab. (35)
55 ((autist\$ or asperger\$ or blindness or deaf or deafness or adhd or attention deficit) adj3 (people or person or persons or individual or individuals)).ti,ab. (248)
56 (blind adj (people or person or persons or individual or individuals)).ti,ab. (52)
57 or/46-56 (6284)
58 exp children/ (12926)
59 exp disabilities/ (27335)

- 60 ((disabled or disability or disabilities or handicap\$ or retard\$) adj3 (infant\$ or baby or babies or toddler\$ or child or children or preschool\$ or teenager\$ or adolescent\$ or pupil\$ or high school student\$)).ti,ab. (1262)
- 61 (intellectual\$ impair\$ adj3 (infant\$ or baby or babies or toddler\$ or child or children or preschool\$ or teenager\$ or adolescent\$ or pupil\$ or high school student\$)).ti,ab. (4)
- 62 ((complex or special) adj3 needs adj3 (infant\$ or baby or babies or toddler\$ or child or children or preschool\$ or teenager\$ or adolescent\$ or pupil\$ or high school student\$)).ti,ab. (280)
- 63 (life adj (limit\$ or threaten\$) adj3 (infant\$ or baby or babies or toddler\$ or child or children or preschool\$ or teenager\$ or adolescent\$ or pupil\$ or high school student\$)).ti,ab. (45)
- 64 (learning disorder\$ adj3 (infant\$ or baby or babies or toddler\$ or child or children or preschool\$ or teenager\$ or adolescent\$ or pupil\$ or high school student\$)).ti,ab. (0)
- 65 (learning difficult\$ adj3 (infant\$ or baby or babies or toddler\$ or child or children or preschool\$ or teenager\$ or adolescent\$ or pupil\$ or high school student\$)).ti,ab. (94)
- 66 (development\$ adj5 (disorder\$ or delay\$) adj5 (infant\$ or baby or babies or toddler\$ or child or children or preschool\$ or teenager\$ or adolescent\$ or pupil\$ or high school student\$)).ti,ab. (31)
- 67 (technolog\$ depend\$ adj3 (infant\$ or baby or babies or toddler\$ or child or children or preschool\$ or teenager\$ or adolescent\$ or pupil\$ or high school student\$)).ti,ab. (5)
- 68 ((cerebral palsy or down\$2 syndrome) adj3 (infant\$ or baby or babies or toddler\$ or child or children or preschool\$ or teenager\$ or adolescent\$ or pupil\$ or high school student\$)).ti,ab. (70)
- 69 ((autist\$ or asperger\$ or blindness or deaf or deafness or adhd or attention deficit) adj3 (infant\$ or baby or babies or toddler\$ or child or children or preschool\$ or teenager\$ or adolescent\$ or pupil\$ or high school student\$)).ti,ab. (180)
- 70 (blind adj (infant\$ or baby or babies or toddler\$ or child or children or preschool\$ or teenager\$ or adolescent\$ or high school student\$)).ti,ab. (20)
- 71 (58 and 59) or (or/60-70) (3603)
- 72 or/35-45 (7962)
- 73 71 and 34 and 72 (146)
- 74 57 and 34 and 72 (62)
- 75 review.mp. [mp=title, other title, abstract, heading words] (17540)
- 76 (74 and 75) not 73 (6)

Records from set 73 and set 76 were downloaded.

NRR archive, <https://portal.nihr.ac.uk/Pages/NRRArchiveSearch.aspx>.

This is a difficult interface to search. Searches have to be constructed with the most general concept first and then more specific concepts used to narrow down the retrieved set. There is no facility to record the search history or to export the results.

(searching in “all fields”):

(1) “child*” or “infant*” or “adolescent*” or “teenage*”

AND

(2) “disab*” or “disorder*” or “handicap*” or “retard*” or “impair*” or special or palsy or syndrome or “autis*” or “asperger*” or “blind*” or “deaf*” or adhd

AND

(3) “behav*” or “challeng*” or “disturb*” or “problem*” or “destruct*” or maladaptive or inappropriate or anger or “aggressi*”

This produced 143 records which were assessed onscreen. 13 potentially relevant records were downloaded.

CERUK, <http://www.ceruk.ac.uk/>

Search terms were entered one by one.

Title-word search for:

disab* or disord* or retard* or handicap* or impair* or adhd or autis* or cerebral or asperger* or blind* or deaf*

AND

psychotherap* or interv* or therap* or relax* or train*

ERIC, Dialog/Datatar

Two search approaches were used:

“A” search = (1) AND (2) AND (3) AND (4)

“B” search = ((2) AND (3) AND (4) AND review) NOT “A”

Searches were limited to English language and publications in the period 1980–2008

(1) CHILDREN

Adolescents.W..DE. OR Children#.W..DE. OR Young-Children#.DE. OR Early-Adolescents.DE. OR Late-Adolescents.DE. OR Secondary-School-Students#.DE. OR Special-Needs-Students.DE. OR Elementary-School-Students.DE.

(infant\$ OR baby OR babies OR toddler\$ OR child OR children OR preschool\$ OR adolescen\$ OR teenage\$).ti,ab.

(2) DISABILITIES

Attention-Deficit-Disorders.DE. OR Behavior-Disorders.DE. OR Communication-Disorders.DE. OR Congenital-Impairments#.DE. OR Developmental-Disabilities.DE. OR Language-Impairments#.DE. OR Learning-Disabilities.DE. OR Pervasive-Developmental-Disorders#.DE. OR Mental-Retardation#.DE. OR Multiple-Disabilities#.DE. OR Physical-Disabilities#.DE. OR Severe-Disabilities#.DE. OR Speech-Impairments#.DE. OR Visual-Impairments#.DE.

(disabled OR disability OR disabilities OR handicap\$ OR retard\$).ti,ab.

(intellectual\$ impair\$).ti,ab.

((complex OR special) ADJ needs).ti,ab.

(life ADJ (limit\$ OR threaten\$)).ti,ab.

(learning ADJ (disorder\$ OR disab\$)).ti,ab.

(technolog\$ ADJ depend\$).ti,ab.

(cerebral ADJ palsy OR down\$2 ADJ syndrome OR autis\$ OR asperger\$ OR blind OR blindness OR deaf OR deafness OR adhd OR attention ADJ deficit).ti,ab.

(3) BEHAVIOURAL PROBLEMS

Separation-Anxiety.W..DE. OR Attention-Deficit-Disorders#.W..DE. OR Behavior-Disorders#.W..DE. OR Antisocial-Behavior#.W..DE. OR Eating-Disorders#.W..DE.

((challenging\$ OR problem\$ OR destructive OR maladaptive OR inappropriate OR disorder\$) NEAR (behav\$ OR conduct)).TI,AB.

(anger OR aggressi\$ OR noncomplan\$ OR (non ADJ complian\$)).TI,AB.

(mutism OR incontinen\$ OR eating ADJ disorder\$ OR antisocial ADJ behav\$).TI,AB.

(personality ADJ disorder\$ OR impulsive ADJ behav\$ OR attention ADJ deficit OR ADHD OR impuls\$ NEAR control OR separation ADJ anxiety).TI,AB.

(4) BEHAVIOURAL INTERVENTIONS

Behavior-Modification#.DE. OR Psychotherapy#.W..DE. OR Reinforcement#.W..DE.
(behav\$ ADJ therapy) OR (psychotherapy OR reinforcement).ti,ab.
(abc OR antecedent OR early ADJ intervention\$ OR punish\$ OR punitive).ti,ab.
(applied ADJ behav\$ OR biofeedback OR chaining OR extinction OR desensiti\$ OR faded
OR fading).ti,ab.
(aversive NEAR (consequence\$ OR intervention\$ OR technique\$ OR therap\$ OR
treatment\$)).ti,ab.
(behav\$ NEAR (approach\$ OR intervention\$ OR program\$ OR therap\$ OR treatment\$ OR
Skills OR modification OR prompt\$)).ti,ab.
(behav\$ NEAR (shaping OR strateg\$ OR technique\$ OR support OR observation OR
function\$ OR training OR manag\$)).ti,ab.
(communication NEAR intervention\$ OR contingency ADJ management).ti,ab.
(fct OR functional ADJ analysis OR functional ADJ communication).ti,ab.
(negative NEAR (technique\$ OR consequence\$ OR reinforcement)).ti,ab.
(non ADJ aversive OR nonaversive OR omission ADJ train\$).ti,ab.
(parent\$ NEAR (management OR training OR skill\$)).ti,ab.
(positive NEAR (behav\$ OR intervention\$ OR programming)).ti,ab.
(psychologic\$ ADJ method\$ OR reinforce\$ OR relaxation OR response ADJ cost\$ OR
seclusion).ti,ab.
(skills NEAR (training OR teaching OR program\$)).ti,ab.
Snoezelen.ti,ab.
(social ADJ learning NEAR (intervention\$ OR therap\$ OR treatment\$ OR program\$ OR
approach\$ OR technique\$ OR strateg\$)).ti,ab.
(social ADJ problem ADJ solving OR time ADJ out\$ OR timeout\$ OR stimulat\$).ti,ab.

Childdata

The search interface does not allow complex searches so a series of searches was undertaken in the title:

(disab*/disord*/retard*/handicap*/(intellectual &
impair*)/adhd/autis*/cerebral/asperger*/blind*/deaf*)
&
((behav* & therap*)/psychotherap*/interv*/therap*/relax*/train*

British Education Index, Dialog/Datatar, 1975 to date (BREI) and Australian Education Index (AUEI)

Two search approaches were used:

“A” search = (1) AND (2) AND (3) AND (4)

“B” search = ((2) AND (3) AND (4) AND review) NOT “A”

Records were not limited by year or language.

(1) CHILDREN

Adolescents.W..DE. OR Children#.W..DE. OR Young-Children#.DE. OR Early-
Adolescents.DE. OR Late-Adolescents.DE.
infant\$ OR baby OR babies OR toddler\$ OR child OR children OR preschool\$ OR
adolescen\$ OR teenage\$

(2) DISABILITIES

Disabilities#.W..DE.

(disabled OR disability OR disabilities OR handicap\$ OR retard\$).ti,ab.

(intellectual\$ NEAR impair\$).ti,ab.

((complex OR special) NEAR needs).ti,ab.

(life ADJ (limit\$ OR threaten\$)).ti,ab.

(learning ADJ (disorder\$ OR disab\$)).ti,ab.

(technolog\$ ADJ depend\$).ti,ab.

(cerebral ADJ palsy OR down\$2 ADJ syndrome OR autism\$ OR asperger\$ OR blind OR blindness OR deaf OR deafness OR adhd OR attention ADJ deficit).ti,ab.

(3) BEHAVIOURAL PROBLEMS

Separation-Anxiety.W..DE. OR Attention-Deficit-Disorders#.W..DE. OR Behaviour-Disorders#.W..DE. OR Antisocial-Behaviour#.W..DE. OR Eating-Disorders#.W..DE.

((challenging\$ OR problem\$ OR destructive OR maladaptive OR inappropriate OR disorder\$) NEAR (behav\$ OR conduct)).TI,AB.

(anger OR aggressi\$ OR noncomplan\$ OR (non ADJ complian\$)).TI,AB.

(mutism OR incontinen\$ OR eating ADJ disorder\$ OR antisocial ADJ behav\$).TI,AB.

(personality ADJ disorder\$ OR impulsive ADJ behav\$ OR attention ADJ deficit OR ADHD OR impuls\$ NEAR control OR separation ADJ anxiety).TI,AB.

(4) BEHAVIOURAL INTERVENTIONS

Behaviour-Modification#.DE. OR Psychotherapy#.W..DE. OR Reinforcement#.W..DE.

(behave\$ ADJ therapy) OR (psychotherapy OR reinforcement).ti,ab.

(abc OR antecedent OR early ADJ intervention\$ OR punish\$ OR punitive).ti,ab.

(applied ADJ behav\$ OR biofeedback OR chaining OR extinction OR desensiti\$ OR faded OR fading).ti,ab.

(aversive NEAR (consequence\$ OR intervention\$ OR technique\$ OR therap\$ OR treatment\$)).ti,ab.

(behav\$ NEAR (approach\$ OR intervention\$ OR program\$ OR therap\$ OR treatment\$ OR Skills OR modification OR prompt\$)).ti,ab.

(behav\$ NEAR (shaping OR strateg\$ OR technique\$ OR support OR observation OR function\$ OR training OR manag\$)).ti,ab.

(communication NEAR intervention\$ OR contingency ADJ management).ti,ab.

(fct OR functional ADJ analysis OR functional ADJ communication).ti,ab.

(negative NEAR (technique\$ OR consequence\$ OR reinforcement)).ti,ab.

(non ADJ aversive OR nonaversive OR omission ADJ train\$).ti,ab.

(parent\$ NEAR (management OR training OR skill\$)).ti,ab.

(positive NEAR (behav\$ OR intervention\$ OR programming)).ti,ab.

(psychologic\$ ADJ method\$ OR reinforce\$ OR relaxation OR response ADJ cost\$ OR seclusion).ti,ab.

(skills NEAR (training OR teaching OR program\$)).ti,ab.

Snoezelen.ti,ab.

(social ADJ learning NEAR (intervention\$ OR therap\$ OR treatment\$ OR program\$ OR approach\$ OR technique\$ OR strateg\$)).ti,ab.

(social ADJ problem ADJ solving OR time ADJ out\$ OR timeout\$ OR stimulat\$).ti,ab.

Appendix B

Quality Assessments

Table B.1 Quality of randomised controlled trials

	<i>Bagner and Eyberg</i>	<i>Brightman et al</i>	<i>Chadwick et al</i>	<i>McIntyre</i>	<i>Plant and Sanders</i>	<i>Preito-Bayard and Baker</i>	<i>Roberts et al</i>	<i>Sofronoff et al</i>
a) Selection bias								
Are the individuals selected to participate likely to be representative of the target population?	Somewhat likely	Not likely	Not likely	Not likely	Not likely	Not likely	Not likely	Not likely
What percentage of selected individuals agreed to participate?	Unclear	Unclear	47%	100%	Unclear	100%	94%	Unclear
<i>Rate this section</i>	<i>Moderate</i>	<i>Weak</i>	<i>Weak</i>	<i>Weak</i>	<i>Weak</i>	<i>Weak</i>	<i>Weak</i>	<i>Weak</i>
b) Study design								
Was the study described as randomised?	Yes	Yes ³⁰	Yes ³¹	Yes	Yes	Partial ³²	Yes	Yes
If yes, was the method described?	Yes	No	Yes	Yes	No	No	No	Yes
If yes, was the method appropriate?	Yes	---	Unclear	Yes	---	---	---	No
<i>Rate this section</i>	<i>Strong</i>	<i>Strong</i>	<i>Strong</i>	<i>Strong</i>	<i>Strong</i>	<i>Strong</i>	<i>Strong</i>	<i>Strong</i>
c) Confounders								
Were there important differences between groups prior to the intervention?	No	No	Yes	No	No	Yes	No	No
If yes, indicate the percentage of relevant confounders that were controlled in the design or analysis?	n/a	n/a	0%	n/a	n/a	100%	n/a	n/a
<i>Rate this section</i>	<i>Strong</i>	<i>Strong</i>	<i>Weak</i>	<i>Strong</i>	<i>Strong</i>	<i>Strong</i>	<i>Strong</i>	<i>Strong</i>

³⁰ Except for three control families who applied for parent training shortly after the programme began.

³¹ Randomisation via borough: two boroughs were treatment groups, one borough control group.

³² One parent switched condition.

	<i>Bagner and Eyberg</i>	<i>Brightman et al</i>	<i>Chadwick et al</i>	<i>McIntyre</i>	<i>Plant and Sanders</i>	<i>Preito-Bayard and Baker</i>	<i>Roberts et al</i>	<i>Sofronoff et al</i>
d) Blinding								
Were the assessors blind to the participants' group assignments? ³³	Yes	n/a	Unclear ("independent evaluator")	Yes	Yes	Yes	Yes	n/a
Were the study participants unaware of the research question? ³⁴	---	---	---	---	---	---	---	---
<i>Rate this section</i>	<i>Strong</i>	---	<i>Moderate</i>	<i>Strong</i>	<i>Strong</i>	<i>Strong</i>	<i>Strong</i>	---
e) Data collection methods								
Were data collection tools shown to be valid?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Were data collection tools shown to be reliable?	Yes	Partial	Partial	Partial	Yes	Partial	Yes	Yes
<i>Rate this section</i>	<i>Strong</i>	<i>Moderate</i>	<i>Moderate</i>	<i>Moderate</i>	<i>Strong</i>	<i>Moderate</i>	<i>Strong</i>	<i>Strong</i>
f) Withdrawals and dropouts								
Were withdrawals and dropouts reported in terms of numbers and reasons per group?	Reported but reasons not given	Reported but reasons not given	Reported but reasons not given	Yes	Reported but reasons not given	Reported but reasons not given	Yes	No dropouts
Indicate the percentage of participants completing the study.	47%	87%	Post 94%; follow-up 75%	90%	Post 100%; follow-up 89% (int. gps only; control gp not follow-up)	89%	Post 67%; follow-up 56% (int. gp only; control gp not follow-up)	---
<i>Rate this section</i>	<i>Weak</i>	<i>Moderate</i>	<i>Moderate</i>	<i>Strong</i>	<i>Moderate</i>	<i>Moderate</i>	<i>Moderate</i>	<i>Strong</i>
Global rating³⁵	Moderate	Moderate	Weak	Moderate	Moderate	Moderate	Moderate	Moderate

³³ This question only completed if non-parent completed measures completed or observational data collected as part of the study.

³⁴ This question deemed inappropriate as parents responsible or partially responsible for delivering the intervention.

³⁵ **Strong** = 4 **strong** ratings with no **weak** ratings; **Moderate** = less than four **strong** ratings and one **weak** rating; **Weak** = 2 or more **weak** ratings).

	<i>Bagner and Eyberg</i>	<i>Brightman et al</i>	<i>Chadwick et al</i>	<i>McIntyre</i>	<i>Plant and Sanders</i>	<i>Preito-Bayard and Baker</i>	<i>Roberts et al</i>	<i>Sofronoff et al</i>
g) Analyses								
Are the statistical methods appropriate for the study design?	Yes	Partial	Yes	Yes	Yes	No	Yes	Yes
Is the analysis on an intention to treat basis?	Yes	Unclear	No	Unclear	Yes (at post treatment, not follow-up)	No	Yes	Unclear

Intervention integrity								
No. of participants	15 int 15 control	37 int 1 16 int 2 13 control	16 int 1 24 int 2 28 control	21 int 23 control	26 int 1 24 int 2 24 control	9 int 11 control	24 int 20 control	18 int 1 18 int 2 15 control
Treatment completion rates		87%	Int 1: 22% 7 sessions; 96% >5 sessions Int 2: 40% 5 sessions; 40% 4 sessions; 20% 2-4 sessions	89%	100%	78%	67%	Unclear
Consistency of treatment delivery checked?	All sessions videotaped, 50% randomly selected and checked for integrity by two individuals (one independent of the study). 97% adherence (97% inter-observer agreement).	Unclear	Unclear	Protocol adherence checklist completed by therapist and an independent observer collected treatment integrity data during 33% of sessions. 100% adherence	Protocol adherence checklist completed by therapist and 33% sessions videotaped and analysed. 100% adherence	Unclear	Protocol adherence checklist completed by therapist. Programme content covered 67%-98%	Protocol adherence checklist completed by therapist used to indicate all components completed. Adherence rates not reported.

Table B.2 Quality of non-randomised controlled trials

	<i>Gates et al.</i>	<i>Hornby and Singh</i>	<i>Hudson et al.</i>	<i>Quinn et al.</i>	<i>Sofronoff et al.</i>
a) Selection bias					
Are the individuals selected to participate likely to be representative of the target population?	Not likely	Not likely	Not likely	Somewhat likely	Somewhat likely
What percentage of selected individuals agreed to participate?	Unclear	Unclear	Unclear	100%	Unclear
<i>Rate this section</i>	<i>Weak</i>	<i>Weak</i>	<i>Weak</i>	<i>Moderate</i>	<i>Moderate</i>
b) Study design					
Was the study described as randomised?	Controlled clinical trial				
If yes, was the method described?	n/a	n/a	n/a	n/a	n/a
If yes, was the method appropriate?	---	---	---	---	---
<i>Rate this section</i>	<i>Strong</i>	<i>Strong</i>	<i>Strong</i>	<i>Strong</i>	<i>Strong</i>
c) Confounders					
Were there important differences between groups prior to the intervention?	No	No	Unclear	No	Unclear
If yes, indicate the percentage of relevant confounders that were controlled in the design or analysis?	---	---	Unclear	---	Unclear
<i>Rate this section</i>	<i>Strong</i>	<i>Strong</i>	<i>Weak</i>	<i>Strong</i>	<i>Weak</i>

	<i>Gates et al.</i>	<i>Hornby and Singh</i>	<i>Hudson et al.</i>	<i>Quinn et al.</i>	<i>Sofronoff et al.</i>
d) Blinding					
Were the assessors blind to the participants' group assignments? ³⁶	n/a – parent report measures only	Unclear	n/a - parent report measures only	n/a – parent report measures only	n/a – parent
Were the study participants unaware of the research question? ³⁷	---	---	---	---	---
<i>Rate this section</i>					
e) Data collection methods					
Were data collection tools shown to be valid?	No	Partial (Vignette Test ³⁸ and home behaviour observations only)	Yes	Yes	Yes
Were data collection tools shown to be reliable?	No	Partial (Vignette Test and home behaviour observations only)	Yes	Yes	No ³⁹
<i>Rate this section</i>	<i>Weak</i>	<i>Strong (partial)</i>	<i>Strong</i>	<i>Strong</i>	<i>Moderate</i>

³⁶ This question only completed if non-parent completed measures completed or observational data collected as part of the study.

³⁷ This question deemed inappropriate as parents responsible or partially responsible for delivering the intervention.

³⁸ Vignette Test (Heifetz, 1997) measure of parents' ability to apply behavioural principles and techniques.

³⁹ SDQ conduct problems subscale only had moderate reliability based on baseline data.

	<i>Gates et al.</i>	<i>Hornby and Singh</i>	<i>Hudson et al.</i>	<i>Quinn et al.</i>	<i>Sofronoff et al.</i>
f) Withdrawals and dropouts					
Were withdrawals and dropouts reported in terms of numbers and reasons per group?	n/a – one day workshop	Reasons not given	Reasons not given	Reasons not given	Yes
Indicate the percentage of participants completing the study.	Unclear	54%	57% completed treatment and/or study at post treatment (figures combined) 28% follow-up (treatment groups only)	92%	100% post-treatment 78% follow-up
<i>Rate this section</i>	<i>Weak</i>	<i>Weak</i>	<i>Weak</i>	<i>Moderate</i>	<i>Moderate</i>
Global rating⁴⁰	Weak	Weak	Weak	Moderate	Moderate
g) Analyses					
Are the statistical methods appropriate for the study design?	Yes	No ⁴¹	Yes	Yes	Yes
Is the analysis on an intention to treat basis?	Yes	No	No	Unclear	Yes

⁴⁰ **Strong** = 4 **strong** ratings with no **weak** ratings; **Moderate** = less than four **strong** ratings and one **weak** rating; **Weak** = 2 or more **weak** ratings).

⁴¹ Parametric test used despite very small sample size.

Intervention integrity					
No. of participants	intervention 1 = 41 intervention 2 = 36 control = 26	intervention = 7 control = 4	intervention 1 = 46 intervention 2 = 13 intervention 3 = 29 control = 27	intervention 1 = 22 control = 19	intervention 1 = 33 parents (17 children) intervention 2 = 36 parents (18 children) control = 20 parents (10 children)
Treatment completion rates	n/a – single day workshop	Unclear (attendance rates across the six sessions reported @ 83%)	57% completed treatment and/or study to post-measure completion.	96% completed five/six sessions	100%
Consistency of treatment delivery checked?	n/a	n/a	Completed adherence checklists. Adherence rates not reported.	Sample of audio-recordings of sessions rated for programme integrity (does not specify who did the rating). All rated as 100% adherence.	Not clear

Appendix C

Outcome Measures

Table C.1 Outcome measures⁺ used by included studies

<i>Author and year</i>	<i>Child behaviour</i>	<i>Parent-child interaction</i>	<i>Parental stress/mental health</i>	<i>Parenting skills</i>	<i>Parenting hassles</i>	<i>Parent attitude to child</i>	<i>Parent sense of competence/self-efficacy</i>	<i>Parent knowledge of behaviour modification (BM) principles</i>	<i>Implementation of BM skills</i>	<i>Child's impact on family life</i>	<i>Family stress</i>	<i>Quality of marital relationship</i>	<i>Consumer satisfaction</i>
Intervention on parents' behaviour management skills only													
Chadwick <i>et al.</i> (2001)	✓✓		✓										✓
Gates, B.; Newell, R. and Wray, J. (2001)	✓✓								✓				
Hornby and Singh (1984)	✓					✓		✓					✓
Quinn <i>et al.</i> (2007)	✓✓✓		✓✓								✓✓		✓
Intervention on parents' behaviour management skills and parent-child relationship													
Bagner and Eyberg (2007)	✓✓	✓	✓										✓
McIntyre (2008)	✓	✓								✓			✓
Intervention on parents' behaviour management skills and teaching skills													
Brightman <i>et al.</i> (1982)	✓							✓	✓				
Hudson <i>et al.</i> (2003)	✓		✓		✓		✓						✓
McIntyre (2008)	✓	✓								✓			✓

<i>Author and year</i>	<i>Child behaviour</i>	<i>Parent-child interaction</i>	<i>Parental stress/mental health</i>	<i>Parenting skills</i>	<i>Parenting hassles</i>	<i>Parent attitude to child</i>	<i>Parent sense of competence/self-efficacy</i>	<i>Parent knowledge of behaviour modification (BM) principles</i>	<i>Implementation of BM skills</i>	<i>Child's impact on family life</i>	<i>Family stress</i>	<i>Quality of marital relationship</i>	<i>Consumer satisfaction</i>
Plant and Sanders (2007)	✓✓	✓	✓	✓			✓					✓	✓
Prieto-Bayard and Baker (1986)	✓							✓	✓				
Roberts <i>et al.</i> (2006)	✓	✓	✓	✓									✓
Intervention on parents' behaviour management skills and understanding of their child's condition													
Sofronoff and Farbotko (2002)	✓	✓	✓	✓									✓
Sofronoff <i>et al.</i> (2004)	✓												✓

+ Where intervention covered more than behaviour problems, only outcomes relevant to behaviour problem aspect of intervention reported.

Appendix D

Results of Studies

Table D.1 Results of studies

Author and year	Quantitative outcome measures and findings
Bagner and Eyberg (2007)	<p>Child Behaviour Checklist (1.5 – 5 yrs) (Achenbach and Rescorla, 2000) Externalising scale and the total scale mos in IT group reported sig fewer child behaviour problems at T2 compared to WL group.</p> <p><i>Externalising scale</i> IT (n=10): T1: mean=34.60 (sd 7.73); T2: mean=20.28. (sd 10.72); WL (n=12): T1: mean=36.25 (sd 6.25); T2: mean=30.69 (sd 8.56), $f(1,19)=8.56$, $p=0.009$</p> <p><i>Total scale</i> IT (n=10): T1: mean=89.70 (sd 29.45); T2: mean=51.90. (sd 27.87); WL (n=12): T1: mean=95.17 (sd 16.41); T2: mean=83.83 (sd 20.44), $f(1,19)=11.62$, $p=0.003$</p> <p>Dyadic Parent-Child Interaction Coding system (Eyberg et al., 2004) (Includes child compliance.) Children's compliance to maternal commends was significantly higher in the IT than the WL group at T2. IT (n=10): T1: mean=63.88 (sd 19.22); T2: mean=85.20 (sd 9.44); WL (n=11): T1: mean=68.89 (sd 19.71); T2: mean=59.72 (sd 25.68), $f(1,18)=9.68$, $p=0.006$</p> <p>Eyberg Child Behaviour Inventory (Eyberg and Pincus. 1999) Sig diffs on the ECBI intensity scale but not the Problem Scale. <i>Intensity scale:</i> IT (n=10): T1: mean=156.40 (sd 34.30); T2: mean=100.63. (sd 26.22); WL (n=12): T1: mean=170.92 (sd19.47); T2: mean=148.14 (sd 30.33), $f(1,19)=13.00$, $p=0.002$.</p> <p>Parenting Stress Index – Short form (Abidin, 1995) No sig diffs between IT and WL on Parental distress and Parent-Child Dysfunctional Interaction subscales but on the Difficult Child sub-scale, IT mos reported sig. fewer child behaviour problems than WL mos. IT (n=10): T1: mean=42.60 (sd 8.40); T2: mean=33.97. (sd 8.87); WL (n=12): T1: mean=43.67 (sd 7.79); T2: mean=38.61 (sd 6.80), $f(1,19)=4.80$, $p=0.041$</p> <p>Mediating role of changes in parenting behaviour Found that changes in positive parenting behaviours and negative parenting behaviours both contributed to child behaviour change during treatment.</p> <p>Intent-to-treat Analyses For those who did not start or dropped out of treatment, last ECBI intensity score before dropping out was taken as post-treatment score. Sig. difference between intervention group and non-intervention group remained ($F(1,29)=5.79$, $p=0.023$, $d=0.67$).</p> <p>Clinical significance Applied Joacobson et al's (1999) Reliable Change Index: found a 'relatively high percentage of mos in the IT group reported clinically significant behaviour change' CBCL externalising :70% (IT) vs 17% (WL): ECBI Intensity: 50% (IT) vs 8% (WL).</p>

Author and year	Quantitative outcome measures and findings
Brightman et al. (1982)	<p>Behavioural Vignettes Test (Heifetz et al., 1981) Parents (all but two mos): knowledge of behavioural principles (Behavioural Vignettes <i>Mos BVT scores:</i> showed significant condition ($F(2,55)=4.00, p=0.002$), time ($F(1,55)=46.96, p<0.001$) and conditionxtime effects ($F(2,55)=4.08, p=0.02$). Trained mos showed a significant BVT gain ($t(45)=8.62, P<0.001$). The gain for trained mos was significantly greater than the gain for control mothers ($t(57)=2/91, p=0.003$). BVT gain scores for group vs individual did not differ.</p> <p>Behaviour Problems Checklist (developed by authors) Significant main effect for time ($F(1,42)=18.93, p<0.001$). No conditions effect and the conditionxtime interaction did not reach significance ($F(2,42)=2.41, p=0.10$). Since the interaction approached significance, t-tests were conducted. Children in trained families showed a highly significant decrease in behaviour problems ($t(37)=6.32, p<0.001$) and decreased significantly more than controls ($t(43)=2.12, p=0.04$). Behaviour improvement for group vs individual formats did not differ ($t(36)=0.59, ns$).</p> <p>6 month follow-up interviews: Structured interview in home 6 months after to 'assess the extent and quality of follow-through teaching. Interviews later 'scored' on two dimensions: extent of continued programming and appropriateness of behavioural techniques employed. (Inter-rater reliabilities for a subsample of 14 interviews were $r=0.87$ and 0.90.) Interviews with 41/46 families. No difference found in extent of continued programming between the two formats ($t(39)=0.71, ns$) or the quality of behavioural techniques employed ($G>I, t(39)=1.57, ns$). Fams were characterised as high, medium or low follow-through based upon a combination of the programming and technique dimensions. Families above the mean for the sample on both dimensions had productively continued the programs they began during training and initiated some new teaching and/or behaviour problem management following training. Fams at least one SD below the mean on either dimension constituted the low group: these families ($n=10$) reported little or no continued teaching or demonstrated inadequate behavioural technique. The remaining 16 fams constituted the medium group: these had continued some degree of useful teaching. Group and individually trained families did not differ by follow-through category ($\chi^2(2)=1.21 ns$).</p>
Chadwick et al. (2001)	<p>Disability Assessment Schedule (Holmes et al., 1982; Wing, 1989): ratings of severity and frequency of behaviour (only for those where baseline and immed. post intervention data avail.) <i>Mean no. of DAS behaviour problems...</i> <i>Posing severe management difficulties:</i> NS across time or between groups <i>Occurring more than once/week:</i> NS across time or between groups.</p> <p><i>Magnitude of the reduction in severity between baseline and post-intervention assessments between the three groups was significant ($F[59,2]=8.76: p=0.005$), and post hoc tests showed significantly greater magnitude of improvement ($p<0.05$) in the ind int group vs the other two groups (both of which showed a slight deterioration). (Reductions in the severity of the behav. problems between baseline and 6 months were greatest in the ind. int but fell short of statistical significance ($p=0.78$)).</i></p> <p>Parent reported change: In terms of mean no of behaviour problems posing <i>severe management difficulties or occurring more often than once a week:</i> no sig diffs between groups or across time (though authors report result were consistent in terms of improvement being more likely in the ind. int gp, and little diff. Between then group and control groups). At immediate follow up: no of problems <i>occurring less frequently and less severe:</i> sig diff between groups, with that difference lying between in ind int gp and the other two groups ($p<0.05$). Diffs between groups in the number of behav. problems occurring more frequently or resulting in greater management difficulties were ns.</p> <p><i>Parents' ratings of change in behaviours targeted in the intervention vs those not targeted (ind int only):</i> at immediate follow-up targeted behaviour probs were sig. More likely to pose less of a management problem ($\chi^2=20.73, 2 df, p<0.001$) and were more likely to occur less frequently ($\chi^2=8.49, 2 df, p<0.001$). AT 6 month, the change was in the same direction but fell short of sig..</p> <p>Parenting stress index – short form (Abidin, 1995) No sig diffs in PD scale between groups on any of the assessment occasions.</p>

Author and year	Quantitative outcome measures and findings
Gates, B., Newell, R. and Wray, J. (2001)	<p>Child behaviour measures: <i>American Association on Mental Retardation Adaptive Behaviour Scale (Sparrow et al., 1984): note designed for 18-80 yr olds: findings not reported</i> <i>Problem and target scales (Marks et al., 1977): a record of identified problem behaviours measured by the parent on a 9 pt. scale.</i> <i>Behaviour checklist developed by authors: 7 day record of the child's behaviour, recorded prior to each assessment point.</i></p> <p><i>Outcomes:</i> no sig diffs between the groups in terms of the children's behaviours following treatment (a mean of the three post-treatment data pts.) on any of these measures.</p> <p>BM participants more likely than GT participants to report using the intervention they were taught in general ((Fisher's exact) $P=0.03416$), and to use the following interventions: implementing a strategy, identifying reinforcers, identifying outcomes and targets. Other interventions (BM or GT): no sig diffs between groups.</p>
Hornby and Singh (1884)	<p>Home Observations: Observers were 10 undergrad students/ 3 x 30 min obs (one per day). Completed in interval between arriving home from school and completion of evening meal. Behav. coding sheets using a modified version of Peed et als (1977) coding system: parent behaviour (rewards, punishments, demands, talks) and child behaviour (appropriate, inappropriate, undesirable, non-compliance). At end of each 15 sec interval, observer recorded one (or the first) parent and one child behaviour. Interobserver reliability checked in 33% of obs.: mean IO agreement = 87% (range: 67-100%). Data only available for 4 treatment and 2 controls: not used.</p> <p>Hereford parent attitude survey (Hereford, 1963): attitudes to child rearing. 77 items, 5 pt scale. TG: statistically significant ($p<0.05$) positive change in parental attitude during the pre-training period, but the change in attitudes over the treatment period was not significant. CG: no sig. changes.</p> <p>Behaviour checklist: to assess changes in parents' perceptions of their child's behaviour covering: problem behaviours, learning difficulties and difficult situations (34 items, 3 pt scale). TG and CG: No sig changes on the behaviour checklist found over baseline or treatment periods.</p> <p>Vignette test (Heifetz, 1977): 'used to test parents' ability to apply behavioural principles and techniques to written problems involving mentally retarded children'. 20, mc questions (5 options). Mean score on Vignette test showed a statistically significant increase ($p<0.001$) over the treatment period, with no change over the pre-training baseline. NS for CG.</p>
Hudson et al. (2003)	<p>Parenting Sense of Competence Scale (PSOC) (Johnson and Mash, 1989): 16 item scale with 2 subscales: satisfaction with role as parent; efficacy (measuring extent to which parents feel they are managing the role of being a parent). Here interested in the efficacy subscale.</p> <p>Depression Anxiety and Stress Scale (DASS, Lovibond and Lovibond, 1995): 3 subscales: dep., anx., and stress. Here interested in the stress subscale.</p> <p>Parenting Hassles Scale (PHS, Gavidia-Payne et al., 1997): 87 item scale to assess daily hassles. 12 subscales, two of which of interest to this evaluation: child behaviour subscale, parent needs subscale.</p> <p>Developmental Behaviour Checklist (DBS, Einfield and Tonge, 1989): 95 item scale assessing difficult behaviour of children with disabilities. Six subscales: disruptive, self-absorbed, communication disturbance, anxiety, autistic and anti-social. Plus a total problems score.</p>

Author and year	Quantitative outcome measures and findings
	<p><i>Outcomes data</i> DASS stress subscale, PSOC efficacy sub scale, PHS child behav. subscale and PHS parental needs sub-scale. At post-test: Compared to control gp., mothers in the experimental groups had more positive scores on the DASS stress subscale ($F(1,60)=5.75, p=0.02$); the PSOC efficacy subscale ($F(1,60)=4.10, p=0.06$); and the PHS Parental Needs subscale ($F(1,60)=4.21, p=0.07$); but not on the PHS Child Behaviour subscale. NO differences were found among the experimental groups.</p> <p><i>Follow-up data</i> Of the 88 who began in one of the experimental groups, 25 (28%) completed all measures at pre-, post- and follow up. Changes in pre- to post- scores for the PSOC efficacy subscale, the DASS stress subscale, and the PSOC parental needs subscale 'were maintained at follow-up' (means presented: Table 3).</p> <p>For the DBC Disruptive Behaviour subscale: sig diff between pre- and follow-up scores ($t=2.69, p0.013$). But no diffs between groups.</p> <p>For the DBC Antisocial Behaviour subscale: sig diff between pre- and follow-up scores ($t=2.31, p0.028$). But no diffs between groups.</p>
McIntyre (2008)	<p>Child Behaviour Checklist (ages 1.5-5 yrs) (Achenbach, 2000). Sig group/time interaction effect for CBCL Total problems, post-treatment children in the treatment group sug. Lower parent-reported behaviour problems/ Also a sig, time effect for both groups. Sig. group x time for CBCL broad-band internalising problems, also a sig time effect for both groups. Externalizing behaviours: no groupxtime effect, but sig effect for time. Behavioural stability (pre and post scores on the CBCL within four points of each other) lower in the experimental group compared to the control group ($\chi=7.14., p=0.03$).</p> <p>Family Impact Questionnaire –FIQ (Donenberg and Baker, 1993): five scales measure neg impact, one measures pos impact. Used three scales: Neg impact on feelings about parenting and neg impact on social relationships (combined to form a negative impact composite score; and positive feelings about parenting formed the positive impact composite. <i>Outcomes:</i> main effect for time on the pos and neg impact scales, but not a significant time x group effect</p> <p>Parent/child interactions: Observation system (using partial interval coding) developed based on IYPT core content areas: 7 parent inappropriate behaviour categories and Child Directed Praise. Observed for 15 mins doing a standardised activity (10 mins free play, 2 mins clean up, 3 mins structured activity). Used the combined Inappropriate Behaviour Index (% of intervals containing an inappropriate behaviour) and the rate of Child-Directed Praise (rate/10 min). Obs carried out within 2 weeks before and within 2 weeks after. Two (blind) independent observers coded 50% videotaped parent-child interaction data. Mean interobserver agreement 99.2.% for Inappropriate Behaviour Index, and 97.4.% for Inappropriate Behaviour Index. Also checked integrity by which standardised activity was carried out: 100% accuracy. <i>Outcomes:</i> Sig. group x time interaction for the parent combined Inappropriate Behaviour Index: sig reduced for the exp. gp but not the control group ($F(2,44)=21.35, p<0.001$). Also a trend approaching significance ($p=0.08$) for increased rates of child-directed praise in the treatment group, though both groups increased rate of CDP.</p> <p><i>Outcomes by child diagnosis</i> 50% of the treatment group had autism, so looked at response to the treatment as a function of diagnosis. No sig diffs found.</p> <p><i>Outcomes by presence of support person</i> 8/21 parents in treatment group attended with a spouse ($n=7$) or other support person ($n=1$). Looked at FIQ scores: no sig diffs when controlled for pre-treatment FIQ scores.</p>

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Plant and Sanders (2007)	<p>Parent child interaction: assessed using a 30 min recorded home observation session following a set format. Observed and coded using the Revised Family Observation Schedule (Sanders et al., 1996). Two composite scores: negative parent behaviour and negative child behaviour. 3 trained observers coded the interactions. Coders were blind to the intervention conditions of participants and stage in intervention. Interrater reliability checked (0.77 parent behaviour; 0.74: child behaviour).</p> <p>Child behaviour: <i>Developmental Behaviour Checklist – Parent Version (DBC, Rinfield and Tonge, 1991).</i> Total problem behaviour score plus six subscales: disruptive, self-absorbed. Communication disturbance, anxiety-relating, autistic-relating, anti-social. Used the total score and the disruptive sub scale scores.</p> <p><i>Care-giving problem checklist (CPC) – difficult child behaviour:</i> assessed the frequency of difficult child behaviour when completing care-giving tasks. Total score, higher scores indicative of higher frequency of problem behaviour.</p> <p><i>Care-giving problem checklist (CPC) – problematic care-giving tasks:</i> presence or absence of problem behaviours across 22 different care giving tasks over a one week period.</p> <p>Parenting skills and ability: <i>Parenting Scale (Arnold et al., 1993):</i> 30 items, measuring dysfunctional discipline styles in parents. Total score based on 3 factors: laxness, over-reactivity, verbosity.</p> <p><i>Parenting Sense of Competence Scale (PSOC) (Gibaud-Wallston and Wandersman, 1978).</i> 16 items: two dimensions: satisfaction with parenting role and feels of efficacy. Get total score and the two dimension sub scores.</p> <p>Parental adjustment <i>Depression, anxiety, and stress scales (DASS) (Lovibond and Lovibond, 1995).</i> 42 items. Get total score, plus depression, anxiety and stress subscores.</p> <p>Short-term intervention effects ANCOVA scores were significant for the four child behaviour measures (FOS-NCB: $F(3,732)=6.92$; $p=0.002$; DBC-D: $F(3,732)=4.62$; $p=0.013$; CPC-B: $F(3,732)=8.18$; $p=0.001$; CPC-T: $F(3,732)=18.62$; $p=0.000$). At post-intervention, the SSTP-E resulted in significant reductions in child behaviour on three of the four measures as compared to the WL condition: FOS-NCB; CPC-T; CPC-B, but not DBC-D. At post-intervention, the SSTP-S resulted in significant reductions in child behaviour on three of the four measures as compared to the WL condition: FOS-NCB; CPC-T; DBC-D, but not CPC-B. Of the four measures, one sig diff. between SSTP-E and SSTP-S : CPC-B (SSTP-E produced better outcomes).</p> <p>ANCOVA scores were significant for parenting skills (PS: $F(3,73)=5.72$, $p=0.005$) and competence ((PSOC: $F(3,73)=5.59$, $p=0.006$). Found a significant effect for treatment condition: compared to the WL condition, mothers in the SSTP-S gp. reported significantly higher (better) scores for PS and PSOC; and mothers in the SSTP-E gp. reported significantly higher (better) scores for PSOC only. No diffs observed between SSTP-S and SSTP-E. ANCOVA scores not significant for negative parent behaviour (FOS-NPB). ANCOVA scores for maternal distress or relationship adjustment not significant.</p> <p>Long-term intervention effects. <i>Child behaviour:</i> sig. main effect for time on FOS-NCB ($F(1,43)=4.22$, $p=0.04$), with negative behaviour decreasing significantly from post-intervention to 1 year follow-up for SSTP-S and SSTP-E groups. No main effects for time on the other child behaviour measures (DBC-D; CPC-B; CPC-T. Also a significant conditionXtime interaction for DBC-D ($F(1,39)=5.10$, $p=0.03$), which revealed significantly lower rates of difficult child behaviour at 1 yr f-up for children in the SSTP-E group as compared to the SSTP-S group.</p>

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	<p><i>Parenting skills/competence</i>: significant conditionXtime interaction for parenting skills (PS)(F(1,39)=4.99, p=0.03), but pairwise comparisons did not reveal any sig diffs between conditions and no sig time effect. No sig main effects or interactions for the other measures (PSOC, FOS-NPB).</p> <p>Maternal distress: no significant main effects or conditionxtime interactions for measures of maternal distress.</p> <p><i>Clinical significance of changes in children's problem behaviour</i> Used the <i>reliable change index</i> (RCI, Jacobson and Truax, 1991) and a <i>30% reduction in observed disruptive child behaviour</i> (Webster-Stratton et al., 1989).</p> <p>Used DBC scores to calculate RCI at post-intervention: a sig. greater proportion of children in the SSTP-E and SSTP-S conditions behaviour had reliably improved when compared to the WL condition. No sig diffs between SSTP-S and SSTP-E.</p> <p>Scores showing movement from clinical to normal range on DBC total score did not reveal significant differences between the 3 groups. Using the 30% reduction criteria, a greater proportion of children in SSTP-S and SSTP-E showed sig. change in the FOS-NCB compared to children in the WL condition. NO sig. diffs between SSTP-S and SSTP-E.</p> <p>Follow-up: no sig diffs in reliable change, movement from clinical to normal range or 30% reduction between the SSTP-S and SSTP-E conditions. ON FOS-NCB: 72% of children across the two intervention conditions had achieved 30% reduction in negative behaviour.</p>
Prieto-Bayard and Baker (1986)	<p>Verbal Behavioural Vignettes Test (VVT): assesses parental knowledge of behaviour modification principles. Verbally administered. Coders rated audiotaped responses for effective use of behavioural principles. Inter-rater reliability=0.91. (pre and post only) <i>Outcomes</i>: VVT: trained mothers gained significantly (t(5)=3.86, p<0.01). ANOVA: a significant Condition x Testing interaction (F(1,13)=15.85, p<0.01).</p> <p>Teaching Interview (TI): home teaching and behaviour problem management assessed through a 'detailed audio-taped interview'. Audiotapes rated on: a) extent of teaching and behaviour problem management reported; and b) the sophistication of behaviour methods employed. Inter-rater reliability=0.94. (pre, post and f-up) <i>Outcomes</i>: TI: trained families gained significantly (t(4)=6.00, p<0.01). ANOVA yielded a significant Condition x Testing interaction (F(1,13)=4.90, p<0.05). No Condition x Testing effect for extent of teaching, but a significant effect for sophistication of teaching (F(1,13)=12.04, p<0.01).</p> <p>Child Behaviour Checklist (CBC): a simplified version of a more detailed performance inventory (Baker and Heifetz, 1976): the authors report the CBC had not been validated. (pre and post only) <i>Post-intervention</i>: CBC: children improved significantly in behaviour problems (t(6)=3.41, p<0.01). ANOVA yielded a significant Condition x Testing interaction (F(1,15)=4.85, p<0.05).</p> <p>Follow-up (n=9). TI scores at follow-up significantly higher than before training, they did not maintain their post-training level in terms of extent and sophistication (5 showed a gain, 3 remained unchanged, one had a poorer rating).</p>

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Quinn <i>et al.</i> (2007)	<p>[Paper provides detail of psychometric properties of all the measures.]</p> <p>Strengths and Difficulties Questionnaire (Goodman 1997): yields total difficulties score and five subscale scores: conduct problems, hyperactivity, emotional symptoms, peer problems and pro-social behaviour. (Psychometric properties re use with adolescents with intellectual disabilities found to be adequate, Emerson, 2005).</p> <p>Child Behaviour Checklist (Achenbach, 1991): 113 item inventory: 3 main scales (total, externalising, internalising); 8 subscales (withdrawn, somatic complaints, anxious/depressed, social problems, thought problems, attention problems, delinquent behaviour, aggressive behaviour). (Norms of children with mild/mod intellectual disabilities, Dekker <i>et al.</i>, 2002).</p> <p>Specific targets: prior to treatment, participants set at least 3 specific, measurable and achievable child- and parent-focussed goals expressed in positive behavioural terms. Participants rated the frequency of the target behaviour in the previous month.</p> <p>General Health Questionnaire 12 (Goldberg and Williams, 1988) (assesses psychological distress)</p> <p>Kansas parental satisfaction scale (James <i>et al.</i>, 1985).</p> <p>Family Assessment devise (Kabacoff <i>et al.</i>, 1990): yields a total score and subscale scores for family problem-solving, communication, roles, affective responsiveness, affective involvement, behaviour control and general functioning.</p> <p>Family Inventory of life events and changes (McCubbin <i>et a.</i>, 1982): Sources of family stress: total score and subscales: intra-familial strain, work strains, illness and family care strains, family transitions, pregnancy and child strains, financial strains and losses.</p> <p>Parental distress scale from the short form of the parenting stress index (PSI, Abidin, 1995). (Used in past evaluations of Parent Plus)</p> <p>Parent and family problems scale of the Questionnaire on Resources and Stress (Friedrich <i>et al.</i>, 1983). (Widely used to assess the stress processes in families of children with intellectual disability.)</p> <p>[Internal consistency of scales checked based on data collected at Time 1: all scales used had good reliability (alpha >0.7) except SDQ conduct subscale (0.42).]</p> <p>Impact of treatment on group mean post-treatment scores ANCOVAs conducted revealed: the treatment and control groups only differed significantly on: the total difficulties scale of the SDQ only (F 6.402, p<0.01). Also, the mean for the treatment group moved from the clinical to the non-clinical range.</p> <p>Improvement in treatment group mean scores at follow-up Sig improvement on SDQ total difficulties (F=11.25, p<0.001: T1>T2=T3; mean scores at post treatment and f/up below the clinical cut-off score, pre treatment mean score was above clinical cut off) and SDQ conduct problems scales of SDQ (F=11.34, p<0.01: T1>T2=T3) , the Kansas Parental Satisfaction Scale (F=5.542, p<0.01: T1<T2=T3; mean scores at post treatment and f/up in the non-clinical range, pre treatment mean score was in clinical range), and the Questionnaire on Resource and Stress Parent and Family Problems Scale (F=3.42, p<0.01: T1<T2=T3). Post treatment and follow-up scores were significantly different from pre-treatment scores but not significantly different from each other. Thus gains made at Time 2 were maintained at Time 3.</p> <p>Clinical improvement rates Cases classified a clinically improved if they moved from the clinical to the non-clinical range on the SDQ total diffs. The diff in clinical improvement rates was <u>not</u> statistically significant. Clinically significant improvers and non-improvers did not differ significantly (p<0.01) on any baseline variable.</p>

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	<p>Reliable improvement rates Cases classified as reliably improved if achieved a score of >1.96 on the reliable change index (Jacobson and Truax, 1991) 3 of the cases in the treatment group and none of the cases in the control group were classified as reliably changed at T2: ns. Reliable and non-reliable improvers did not differ significantly on any baseline variables.</p> <p>Goal attainment Rated attainment of 3 child-centred and 3 parent-centred parent-set goals (10 pt scale). Mean child-centred goal attainment for treatment group increased significantly from T1 to T2, and this was improved 10 months later at follow-up ($F(2,42)=100.63, p<0.01$). Mean parent-centred goal attainment also increased significantly from T1 to T2 with the improvement maintained at follow-up ($F(2,40)=58.30, p<0.01$).</p>
Roberts et al. (2006)	<p>Blind research assistants visited parents to complete measures and carry out behavioural obs (one parent was the father).</p> <p>Developmental Behaviour Checklist Parent Version (Einfield and Tonge, 1992): assesses mos and fas perceptions of behaviour problems. Total score and six subscales (disruptive, self-absorbed, communication disturbance, anxiety, autistic relating, anti-social. Total score was used (TBPS) with clinical cut-off of 46; and a change score of 17 or more used to assess reliable change.</p> <p>Family Observation Schedule – Revised III: (Sanders et al., 1996) assessed primary caregiver-child interaction in the home and community settings. Parents nominated 3 difficult settings from a 16-setting checklist. Observations blind to child's group status. Child non-compliance and oppositional behaviours were coded plus appropriate verbal interactions and engaged activity. Five positive parental behaviours were coded: 2 antecedent and 3 consequent to child's behaviour. Parental negative behaviour also coded. 15 sec interval coding system, 20 min observation period. Research assistants coded. Reached 80% agreement.</p> <p>Parenting Scale (Arnold et al., 1993): 30 item measure of dysfunctional parenting discipline: 3 factors: laxness, overreactivity, verbosity. Clinical cutoffs used.</p> <p>Depression-anxiety-stress scale (Lovibond and Lovibond, 1995): relating to continuing difficulties in meeting the demands of life in the previous week.</p> <p>Outcomes <i>Child behaviour: parent report:</i> Mothers' TBPS indicated significant time ($F(1,30)=4.25, p<0.05$) and time by group ($F(1,30)=8.51, p<0.01$) effects. Intervention mos reported sig. reductions in behaviour probs from pre to post intervention ($t(16)=3.67, p<0.01$), and pre-int to follow-up ($t(14)=3.19, p<0.05$). Control mos reported no sig. changes. No sig effects found for fathers. Intention to treat analyses did confirmed the time x group interaction</p> <p><i>Child behaviour: Behavioural observations:</i> no sig effects for non-compliance, but significant time ($F(1,30)=6.23, p<0.05$) and time by group effects ($F(1,30)=8.90, p<0.01$) for oppositional behaviour, with intervention group decreasing in levels of oppositional behaviour from pre to post ($t(15)=2.67, p<0.05$), and from pre to follow-up ($t(15)=2.98, p<0.05$). No changes in control group children. Sig time effects for 'appropriate behaviour' for both groups. Intention to treat analyses did confirmed the time x group interaction</p> <p>In the 'generalisation settings': sig time ($F(1,30)=5.59, p<0.05$) and time x group effects ($F(1,30)=7.80, p<0.01$) for non-compliance, with intervention group decreasing in levels of noncompliance from pre to post ($t(16)=3.69, p<0.01$), and from pre to follow-up ($t(15)=2.70, p<0.05$). No changes for the control group. For oppositional: sig time effect only, indicating both groups reduced in oppositional behaviour over time. No sig effects for appropriate child behaviour. Intention to treat analyses did confirmed the time x group interaction</p> <p><i>Parental behaviour</i> <i>Parental report:</i> Mothers: sig time x group effects for over-reactivity ($F(1,27)=7.96, p<0.01$) and time effects for laxness ($F(1,27)=6.24, p<0.05$) and over-reactivity ($F(1,27)=9.72, p<0.01$). Intervention mos became less over-reactive after the intervention ($t(13)=3.34, p<0.01$) and this was maintained at follow-up compared to preint. ($t(11)=3.97, p<0.01$). No changes for control group mos. However, intention to treat analyses did not confirm the time x group interaction.</p>

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	<p><i>Parental report. Fathers:</i> sig time x group effects for laxness ($F(1,19)=9.95, p<0.01$), verbosity ($F(1,19)=18.82, p<0.01$), but not over-reactivity. Intervention fathers use of lax ($t(9)=4.47, p<0.01$) and verbose ($t(9)=3.24, p<0.01$) styles declined sig from pre- to post- and from pre- to follow-up. Control fas used more verbose discipline from pre to post. Intention to treat analyses confirmed the group effects for verbose discipline, and declines in intervention fas use of these discipline strategies.</p> <p><i>Behavioural observations:</i> no sig effects for parental positive antecedent behaviours or parental negative behaviours in the target settings. But for parental positive consequences behaviour there was a sig. group x time interaction ($F(3,28)=3.16, p<0.05$) (univariate time effects for positive social attention and time x group effects for praise – pre – post, and pre- f/up)). Intention to treat analyses confirmed the time x group interaction for praise.</p> <p>In the 'generalization settings': no sig time or time by group effects.</p> <p><i>Parental stress</i> No sig effects found.</p> <p><i>Clinical significance</i> At post intervention, 9 (52.9%) of intervention group children experienced reliable <i>behaviour change</i> on the maternal TBPS compared to 3 (20%) control-group children. Chi square analysis approached significance ($p<0.05$: they used the more conservative $p<0.01$ as they had siblings within the study so wanted to take account of possibility of Type 1 errors due to data interdependence).</p> <p><i>Parenting:</i> Sig more intervention mos (50% vs 6.7%) reported reliable reductions in overactive discipline at postintervention. At follow-up, 3 (25%) showed reliable change., Sig more intervention fas. reported reliable change in laxness (40% vs 0%) and verbosity (50%, 1%) at postintervention. At follow-up 50% showed reliable change from preintervention on laxness and verbosity.</p> <p><i>Stress:</i> sig more intervention group mothers (28.6%) compared to control group mos (0%) reported reliable reductions in stress at post-intervention. None reported deteriorations at follow-up.</p>
Sofronoff and Farbotko (2002)	<p>'Parental Efficacy in the management of Asperger syndrome': (developed for the project) 15 items assessing the behaviours the children displayed (yes/no) and the extent to which parents believed they could manage the behaviour problems (0-5: no confidence – complete confidence). Used average self-efficacy scores as some children displayed more problem behaviours than others.</p> <p>Eyberg Child Behaviour Inventory (ECBI) (Eyberg and Pincus, 1999) (though authors note could not find any studies which use this inventory with children with Aspergers. Used the total problem score.</p> <p>Outcomes For control group, data at T2 were carried forward to Time 3 as in an intention to treat analysis. 3X3 repeated measures.</p> <p><i>Number of reported problem behaviours</i> The no. of problem behaviours decreased significantly between Time 1 and Time 2 ($p<0.001$ for both intervention groups). Also a sig diff between Time 1 and Time 3 for the ind gp sessions ($p<0.002$). Sig effect for time x group ($F=8.28, p<0.001$): control group different to intervention groups.</p> <p><i>Parental self-efficacy</i> Significant main effect for time ($F=7.37, p=0.001$), with sig diffs between T1 and T2 ($p<0.005$), and T1 and T3 ($p<0.02$). No sig main effect for group. Sig time x group interaction ($F=6.26, p<0.001$) with control group different to intervention groups.</p>

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	<p><i>Parental self-efficacy: differences between mothers and fathers</i> 2X3 repeated measures (mo; fa) (T1, T2, T3). Sig main effect for time ($F=11.62, p<0.001$). Pairwise comparisons showed the overall level of parental self-efficacy increased sig. between T1 and T2 ($p<0.001$) and between T1 and T3 ($p<0.002$). No main effect for parent, but a sig. time x parent interaction (mos scores started lower but ended higher than fas).</p> <p>Sig parent x time interaction found in the ind session group ($F(4.19, p<0.05)$) with this interaction appearing to stem from mothers showing a sig. increase in self-efficacy whilst fathers showed little change.</p> <p>Level of self-efficacy in the intervention group: mothers increased significantly after the commencement of the intervention for the workshop (ie T2) ($F=9.80, p<0.01$) and ind sessions ($F=12.98, p<0.001$) groups. Ind session group: sig diffs between T1 and T2 ($p<0.01$) and T1 and T3 ($p<0.001$). Workshop group T1 and T2 ($p<0.01$). No such changes for fathers in either group.</p>
Sofronoff <i>et al.</i> (2004)	<p>Eyberg Child Behaviour Inventory (ECBI) (Eyberg and Pincus, 1999) (though authors note could not find any studies which use this inventory with children with Aspergers. Used the total problem score.</p> <p>Outcomes <i>Number of problem behaviours:</i> sig main effect for time ($F(2,96)=26.68, p<0.001$) and for group ($F(2,48)=6.90, p<0.005$). Main effects modified by a significant time x group interaction ($F(4,96)=6.53, p<0.005$). Post hoc tests revealed the workshop group reported significantly fewer problems at T2 ($p<0.0001$) compared with T1, and at T3 compared with T1 ($p<0.001$). Individual sessions group: similar ($p<0.0001$; and $p<0.0001$). No sig diffs for time for the wait list group. Also, at T2, a sig diff between workshop and wait list group ($p<0.004$) and the ind session and wait list group ($p<0.0001$). At T3, sig. diff between workshop and wait list group ($p<0.01$) and between ind sessions and wait list group ($p<0.0001$). No sig diffs between the two intervention groups at any time. <i>Reported intensity of problem behaviours:</i> sig main effect for time ($F(2,96)=24.71, p<0.001$) and for group ($F(2,48)=5.81, p<0.01$). Main effects modified by a significant time x group interaction ($F(4,96)=7.82, p<0.001$). Post hoc tests revealed the workshop group reported significantly lower intensity of problem behaviours at T2 ($p<0.0001$) compared with T1, and at T3 compared with T1 ($p<0.0001$). Individual sessions group: similar ($p<0.0001$; and $p<0.0001$). No sig diffs for time for the wait list group. Also at T2 a sig diff between the workshop and individual sessions groups ($p<0.05$), the individual sessions and wait list group ($p<0.0001$), but <u>not</u> the workshop and wait list groups. At T3, sig. diff between the two intervention groups ($p<0.01$), and between ind sessions and wait list group ($p<0.0001$), but not between the workshop and waiting list groups. So, across all these the ind sessions group was reporting significantly lower intensity of problem behaviours than either the workshop or wait list group at T2 and T3.</p>