Campbell Systematic Reviews
2012:1
First published: 3 January, 2012
Last updated: 6 April, 2011
Search executed: 7 October, 2010

Home-based Child Development Interventions for Preschool Children from Socially Disadvantaged Families

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Title	Home-based child development interventions for preschool children from socially disadvantaged families
Institution	The Campbell Collaboration
Authors	Miller, Sarah Maguire, Lisa K. Macdonald, Geraldine
DOI	10.4073/csr.2012.1
No. of pages	71
Last updated	6 April, 2011
Citation	Miller, S., Maguire, L. K., Macdonald, G. Home-based child development interventions for preschool children from socially disadvantaged families. Campbell Systematic Reviews 2012:1 DOI: 10.4073/csr.2012.1
Co-registration	This review is co-registered within both the Cochrane and Campbell Collaborations. A version of this review can also be found in the Cochrane Library.
Contributions	Sarah Miller wrote the background and methods. SM and Lisa Maguire selected studies for inclusion in the review, extracted data from the included studies, assessed the risk of bias of the studies and entered data in Review Manager 5.1. Sarah Miller described the included studies, analysed the data, drafted the discussion and identified issues for practice and research.
Editors for this review	Editor: William Turner Managing editor: Krystyna Kowalski
Support/funding	Internal sources: Centre for Effective Education, Queen's University Belfast, UK External sources: Research and Development Office, Northern Ireland, UK
Potential conflicts of interest	Sarah Miller - principal investigator of a randomised controlled trial of a home-based intervention aimed at improving developmental outcomes of preschool children. Potential conflicts of interest were minimised by the assessment of eligibility and risk of bias being done by two authors. Lisa K Maguire - none known. Geraldine Macdonald - none known.

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Abstract

BACKGROUND

Social disadvantage can have a significant impact on early child development, health and wellbeing. What happens during this critical period is important for all aspects of development. Caregiving competence and the quality of the environment play an important role in supporting development in young children and parents have an important role to play in optimising child development and mitigating the negative effects of social disadvantage. Home-based child development programmes aim to optimise children's developmental outcomes through educating, training and supporting parents in their own home to provide a more nurturing and stimulating environment for their child.

OBJECTIVES

To determine the effects of home-based programmes aimed specifically at improving developmental outcomes for preschool children from socially disadvantaged families.

SEARCH STRATEGY

We searched the following databases between 7 October and 12 October 2010: Cochrane Central Register of Controlled Trials (CENTRAL) (2010, Issue 4), MEDLINE (1950 to week 4, September 2010), EMBASE (1980 to Week 39, 2010), CINAHL (1937 to current), PsycINFO (1887 to current), ERIC (1966 to current), ASSIA (1987 to current), Sociological Abstracts (1952 to current), Social Science Citation Index (1970 to current). We also searched reference lists of articles.

SELECTION CRITERIA

Randomised controlled trials comparing home-based preschool child development interventions with a 'standard care' control. Participants were parents with children up to the age of school entry who were socially disadvantaged in respect of poverty, lone parenthood or ethnic minority status.

DATA COLLECTION AND ANALYSIS

Two authors independently selected studies, assessed the trials' risk of bias and extracted data.

RESULTS

We included seven studies, which involved 723 participants. We assessed four of the seven studies as being at high risk of bias and three had an unclear risk of bias; the quality of the evidence was difficult to assess as there was often insufficient detail reported to enable any conclusions to be drawn about the methodological rigour of the studies. Four trials involving 285 participants measured cognitive development and we synthesised these data in a meta-analysis. Compared to the control group, there was no statistically significant impact of the intervention on cognitive development (standardised mean difference (SMD) 0.30; 95% confidence interval -0.18 to 0.78). Only three studies reported socioemotional outcomes and there was insufficient data to combine into a meta-analysis. No study reported on adverse effects.

AUTHORS' CONCLUSIONS

This review does not provide evidence of the effectiveness of home-based interventions that are specifically targeted at improving developmental outcomes for preschool children from socially disadvantaged families. Future studies should endeavour to better document and report their methodological processes.

PLAIN LANGUAGE SUMMARY

The early years of a child's life are extremely important in terms of development and growth. Children from a deprived family background are at greater risk of developmental problems and poor health. Parenting and the quality of the home environment can help boost young children's development and reduce the negative consequences of deprivation. The purpose of this review was to look at whether home-based parenting programmes, which aim to improve child development by showing parents how to provide a better quality home environment for their child, are effective in doing so. Seven randomised controlled trials (RCTs) met the inclusion criteria for this review. It was possible to combine the results from four of the seven studies, which showed that children who received the programme did not have better cognitive development than a control group. Socioemotional development was measured in three studies but we could not combine this data to help reach a conclusion about effectiveness. None of the studies measured adverse effects. The quality of the evidence in the studies was difficult to assess due to poor reporting. More high quality research is needed.

1 Background

1.1 DESCRIPTION OF THE CONDITION

Social disadvantage can have a significant impact on early child development, health and wellbeing (Siddiqi 2007; Lucas2008; Matthews 2010), in addition to longer term social, emotional and cognitive impacts (Kaplan 2001; Schoon 2003;Najman 2004; Sektnan 2010). It is not simply a question of income poverty but a combination of deprivation and social exclusion (Saunders 2006). Those living in poverty, lone parents (Saunders 2006) and minority ethnic groups (often confounded with poverty) are all at risk of social disadvantage (Bradley 2001a). Adverse child outcomes associated with social disadvantage are wide-ranging and can include poorer physical health (Bauman 2006; Seguin 2007), emotional dysregulation, poorer or fewer social skills, more behavioural difficulties (Webster-Stratton 2008), cognitive delay (Dowdney 1998), impaired intellectual development (Croft 2001; Otero 2003), poor language skills (McPhillips 2007) and low educational attainment (Sammons 1995).

Access to resources (Evans 2004), caregiving competence and the quality of the home learning environment play a crucial role in supporting development in young children (Bradley 2001a; Bradley 2001b; Thompson 2001; Blair 2002; Waterston 2003; Sammons 2004; Siddiqi 2007; Burger 2010). However, children who grow up in poverty, a significant dimension of social disadvantage, are more likely to be exposed to cumulative multiple stressors and are consequently at increased risk of adverse outcomes. Their housing is more likely to be noisy, overcrowded and of poor quality; they are at higher risk of experiencing more family turmoil and higher levels of violence (Bradley 2001a; Evans 2002; Evans 2004), and are less likely to be exposed to developmentally enriching materials and opportunities than children who are not socially disadvantaged. As conditions worsen and stress mounts, home environments can become less stimulating (Ramey 2004).

Parent behaviour also mediates the relationship between disadvantage and child outcomes (Eckenrode 2001; Repetti 2002). Parents living in poverty are at increased risk of mental health problems and their parenting behaviours tend to be less consistent, less stimulating and more punitive than those of parents not living in poverty (McLoyd 1998; Bradley 2001a; Crosier 2007; Kohen 2008). Ramey and

Ramey (Ramey 2004) have summarised the crucial experiences that are necessary to provide opportunities for stimulating learning and are required for normal early brain development. Children benefit if their parents:

1. encourage exploration;
2. mentor in basic skills;
3. celebrate developmental advances;
4. rehearse and extend new skills;
5. protect them from inappropriate disapproval, teasing and punishment;
6. communicate richly and responsively;
7. guide and limit behaviour.

What happens in the home and with the caregivers is clearly an important aspect of limiting the impact of social disadvantage and promoting child development, thus the focus of this review is the specific impact of home-based child development interventions on changing a potentially impoverished intellectual environment and promoting cognitive and socioemotional development.

1.2 DESCRIPTION OF THE INTERVENTION

Home-based child development programmes delivered by trained lay or professional family visitors aim to optimise children's developmental outcomes through educating, training and supporting parents in their own home to provide a more nurturing and stimulating environment for their child. Some interventions are broad-based, but the focus of this review is those interventions that specifically try to remedy this information gap by giving parents knowledge, resources and support.

The intervention is curriculum-based and is delivered by a family visitor or practitioner directly to parents in their own homes. It consists of:

- age-appropriate information (either written, verbal or both) related to child development and competent caregiving;
- age-appropriate resources, which might include books, puzzles, art materials, nursery rhyme tapes etc;
- general support to the parent in relation to parenting and child development.

The family visitor provides information that addresses children's intellectual, social and emotional development, explains it to the parent and helps them to use it in their everyday parenting. Parents are encouraged by the family visitor to engage in practical activities with their child that will reinforce the parent-child relationship, provide new learning experiences and thereby promote development. Parents are shown how to make best use of any resources provided and how they can be used to aid activities such as reading to the child, singing nursery rhymes or playing games with household objects.

The information that the practitioner gives can also include advice and support that targets parental attitudes, knowledge and skills in order to promote parental behaviours that will facilitate their child's cognitive and socioemotional development. Such information includes specific knowledge appropriate to their child's stage of development. The family visitor provides support to the parent through the discussion of child development and other child-related issues that may be raised by the parent and will often signpost the parent to appropriate support agencies or additional programmes.

1.3 HOW THE INTERVENTION MIGHT WORK

Improved parenting skills and patterns that are highly supportive, as well as provision of appropriate developmental stimulation in the home, are related to improved development in children (Bronfenbrenner 1998; Herbst 2000; Bradley 2001b; Croft 2001; Blair 2002; Ryan 2006) and can ameliorate the differences in academic achievement within and between income groups (McLoyd 1998). According to the Bronfenbrenner and Morris bio-ecological Person-Process-Context-Time (PPCT) model, parental processes interact with child characteristics to influence development (Bronfenbrenner 1998). Proximal processes (activities in which the child interacts with people, objects or symbols) are considered to be "the primary engines of development" (Bronfenbrenner 1998) and are at risk of being less than optimal in the context of poverty and social disadvantage.

Home-based child development programmes directly target parents' knowledge and skills, seeking to enhance their ability to facilitate and encourage their child's development and to provide enriched learning opportunities (Sandler 2011). The family visitor is the primary mechanism through which the programme is delivered to the parent and is an important element of programme delivery. It is through changes in parental attitudes and behaviour that changes in child outcomes are achieved. Furthermore, the link between the number of visits a parent receives and the success of the programme in achieving its goals is not thought to be a simple dose-response relationship. While intensive programmes are considered to be important, there is no accepted threshold number of visits that should be completed by parents to ensure success.

1.4 WHY IT IS IMPORTANT TO DO THIS REVIEW

Parents have an important role to play in optimising child development and mitigating the negative effects of social disadvantage. As such, there is a need to examine the specific effects and benefits of interventions targeted at preschool disadvantaged children that are delivered in the home and seek to provide parents with the requisite skills to achieve a nurturing and stimulating home environment that promotes child development, specifically cognitive and socioemotional development.

2 Objectives

To ascertain the effects of home-based programmes aimed specifically at improving developmental outcomes for preschool children from disadvantaged families.

3 Methods

3.1 CRITERIA FOR CONSIDERING STUDIES FOR THIS REVIEW

3.1.1 Types of studies

We included only randomised controlled trials (RCTs) in this review. The control group received either no intervention or standard care. Studies comparing two different types of home-based programme without a control group were excluded.

3.1.1.1 Types of participants

Parents with children up to the age of school entry and who were socially disadvantaged in respect of poverty, lone parenthood or ethnic minority status. Age of school entry can vary between countries (four to seven years) and so the upper age range for this review was the school entry age for the country in which the trial took place.

We excluded studies if they aimed to recruit particular clinical subgroups of parents.

3.1.2 Types of interventions

Home-based interventions, delivered by trained lay or professional family visitors, designed to improve child intellectual and socioemotional development through the provision of relevant knowledge and skills to the parent. Interventions that included a group element were excluded.

3.1.3 Types of outcome measures

3.1.3.1 Primary outcomes

Child outcomes

- Cognitive development (including language development and attention)
- Socioemotional development (including self-regulation and behavioural development)
- Adverse outcomes
- Parents feel disempowered

3.1.3.2 Secondary outcomes

Child outcomes

- Physical development
- Parent outcomes
- Parenting behaviour
- Parenting attitudes
- Quality of the home environment

Outcome measures vary widely in terms of quality and validity. Our minimum standard was that for any instruments used in included studies a full description of the scale and its scoring was available. Outcomes were assessed immediately upon programme completion. For future updates of the review, we will assess outcomes from any newly identified studies at posttest and, where possible, at longer-term follow-up as well.

3.2 SEARCH METHODS FOR IDENTIFICATION OF STUDIES

3.2.1 Electronic searches

We searched the following electronic databases.

- Cochrane Central Register of Controlled Trials (CENTRAL) (2010, Issue 4). Searched 12 October 2010.
- MEDLINE (1950 to week 4 September 2010). Searched 7 October 2010.
- EMBASE (1980 to Week 39, 2010). Searched 7 October 2010.
- CINAHL (1937 to current). Searched 8 October 2010.
- PsycINFO (1887 to current). Searched 8 October 2010.
- ERIC (1966 to current). Searched 8 October 2010.
- ASSIA (1987 to current). Searched 8 October 2010.
- Sociological Abstracts (1952 to current). Searched 8 October 2010
- Social Science Citation Index (1970 to current). Searched 8 October 2010.

While no language or date restrictions were applied to the searches, we took no additional steps to identify unpublished and non-English language sources.

3.2.2 Searching other resources

We searched the reference lists from relevant review articles and any study chosen for potential inclusion in this review to identify further relevant studies. It was intended that experts in the field would be contacted to identify other sources; we did not do this but will be included in future updates of the review.

3.3 DATA COLLECTION AND ANALYSIS

3.3.1 Selection of studies

Two authors (SM and LM) independently assessed and screened all titles identified through the search strategy to determine whether they met the inclusion criteria. We obtained and assessed hard copies of all reports of studies that appeared to meet the eligibility criteria. We resolved disagreement over inclusion through discussion with

the third author (GM). There were no occasions where consensus could not be reached. We document details of all reasons for exclusion in the Characteristics of excluded studies table.

3.3.2 Data extraction and management

Two authors (SM and LM) extracted data independently according to a piloted pro forma that was developed and tested for this review. Information was extracted pertaining to study location, sample sizes, participant characteristics (for example, age, gender, ethnicity or race), intervention characteristics (including intensity and duration, implementation integrity, and details of any intervention offered to the control group), outcomes and outcome measures at post-treatment and follow-up, attrition rates and methods (including sequence generation, method of allocation concealment and methods of analysis).

3.3.3 Assessment of risk of bias in included studies

Two authors (SM and LM) independently appraised the included studies and assessed them for risk of bias according to the criteria specified in the Cochrane Handbook for Systematic Reviews of Interventions (Higgins 2008) for each of the following domains.

1. Sequence generation: was the allocation sequence adequately generated?
2. Allocation concealment: was allocation adequately concealed?
3. Blinding of participants, personnel and outcome assessors: was knowledge of the allocated intervention adequately prevented during the study?
4. Incomplete outcome data: were incomplete outcome data adequately addressed?
5. Selective outcome reporting: are reports of the study free of suggestion of selective outcome reporting?
6. Recruitment of participants: did the method of recruitment favour or hinder any particular groups of parents?
7. Other sources of bias: was the study apparently free of other problems that could put it at a high risk of bias?

For each study and domain of bias, we gave a rating of low risk of bias, high risk of bias or unclear risk of bias. A rating of 'unclear' indicated uncertain risk of bias in that insufficient detail was reported; sufficient detail was reported but the risk of bias was unknown, or that the study did not address the outcome. We summarised the overall risk of bias within each study across the domains, giving greatest weight to selection bias, detection bias and attrition bias. If any or all of these domains were assessed as at high risk of bias (for example, the outcome assessors were not blinded to allocation or attrition at posttest was considerable) then the overall assessment of risk of bias for the study was considered to be high. The assessment of the risk of bias for each included study can be found in Characteristics of included studies.

3.3.4 Measures of treatment effect

We used mean differences for studies reporting continuous data on similar outcome measures with a 95% confidence interval. Where outcome measures differed between studies, as was the case for the cognitive development outcome, we calculated the standardised mean difference in order to combine results across scales. When two measures were used to assess the same outcome, we chose the measure that most accurately reflected the outcome of interest. We summarized the outcome measures used in the included studies in Additional Table 1. See also Description of studies.

No studies reported dichotomous data in such a way that they could be combined in a meta-analysis. An example of this is that three of the included studies (Sandler 1973; Madden 1984; Scarr 1988) used a maternal teaching task as a measure of parental behaviour. However, the measurement of maternal performance during this task varied between the studies: Madden (1984) rated maternal behaviour according to 10 categories, Scarr 1988 rated maternal behaviour according to four categories of behaviour (only some of which overlapped with the categories assessed by Madden 1984) and Sandler (1973) also rated maternal behaviour but did not report any scoring information.

3.3.5 Unit of analysis issues

No studies were randomised by group; all were randomised at the level of the individual. It transpired, however, that one study recruited two separate cohorts of intervention and control participants in two different years. We combined the data from the intervention and control groups of the two relevant cohorts into a single intervention and control group, which is the method recommended by Higgins (2008).

3.3.6 Dealing with missing data

We contacted authors for them to supply any missing or unreported data including group means, standard deviations, details of attrition and details of interventions received by the control groups. We described missing data and attrition for each included study in the 'Risk of bias' tables. We assessed the extent to which the results and conclusions of the review might be affected by this in the Discussion section.

3.3.7 Assessment of heterogeneity

We assessed the extent of between trial differences and the consistency of results of the meta-analysis in three ways:

- by visual inspection of the forest plots;
- by performing the Chi2 test of heterogeneity (where a significance level less than 0.10 would be interpreted as evidence of
- heterogeneity);

- by examining the Tau2 and I2 statistics (Higgins 2008; section 9.5.2).

Tau2 describes the between studies variance. The I2 statistic describes approximately the proportion of variation in point estimates due to heterogeneity rather than sampling error: 0% to 40% indicates that only a small amount of the observed variation is due to true heterogeneity; 30% to 60% may indicate moderate heterogeneity; 50% to 90% may indicate substantial heterogeneity; and 75% to 100% may indicate considerable heterogeneity (Higgins 2008).

3.3.8 Assessment of reporting biases

We did not draw a funnel plot (estimating differences in treatment effects against their standard error) as there were insufficient included studies (n = 7) to make this meaningful.

3.3.9 Data synthesis

Where possible, we synthesised results into a meta-analysis if interventions were sufficiently similar in terms of intensity, frequency and duration. We used both fixed-effect and random-effects models to assess the impact of heterogeneity.

3.3.10 Subgroup analysis and investigation of heterogeneity

We did not conduct subgroup analyses because of insufficient data due to the small number of included studies. Details of analyses we had planned to do and will do in the update, if appropriate, are in Table 2.

3.3.11 Sensitivity analysis

Similarly, due to the small number of included studies, there were insufficient data to perform planned sensitivity analyses. See Table 2.

4 Results

4.1 DESCRIPTION OF STUDIES

4.1.1 Results of the search

The searches yielded 13,569 records. SM and LM screened the titles and abstracts for eligibility. At this stage, 176 records appeared to meet the eligibility criteria and we retrieved the full texts of these records. SM and LM independently assessed them. Subsequently, seven studies met the criteria for inclusion in the review. We resolved any uncertainties by discussion. The authors were initially uncertain whether the intervention in Infante-Rivard (1989) was sufficiently child development oriented to meet the inclusion criteria of the review. The authors reviewed the items of the HOME observation tool, upon which the intervention is based, and decided that the content of the HOME (and thus the intervention) was sufficiently focused on child development to be included.

4.1.2 Included studies

Seven studies (Sandler 1973; Field 1982; Madden 1984; Scarr 1988; Infante-Rivard 1989; Powell 1989; Johnson 1993), including 723 participants, met the inclusion criteria for the review. All studies used an RCT design and compared homebased preschool child development interventions with a 'standard care' control. Four studies did not report what the standard

care consisted of (Sandler 1973; Field 1982; Madden 1984; Scarr 1988), while three studies reported that standard care consisted of primary healthcare services (Infante-Rivard 1989; Powell 1989; Johnson 1993). The Madden 1984 study recruited four intervention groups in total, only two of which (the groups recruited in 1973 and 1975) were eligible to be included. The other two cohorts in this study (recruited in 1973 and 1976) were compared to another intervention rather than a standard care control condition, which made them ineligible.

4.1.3 Location of studies

The studies identified for inclusion were conducted in the US (Sandler 1973; Madden 1984), Canada (Infante-Rivard 1989), Bermuda (Scarr 1988), Jamaica (Powell 1989) and Ireland (Johnson 1993). Field (1982) did not report the location of their study.

4.1.4 Participants

See Additional Table 10.3.

All seven studies recruited socially disadvantaged mothers aged 13 to over 40 years. In four studies (Sandler 1973; Madden 1984; Scarr 1988; Infante-Rivard 1989) social disadvantage was defined by low maternal educational attainment in addition to at least one other criterion including: living below the poverty line, living in rented accommodation, having an occupational level no higher than semi-skilled. In Field (1982) the mothers were teenagers with a low income and low socioeconomic status, while Johnson (1993) and Powell (1989) did not specify how disadvantage was defined.

For all studies, the age of participating children was less than four years: Infante-Rivard (1989) included pregnant mothers; Field (1982) and Johnson (1993) included mothers with a newborn baby, and the remaining studies (Sandler 1973; Madden 1984; Scarr 1988; Powell 1989) included mothers with a child aged between 16 and 44 months.

Four studies (Sandler 1973; Madden 1984; Powell 1989; Johnson 1993) reported the gender of participating children. In Johnson (1993), Madden (1984) and Powell (1989), there were approximately equal proportions of boys and girls. In the Sandler (1973) study, the sample included more boys (67%) than girls (33%).

Five studies reported the ethnicity of participants: Madden (1984) included 88% Black and 12% non-Black mothers; Sandler (1973) included 60% White and 40% Black mothers; and Scarr (1988) included 59.5% Black Bermudian, 16% White non-Bermudian, 13.5% White Bermudian and 7% Portuguese mothers (4% missing). Field (1982) reported that the sample was Black and Powell (1989) reported that the sample was predominantly Black.

4.1.5 Interventions

Two of the studies (Madden 1984; Scarr 1988) evaluated the Levenstein's Mother Child Home Program (Day 1977), which aims to teach mothers how to maintain a cognitively stimulating mother-child interaction in the home and thus prevent later educational disadvantage in their children aged two to four years. The programme consists of 46 twice-weekly half hour home visits for the 10 month school calendar over two years. Visits are conducted by a trained home visitor called a 'toy demonstrator' who models verbal interaction techniques with parents, teaching them how to use toys and books with their child. Examples include showing parents how to play with their child, demonstrating the kinds of questions to ask the child during the activity, encouraging parents to praise the child and respond appropriately to their child's emotions and behaviour.

The home visitors have a guide sheet for each visit that details the contents and techniques to be communicated to the parent each week. In Madden (1984), both

the (1973) and the (1975) control groups received only testing and home interviews; in Scarr (1988), the control group received only the testing. Neither study reported additional support or services that were available to participants in the form of standard care.

Field (1982) evaluated an intervention that aims to train teenage mothers in infant stimulation using caretaking, sensorimotor and mother interaction exercises that are adapted from developmental assessment scales such as the Brazelton Neonatal Behavioural Assessment Scale (Brazelton 1973) and the Bayley Scales of Infant Development (Bayley 1969). The intervention consisted of six months of biweekly home visits, which were made by a psychology graduate student and a training Comprehensive Employment Training Act (CETA) aide. The psychology graduate demonstrated the exercises to the mother, provided illustrated cards of the exercises and toys and asked the mother to demonstrate the exercises to ensure the mother understood them. The mother was asked to practise each exercise for five minutes a day and record the amount of time per day the exercise was practised and whether it was performed successfully by the child. There were six exercises per home visit. At the following visit, the mother was asked to demonstrate the exercises and show the completed exercise card. During the home visit, the CETA worker interacted with the teenage mother's siblings or family in order to minimize disruption during the visit. The control group received the assessments but no further details were provided in relation to what other services were available to them.

Infante-Rivard (1989) evaluated an intervention that aimed to provide the mother with simple tools to maximise the quality of the mother-child interaction. It was based around the items from the Home Observation for Measurement of the Environment (HOME) (Caldwell 1979) and aimed to develop the mother's potential for interaction with her child through the provision of simple tools to maximise the quality of the mother-child interaction. For example, at the postnatal visit when the child is one week old, home visitors show the mother that the child can hear, see and respond to their environment and demonstrate to the mother how to communicate with her baby by talking in a calm voice, looking directly into the baby's eyes and touching and caressing the baby while it is held in the optimal position. The intervention consisted of three prenatal visits at 28, 30 and 36 weeks gestation and five postnatal home visits at one, two, five, 12 and 30 weeks by a public health nurse. The control group in this study received a single routine postnatal visit at two to four weeks after birth by an experienced public health nurse.

Johnson (1993) evaluated the Community Mothers programme. This programme consists of monthly home visits for the first 12 months of the child's life from a family visitor who is a trained, experienced volunteer mother living in the local community. Home visitors work under the guidance of a family development nurse and each volunteer supports 15 first-time parents. The programme aims to give support and encouragement to parents in rearing their children using three modules of the Child Development Programme (Barker 1984), namely: educational

development, language development and cognitive development. Both the intervention and control groups received standard support from a local health nurse, which consisted of visits at birth, six weeks and other times as required in addition to invitations to attend for immunisations and a developmental assessment.

Powell (1989) evaluated a 12 month programme that aimed to improve child development, make mothers more effective teachers, improve maternal-child interaction and improve the self-esteem of the mother and child. A community health aide (supervised by a nurse) provided weekly hour-long home visits to a maximum of 13 children each week. During the visit, the family visitor played with the child and covered various combinations of language activities, games, songs and crayon and paper activities. The home visits followed a curriculum that was structured and cognitively oriented, based on Piagetian concepts. In general, two concepts were taught per visit, utilising different toys, and mothers were encouraged to talk with their children and to label things and actions in their environment. A toy was left with the family each week and two manuals have been published that demonstrate how the toys can be used (Grantham-McGregor 1980a; Grantham-McGregor 1980b). The control group received standard care (primary healthcare services), which consisted of home visits from health aides who provided health and nutritional advice.

Sandler (1973) evaluated a programme developed by the Demonstration and Research Centre for Early Education (DARCEE). The overall aim of the programme is to enable the mother to be a more effective educational change agent for her child. Families were visited once a week for 12 weeks by a paraprofessional home visitor who was supervised by a professional home visitor and used behaviour modelling techniques to demonstrate how to use objects and events in the home for educational purposes. The control group received only testing and all participants were paid $6 for taking part.

Additional support or services that might be available to participants in the form of standard care were not reported.

4.1.6 Outcome measures

See Additional Table 10. 1.

4.1.6.1 Primary outcomes

4.1.6.1.1 Child cognitive development

Six of the seven included studies (Sandler 1973; Field 1982; Madden 1984; Scarr 1988; Infante-Rivard 1989; Powell 1989) evaluated the impact of the intervention on cognitive development at post-test using well known reliable and valid tests. Madden 1984 used two measures: the Cattell Developmental and Intelligence Scale (Cattell 1940) and the Stanford Binet Intelligence Test (Terman 1972). Scarr (1988) also used the Stanford Binet Intelligence Test; while Field (1982) and Infante-

Rivard (1989) used the Bayley Scales of Infant Development (Bayley 1969); Powell (1989) used the Griffiths Mental Development Scale (Griffiths 1967; Griffiths 1970). Sandler (1973) used the DARCEE Concept test (Gilmer 1969), which is not well known and insufficient information pertaining to the content, administration and scoring of the test was reported by the authors to enable us to judge the test's reliability or validity. In addition, the DARCEE Concept test measures some of the basic skills emphasised in the home visits (including skills of matching, recognition and identification) and risks being a treatment inherent measure that would be biased towards the intervention group.

Field (1982) assessed cognitive development at two further follow-up points (one year and two year assessments) using the Bayley Scales of Infant Development.

4.1.6.1.2 Child socioemotional development

Three studies (Field 1982; Madden 1984; Scarr 1988) measured socioemotional development at post-test. Field (1982) measured child temperament using the Carey Infant Temperament Questionnaire (Carey 1970) at the mid-term assessment (four months) and at post-test (eight month assessment).

Madden (1984) used the Child Behaviour Trait Rating (Johnson 1976), specifically designed for use with children taking part in the intervention and potentially a treatment inherent measure that would be biased in favour of the intervention group, to assess the programme's impact on socioemotional development in their (1973) cohort at three year follow-up.

Scarr (1988) used four measures to assess this outcome: the Infant Behaviour Record from the Bayley Scales of Infant Development (Bayley 1969), which assesses activity, attention, coordination, deviance and social responsiveness; the Cain Levine Social Competency Scale (Cain 1963), which assesses adaptive skills and communication skills; a delay of gratification task; and a maternal teaching task (Hess 1968), which was used to assess children's motivation to learn and cooperation via the child's ability to sort blocks by colour or kind and the child's positive attitude.

4.1.6.1.3 Adverse outcomes

No adverse outcomes for parents, in the form of disempowerment, were reported in any of the included studies.

4.1.6.2 Secondary outcomes

4.1.6.2.1 Child physical development

Field (1982) and Infante-Rivard (1989) assessed physical development but there were insufficient data to combine into a metaanalysis. Infante-Rivard (1989) reported no statistically significant differences between groups 7.5 months after the intervention. Field (1982), however, reported better psychomotor development and

weight gain in the intervention group compared to the control group. These differences were statistically significant at post-test and at the one and two year followup assessments. There were no differences between the groups in terms of length.

4.1.6.2.2 Parenting behaviour

Five studies assessed parenting behaviour (Sandler 1973; Field 1982; Madden 1984; Scarr 1988; Johnson 2000), three of which used maternal teaching tasks (Sandler 1973; Madden 1984; Scarr 1988). Madden (1984) used the Maternal Interactive Behaviour Record to assess mother-child interactions. The authors described this measure as directly related to the programmes goals, which suggests that it may be a treatment inherent measure and thus potentially biased towards the intervention group. It was a play task that was rated according to 10 categories of behaviour including: labelling, use of colour names, verbalisation of actions, verbalisation of number and shape, solicitation of information from the child, verbal praise, encouragement of divergent use of a toy, non-verbal indication of warmth, reply to child's vocalisation, and failure to reply to child's vocalisation.

Scarr (1988) used a maternal teaching task (Hess 1968) to assess a mother's teaching ability, specifically: whether the mother oriented her child to the task, helped her child to sort the toys by colour and kind, explained how to sort the toys, had a positive attitude and maintained positive control.

Sandler (1973) used the Maternal Teaching Style Instrument to assess mothers' teaching behaviours while helping their child to complete a specific task. While the authors reported that the task was videotaped and coded, no specific coding or scoring information was reported.

Field (1982) used videotaped assessments (coded using a three point rating) of mother and infant alertness, eye contact, facial expressions, vocalisations and the sensitivity and contingency of each other's behaviours. These were only completed for the mid-term assessments (at four months) and were not repeated at post-test or follow-up. The proportion of time the mother talked and the infant's gaze was averted was also quantified. Johnson (1993) used parent report of frequency of reading, playing games and using songs or nursery rhymes with their child. These measures were insufficiently well reported (see section on incomplete outcome data below) or too dissimilar to combine into a meta-analysis.

4.1.6.2.3 Parenting attitude

Johnson (1993) assessed parenting attitudes post-test and used maternal reports of levels of tiredness, occurrence of headaches, feeling miserable and not wanting to go out as a measure of self-esteem. This study also asked mothers about the extent of the positive or negative feelings they had towards their child. At the seven year follow-up, these outcomes were assessed again. In addition, maternal perception of

the appropriateness of physical punishment and perceived importance of being involved in a child's schooling and games were also recorded (Johnson 2000).

Scarr 1988 also measured maternal self-esteem but using the discrepancy between real and ideal ratings on the following subscales of the Parent Report, a companion instrument to the Childhood Personality Scale (Cohen 1977): respect for autonomy, child centeredness, consistency, control via guilt and anxiety and temper and detachment. The differences between the real and ideal ratings on these subscales were taken as a measure of self-esteem. The two measures described above are more a proxy measure of self-esteem rather than a direct assessment of this outcome. In addition, Scarr 1988 assessed maternal attitudes towards discipline using a Discipline Techniques Interview, based on vignettes of typical child misbehaviour, to determine the degree to which mothers relied on reasoning versus physical punishment as discipline strategies. Scarr 1988 also used the Parent as Educator Interview to assess parenting attitudes including: playing activities, talking activities, sharing activities, authoritarian educational beliefs, progressive educational beliefs, rejection of child rearing role, need for family privacy, values conformity, values social skills, values self-direction.

These measures of parenting attitude were not sufficiently similar to combine in a meta-analysis.

4.1.6.2.4 Quality of the home environment

Field 1982 and Infante-Rivard 1989 assessed the quality of the home environment using the HOME observation tool (Caldwell 1979).

4.1.6.3 Other outcomes

The outcomes and measures reported in this review are those that were originally specified in the protocol. However, other outcomes were also assessed by the studies and these included: maternal report of the child being bullied in school at seven year follow-up (Johnson 2000); teacher ratings of school performance measured at three year follow-up (Madden 1984); a treatment-inherent achievement test designed to assess the curriculum of the Mother-Child Home Programme, child personality and parental verbal intelligence (Scarr 1988).

4.1.7 Excluded studies

There were a number of interventions that did not meet the inclusion criteria on the basis that they were not specifically (and only) a child development programme, for example, the Nurse Family Partnership (see Olds 2003; Olds 2006; Olds 2008), or they contained a group parenting element, for example, Early Head Start (see Sandler 1997; Love 2005), HIPPY (see Baker 1999; Barhava-Monteith 1999) or Parents as Teachers (see Renard 1996).

4.2 RISK OF BIAS IN INCLUDED STUDIES

The reporting of issues related to risk of bias was generally poor (full details can be found in Characteristics of included studies and 'Risk of bias' tables). Four of the seven studies were classified as at high risk of bias (Sandler 1973; Madden 1984; Infante-Rivard 1989, Johnson 1993) and three as unclear (Field 1982; Scarr 1988; Powell 1989). The 'Risk of bias' graph (Figure 1) shows our judgements about each risk of bias item, presented as percentages across all included studies. All the trials were single site trials and sample sizes ranged from 47 to 232. In future versions of this review, we will use forest plots to compare intervention effect estimates across studies according to each study's overall risk of bias. This will allow visual inspection of the relative contributions of the studies to the meta-analysis at the different levels of risk of bias.

4.2.1 Allocation

Four studies (Field 1982; Madden 1984; Scarr 1988; Powell 1989) described the randomisation process as a lottery or simply 'random assignment' and provided no further detail. Sandler 1973 used random sampling stratified by initial Stanford Binet IQ test scores and race, quote: "White and Black groups were separately stratified into high, medium and low IQ groups and then randomly assigned to either the experimental or control group". Infante-Rivard 1989 used a randomized block scheme to assign participants to groups and Johnson 1993 prepared cards from a random number table, which were put into sealed envelopes and drawn as required. This study was the only one to report on allocation concealment.

4.2.2 Blinding

In evaluating this type of intervention, it is not possible to blind participants to their allocation; however, five of the seven studies reported that the outcome assessors were blinded to the allocation of participants (Field 1982; Madden 1984; Scarr 1988; Infante-Rivard 1989; Powell 1989).

4.2.3 Incomplete outcome data

Attrition rates ranged across the seven studies from 0% to 41% and the reasons for this were often unclear. No study reported undertaking an intention-to-treat analysis. In three out of the seven studies (Madden 1984; Scarr 1988; Infante-Rivard 1989) it was not possible to tell whether attrition was greater in the intervention or control group. Authors who reported differences in background characteristics between those who dropped out and those who completed the intervention found that that those who dropped out before the post-test assessments were conducted were more likely to be younger (Madden 1984), living alone and single (Infante-Rivard 1989).

Field 1982 reported only means and did not report standard deviations, standard errors, effects sizes or the findings from the statistical significance tests that were undertaken (they only reported whether the resulting P value was less than 0.05).

Sandler 1973 did not report summary statistics for either the measure of cognitive development (the DARCEE Concept test) or the Maternal Teaching Style Instrument meaning that no data from this study could be used in a meta-analysis. The author was emailed in an attempt to retrieve this data however we were unsuccessful and did not receive a reply. Although significant results were reported in favour of the experimental group on some of the subscales of the DARCEE test and the Maternal Teaching Style Instrument, without further information about the tests it was not possible to draw any meaningful conclusions from these partially reported results.

Madden 1984 did not report standard deviations for their measure of parental behaviour, the Maternal Interactive Behaviour Record.

4.2.4 Selective outcome reporting

As far as it was possible to tell, all of the studies reported the outcomes that they set out to measure. However, Powell 1989 mentioned the Peabody Picture Vocabulary Test (PPVT), the data for which is not reported in their paper. Two studies were reported in Powell 1989 and it is unclear whether the PPVT was in fact used with the participants of the study included in this review (Study 2 in the paper) or with the participants of the other study (Study 1), which was not eligible for inclusion in this review.

4.3 EFFECTS OF INTERVENTIONS

See Summary of findings table 1, which presents the main findings for the primary outcomes.

4.3.1 Primary outcomes

4.3.1.1 Cognitive development

Six studies examined the impact of intervention on cognitive development (Sandler 1973; Field 1982; Madden 1984; Scarr 1988; Infante-Rivard 1989; Powell 1989). The data from four of these studies (Madden 1984; Scarr 1988; Infante-Rivard 1989; Powell 1989) were combined into a meta-analysis (n = 285). Madden 1984 tested and reported data for two separate cohorts (1973 and 1975). The data from these two cohorts were combined into a single intervention and control group prior to analysis.

A random-effects model was fitted to the data given the differences between the interventions and outcome measures. The meta-analysis found that the overall average effect for the intervention was a standardised mean difference (SMD) of 0.30, which was not statistically significant (95% CI -0.18 to 0.78; Tau2 = 0.17; I2 =

73%; P value for heterogeneity 0.01, indicating that while the variance between studies was relatively low there was a high degree of inconsistency between the studies). The data from Field 1982 and Sandler 1973 were excluded because insufficient data were reported to use in the metaanalysis.

4.3.1.2 Socioemotional development

Three studies assessed aspects of socioemotional development. Field 1982 and Scarr 1988 measured child temperament and child behaviour respectively at post-test and Madden 1984 measured child behaviour at the three year follow-up with the 1973 cohort. There were insufficient data to combine in a meta-analysis.

Field 1982 reported that mothers in the intervention group (mean temperament rating = 3.4) reported their child's temperament to be less 'difficult' than the control mothers (mean temperament rating = 3.8). This difference was statistically significant at mid-term (four month assessment) ($P < 0.05$) but not at post-test (eight-month assessment). Insufficient data were available to calculate effect sizes or confidence intervals.

Scarr 1988 assessed child behaviour and reported that of the 10 dimensions of socioemotional development they assessed at post-test (including block sorting, positive attitude, activity, attention, coordination, deviance, social responsiveness, adaptive skills, communication skills, delay of gratification), children in the intervention group had better communication skills compared to the control group on the Cain Levine Social Competency Scale (SMD 0.47; 95% CI 0.08 to 0.86, $P < 0.05$) and were better able to sort blocks by colour or kind on the maternal teaching task (SMD 0.39; 95% CI 0.00 to 0.78, $P < 0.05$).

Madden 1984 reported no significant differences in child behaviour between groups at a three year follow-up.

4.3.1.3 Adverse outcomes

No studies measured or reported on adverse outcomes.

4.3.2 Secondary outcomes

4.3.2.1 Physical development

Field 1982 assessed psychomotor development, weight and length, while Infante-Rivard 1989 assessed psychomotor development, however there were insufficient data to combine into a meta-analysis.

Infante-Rivard 1989 reported no statistically significant differences in psychomotor development between groups 7.5 months after the intervention.

Field 1982 reported better psychomotor development in the intervention group compared to the control group and this difference was statistically significant at

post-test (eight month assessment), one year follow-up and two year follow-up. Field 1982 also reported that at each assessment point children in the intervention group weighed statistically significantly more than the children in the control group. There were no differences between the groups in terms of length. Insufficient data were reported by Field 1982 to calculate effect sizes or confidence intervals.

4.3.2.2 Parenting behaviour

Four studies assessed various aspects of parenting behaviour including teaching styles and mother-child interaction (Sandler 1973; Field 1982; Madden 1984; Johnson 1993), however the data were not sufficiently similar (or sufficiently reported in the case of Sandler 1973, Field 1982 and Madden 1984) across the studies to combine into a meta-analysis.

Field 1982 assessed mother-child interaction but only at the mid-term (four month assessment) and not at post-test or followup. However, they reported that at this stage there was significantly better interaction between the mother-infant dyads in the intervention group compared to the control group, intervention mothers talked to their children for a greater proportion of time and intervention infants averted their gaze less than those in the control group. Insufficient data were reported to calculate effect sizes or confidence intervals.

Johnson 1993 assessed parenting behaviour including parental report of frequency of reading, playing games and using nursery rhymes with their child at both post-test and a seven year follow-up. At post-test, mothers who read to their child were more likely to be in the intervention group (relative risk (RR) 1.81; 95% CI 1.52 to 2.16, P < 0.0001) and mothers who read to their child daily were more likely to be in the intervention group (RR 2.13; 95% CI 1.34 to 3.38, P < 0.0001). They also reported that mothers in the intervention group more frequently engaged in developmental stimulation games with their children including cognitive games (MD 2.13; 95% CI 1.65 to 2.60, P < 0.01) and nursery rhymes (MD 4.24; 95% CI 3.59 to 4.88, P < 0.01). There was no difference for motor games and these outcomes were not measured at the seven year followup. At the seven year follow-up, the authors reported that intervention children were more likely to visit the library (RR 1.58; 95% CI 1.10 to 2.26, P < 0.01) and intervention mothers were more likely to check their child's homework (RR 1.23, 95% CI 1.05 to 1.43, P < 0.01).

Madden 1984 assessed the mother-child interaction at post-test with the 1975 cohort and reported that there were no statistically significant differences between the intervention and control groups on this outcome.

Although Sandler 1973 did not report any means or standard deviations, they did report that mothers in the intervention group gave significantly more colour (t = 2.33, P < 0.05) and shape (t = 3.97, P < 0.01) cue labels and fewer inappropriate directions (t = -1.79, P < 0.05), however these analyses were performed on sample

sizes that were too small (total n = 15) to be reliable or valid. It was not possible to calculate effect sizes or confidence intervals.

4.3.2.3 Parenting attitudes

Johnson 1993 explored the impact of the intervention at post-test and at a seven year follow-up on maternal self-esteem, which was measured via maternal reporting of tiredness, headaches, feeling miserable and not wanting to go out. They reported that at post-test, and compared to the control group, mothers in the intervention group reported feeling less tired (RR 0.86; 95% CI 0.77 to 0.97), less miserable (RR 0.75; 95% CI 0. 63 to 0.90) and less frequently wanting to stay in (RR 0.58; 95% CI 0.43 to 0.79). Furthermore, intervention mothers in this study reported more positive feelings (MD 1.44; 95% CI 1.14 to 1.775, P < 0.01) and fewer negative feelings (MD -0.50; 95% CI -0.77 to -0.23, P < 0.01) towards their child than control mothers.

The differences in maternal self-esteem observed at post-test were no longer evident at the seven year follow-up, however intervention mothers were significantly more likely to disagree with the statement that 'children should be smacked for persistently bad behaviour' (RR 2.11; 95% CI 1.10 to 4.06, P < 0.05) (Johnson 2000).

Scarr 1988 found no differences between groups on maternal self-esteem. In the Parent as Educator Interview, they found that the mothers in the intervention group reported significantly more sharing activities (SMD 0.48; 95% CI 0.09 to 0.87, P < 0.01), however this result was one of only two statistically significant findings out of a total of 44 comparisons and is therefore likely to be a spurious finding (which the authors acknowledge in their report). The other significant finding was on the plead/request dimension of the Discipline Techniques Interview and, for the reason above, is a tenuous finding.

4.3.2.4 Quality of the home environment

Both Field 1982 and Infante-Rivard 1989 found no statistically significant differences between groups in terms of the quality of the home environment.

5 Discussion

5.1 SUMMARY OF OVERALL RESULTS

Only seven small studies, the most recent of which was conducted 18 years ago, met the inclusion criteria for this review and as such the results should be treated with caution. There were sufficient data to perform a meta-analysis on only one outcome, cognitive development, and this analysis found that the overall average effect for the intervention was a standardised mean difference of 0.30, which was not statistically significant (95% CI -0.18 to 0.78). Thus, there was no evidence of any impact of home-based child development interventions on the cognitive development of preschool children from socially disadvantaged families. These findings do not enable us to draw reliable conclusions regarding the efficacy of such interventions.

5.2 OVERALL COMPLETENESS AND APPLICABILITY OF EVIDENCE

There were insufficient data to perform a meta-analysis on the other outcomes, which were socioemotional development, physical development, parenting behaviour, parenting attitudes and the quality of the home environment. Nevertheless, no consistent pattern of findings emerged from the individual studies in relation to these particular outcomes. We planned to assess adverse outcomes but these were not addressed by any study.

5.3 QUALITY OF THE EVIDENCE

The quality of the evidence was unclear. Often there was insufficient detail reported to enable any conclusions to be drawn about the methodological rigour of the studies. In particular, details pertaining to the randomisation process and allocation, levels of attrition and reasons for attrition were poorly reported, if at all, and it is this poor reporting that limits our capacity to draw reliable conclusions about the effectiveness of such programmes in improving child development outcomes.

5.4 POTENTIAL BIASES IN THE REVIEW PROCESS

Not being able to obtain the missing data from the Sandler 1973 and Field 1982 studies, to include in the meta-analysis, remains a limitation of this review.

5.5 AGREEMENTS AND DISAGREEMENTS WITH OTHER STUDIES OR REVIEWS

The common view is that home visiting is an important tool in providing support, education and guidance to parents of young children. Home visiting has been shown to improve the quality of the home environment (Kendrick 2000) and there is some evidence to support the effectiveness of one-to-one and group parent training (for teenage mothers) in improving parent-child interaction (Barlow 2011) and emotional and behavioural outcomes for the children (Elkan 2000; Barlow 2010). This review had a very specific focus on programmes that were child development oriented, however it was unable to support or go beyond the evidence provided by other studies and reviews to provide reliable evidence of their effectiveness in improving developmental outcomes. It should be kept in mind that the majority of trials published in this area, and thus that form the basis of this review, are small scale and likely to be underpowered (Slavin 2009).

6 Conclusions

6.1 IMPLICATIONS FOR PRACTICE

This review does not currently provide any evidence of the effectiveness of home-based interventions that are specifically targeted at improving development outcomes for preschool children from socially disadvantaged families. It is recognised, however, that such interventions, even when effective, are not a panacea and are insufficient in and of themselves to eradicate inequalities in early development (Burger 2010). Any contribution of such interventions should be considered within the wider political and economic context.

6.2 IMPLICATIONS FOR RESEARCH

Given that the most recent included study was conducted 18 years ago, there is a clear need for new trials evaluating the impact of home-based interventions that are specifically targeted at improving developmental outcomes for preschool children from socially disadvantaged families. Given some of the methodological shortcomings of the included studies, future evaluations should endeavour to avoid such weaknesses and aim to be high quality, rigorous and large scale. Evaluations should use reliable and valid outcome measures and should better document and report the methodological processes, specifically the randomisation process, whether and how outcome assessors were blinded, and what care or treatment was received by the control group. They should provide clear details regarding rates of attrition, as well as reporting missing data and what measures were used to deal with these, intention-to-treat analyses, and sufficient data required for future use in meta-analyses and systematic reviews.

7 Acknowledgements

The authors would like to acknowledge the support of the Research and Development Office, Northern Ireland who funded this review.

8 Characteristics of Studies

8.1 CHARACTERISTICS OF INCLUDED STUDIES

Field 1982	
Methods	RCT
Participants	80 mothers with a newborn child and a mean maternal age of 16.3 years.
Interventions	Control group (n=40): pre and post-tests and follow-up assessments, no further details are provided. Experimental group (n=40): six months of bi-weekly visits to train mothers in infant stimulation using care taking, sensorimotor and mother interaction exercises which are adapted from developmental assessment scales such as the Brazelton Neonatal Behavioural Assessment Scale (Brazelton 1973) and the Bayley Scales of Infant Development (Bayley 1969). Home visits are made by a Psychology graduate student and a training CETA (Comprehensive Employment Training ACT) aide who demonstrates the exercises to the mother, provides illustrated cards of the exercises and toys asks the mother to demonstrate the exercises to ensure the mother understands them. The mother is asked to practice each exercise for 5 minutes a day and record the amount of time per day the exercise is practised and whether it is performed successfully by the child. There are six exercises per home visit. At the following visit the mother is asked to demonstrate the exercises and show the completed exercise card. During the home visit the CETA worker interacts with the teenage mother's siblings/family in order to minimise disruption during the visit.
Outcomes	Child cognitive development: Brazelton Neonatal Behavior Assessment (Brazelton 1973) at pre-test; Denver Developmental Screening Test (Frankenberg 1967) at the 4-month assessment (mid-term test); Mental Development Index of the Bayley Scales of Infant Development (Bayley 1969) at the 8-month (post-test) and 1-year and 2-year follow-up assessments. Child physical development: weight (grams), length (centimetres) at 4-month, 8-month, one-year and two-year assessments; Psychomotor Development Scale of the Bayley Scales of Infant Development at the 8-month, one-year and two-year assessments. Child temperament: Carey Infant Temperament Questionnaire (Carey 1970) at the 4-month assessment and 8-month assessment. Mother-child interaction: videotaped assessments coded using a three point rating of mother and infant alertness, eye contact, facial expressions, vocalisations and the sensitivity and contingency of each other's behaviours. The proportion of time the mother talked and the infant's gaze was averted was also quantified. Quality of the home environment: Caldwell Home Scale (Caldwell 1979) at the 8-month, one-year and two-year assessments. Other outcomes: return to work/school and repeat pregnancy at one-year and

	two-year assessments.
Notes	This study reported only means. It did not report standard deviations or standard errors, nor did it report the findings from the significance tests that were performed, merely whether the tests were statistically significant (P<0.05) or not.

Risk of bias

Item	Judgement	Description
Adequate sequence generation?	Unclear	It was reported that participants were 'randomly assigned' but no further details were provided.
Allocation concealment?	Unclear	Not reported.
Incomplete outcome data addressed?	Unclear	Control group: 98% (n=39) completed 4-month assessment; 93% (n=37) completed 8-month assessment; 88% (n=35) completed one-year assessment; 75% (n=30) completed two-year assessment. Experimental group: 93% (n=37) completed 4-month assessment; 88% (n=35) completed 8-month assessment; 85% (n=34) completed one-year assessment; 78% (n=31) completed two-year assessment.
Free of selective reporting?	Yes	As far as it is possible to tell.
Free of other bias?	Unclear	None identified.
Overall assessment	Unclear	This study is at unclear risk of bias.
Blinding of participants and personnel (performance bias)	No	Participants and personnel were not blinded.
Blinding of outcome assessment (detection bias)	Yes	Outcome assessors were blinded to participant allocation.

Infante-Rivard 1989	
Methods	RCT
Participants	73 pregnant mothers with a mean age of 24.5 years. 47 mother-child pairs completed post treatment assessments.
Interventions	Control group (n=21): standard care consisting of a single post-natal home visit 2-4 weeks after birth by an experienced public health nurse. Experimental group (n=26): three prenatal visits at 28, 30 and 36 weeks gestation and five post-natal home visits at 1, 2, 5, 12 and 30 weeks by a public health nurse. The intervention consisted mainly of teaching and counselling and was based on the items in the Home Observation for Measurement of the

	Environment (HOME, Caldwell 1979). The aim of the intervention was to provide the mother with simple tools (through setting simple objectives at each visit) to maximise the quality of the mother-child interaction.
Outcomes	Cognitive and psychomotor development: Bayley Scales of Infant Development (Bayley 1969) when children were aged 15 months i.e. 7.5 months post-intervention. Quality of the home environment: the HOME observation tool (Caldwell 1979) when children were 9 months of age i.e. 1.5 months post-intervention. No immediate post-test assessments were conducted.

Risk of bias

Item	Judgement	Description
Adequate sequence generation?	Yes	A randomised block scheme (of size 6) was used to assign participants to groups.
Allocation concealment?	Unclear	Not reported.
Incomplete outcome data addressed?	No	64% (n=47) of the overall sample completed post test assessments. 21% (n=17) did not participate after being admitted to the study and a further 12% (n=9) were lost to follow-up. Of those who did not complete the study a greater proportion lived alone (17.8% compared to 12.6%) and were single (27.4% compared to 19.1%) compared to study completers. It is not possible to know whether attrition was greater in the intervention or control groups as the individual number of participants originally allocated to the intervention and control groups is not reported. Intention-to-treat (ITT) analysis is not reported.
Free of selective reporting?	Yes	As far as it is possible to tell.
Free of other bias?	Unclear	None identified.
Overall assessment	No	This study is at high risk of bias.
Blinding of participants and personnel (performance bias)	No	Participants and personnel were not blinded.
Blinding of outcome assessment (detection bias)	Yes	Outcome assessors were blinded to participant allocation.

Johnson 1993	
Methods	**RCT**

Participants	262 mothers with a newborn baby and a mean age of 23.6 years. 232 mother-child pairs completed post-treatment assessments. 77 mother-child pairs completed 7 year follow-up assessments (Johnson 2000).
Interventions	Control group (n=121): standard care which consisted of visits at birth, six weeks and other times as required from a public health nurse as well as invitations to attend for primary immunisations and a development assessment. Experimental group (n=141): standard care plus monthly home-based visits for the first 12 months of the child's life from a family visitor who was a trained, experienced volunteer mother living in the local community. Family visitors worked under the guidance of a family development nurse and each volunteer supported 15 first time parents. The programme aimed to give support and encouragement to parents in rearing their children using three modules of the Child Development Programme (Barker 1984) namely: educational development, language development and cognitive development.
Outcomes	Parenting behaviour: at post-test - parent report of frequency of reading with child; playing games with child; using songs/nursery rhymes with child at post-test. At 7 year follow up - parent report of reading and library use, supervision of: television viewing, homework and friends. Parenting attitudes: at post-test - maternal self esteem (using mothers' self reported levels of tiredness and occurrence of headaches); extent of positive or negative feelings towards child. At 7 year follow-up - maternal self esteem (using mothers' self reported levels of tiredness and occurrence of headaches); parental report of positive or negative feelings towards child; maternal perception of the appropriateness of physical punishment and the importance of being involved in child's schooling and games. Child development was not measured and no pretests were conducted. Other: maternal report of the child being bullied in school at 7 year follow-up.

Risk of bias

Item	Judgement	Description
Adequate sequence generation?		280 cards were prepared from a random number table with even numbers denoting allocation to the intervention group and odd numbers allocation to the control group.
Allocation concealment?		Cards depicting the allocation were put into sealed, consecutively marked envelopes and drawn in order as required.
Incomplete outcome data addressed?		90% (n=127) of the intervention group and 87% (n=105) of the control group completed post-test assessments. 27% (n=38) of the intervention group and 32% (n=39) of the control group completed 7 year follow-up assessments (Johnson 2000). Background characteristics of those who completed the follow up and those who didn't and no differences were reported. ITT analysis is not reported.
Free of selective reporting?		As far as it is possible to tell.
Free of other bias?		None identified.
Overall assessment		This study is at high risk of bias.

Blinding of participants and personnel (performance bias)	The family development nurse who identified and recruited eligible families to the study also informed parents of allocation.
Blinding of outcome assessment (detection bias)	No, the family development nurse also collected the outcome data.

Madden 1984	
Methods	RCT
Participants	Two cohorts: the first was recruited in 1973 (n=56) and the second in 1975 (n=51). The mean maternal age of the entire sample was 28.5 years and children were aged between 21 and 33 months. 34 mother-child pairs from the 1973 cohort and 29 pairs from the 1975 cohort (total n=63) completed post-treatment assessments. 27 mother-child pairs from the 1973 cohort completed 3 year follow-up assessments (a three year follow up was not conducted for the 1975 cohort).
Interventions	Control group (number randomised unclear): a test only condition consisting of testing and home interviews. Experimental group (number randomised unclear): The Mother-Child Home Programme aims to teach mothers to maintain a cognitively stimulating mother-child interaction in the home. The programme consists of 46 twice-weekly half hour home visits for the 10 month school calendar for two years. Visits are conducted by a trained home visitor called a 'toy demonstrator' who models verbal interaction and encourages the mother to assume responsibility for the interaction between her and the child. Overall four cohorts were recruited in 1973, 1974, 1975 and 1976. Only the 1973 and 1975 cohorts included a non-intervention control condition and so only this data for these cohorts has been extracted for this review.
Outcomes	Child cognitive development and intelligence: Pre test - Cattell Developmental and Intelligence Scale (Cattell 1940) - only the 1973 cohort was pre-tested. Post-test: Stanford Binet Intelligence Scale (Terman 1972) and Peabody Picture Vocabulary Test (Dunn 1961) for both cohorts. Three year follow-up: Stanford Binet - only the 1973 cohort were followed up at 3 years. Child socioemotional behaviour: Child Behaviour Trait Rating (Johnson 1976), measured only with the 1973 cohort at the 3 year follow-up. Mother child interaction: Maternal Interactive Behaviour record - measured at the 1 year follow up for the 1973 cohort and at post-test for the 1975 cohort. Other outcomes: teacher ratings of school performance measured at the 3 year follow-up for the 1973 cohort only.

Risk of bias

Item	Judgement	Description
Adequate sequence generation?	Unclear	Randomisation was described as a 'lottery' but no further detail was reported.
Allocation concealment?	Unclear	Not reported.

Item	Judgement	Description
Incomplete outcome data addressed?	No	59% (n=63) of the overall sample completed post-test assessments. It is not possible to know whether attrition was greater in the intervention or control groups as the individual number of participants originally allocated to the intervention and control groups is not reported. While the authors report that there were no significant differences in rates of attrition between groups or cohorts, they do report that those mothers who left the study were significantly younger than those who remained (t=2.20, P<0.05). ITT analysis is not reported.
Free of selective reporting?	Yes	As far as it is possible to tell.
Free of other bias?	No	Only 68% and 50% of those approached in the 1973 and 1975 cohorts agreed to participate. There is no information available relating to the characteristics of non-responders. Participants were identified from referrals by public and private agencies, private individuals and public census lists and not randomly selected or approached.
Overall assessment	No	This study is at high risk of bias.
Blinding of participants and personnel (performance bias)	No	Participants and personnel were not blinded.
Blinding of outcome assessment (detection bias)	Unclear	Outcome assessors who conducted the pre-tests were blinded. No information is provided on the blinding of assessors at post-test.

Powell 1989	
Methods	RCT
Participants	58 mother-child pairs with a mean age for children of 24.3 months. The majority of the sample mothers (n=45) were aged between 20 and 40 years, 12 were younger than 20 years and 1 was older than 40 years. All 58 participants completed post-test assessments.
Interventions	Control group (n=29): standard care (primary healthcare services) which consists of home visits from health aides who provide health and nutritional advice. Experimental group (n=29): standard care plus psychosocial stimulation for 12 months. The intervention aims to improve child development, make mothers more effective teachers, improve maternal-child interaction and improve the self esteem of mother and child. A community health aide (supervised by a nurse) provides weekly hour long home visits to a maximum of 13 children week. During the visit they play with the child and cover various combinations of language activities, games, songs and crayon and paper activities. The home visits follow a curriculum that is structured and cognitively oriented, based on Piagetian concepts. In general, two concepts are taught per visit utilising different toys and mothers are encouraged to talk with their children and to label things and actions in their environment. A toy is left with the family each week.

Powell 1989	
Outcomes	Child cognitive development: Griffiths Mental Developmental Scales pre and post-test.
Notes	Two different studies relating to the same intervention are reported in this paper. The authors report using the Peabody Picture Vocabulary Test (PPVT) in relation to the first study but it is unclear whether they also used this measure with the second study (the RCT reported here). No data relating to the PPVT for either study is actually reported in the paper.

Risk of bias

Item	Judgement	Description
Adequate sequence generation?	Unclear	It was reported that 'random assignment was used' but no further details were provided.
Allocation concealment?	Unclear	No reported.
Incomplete outcome data addressed?	Yes	All participants completed the post test assessment.
Free of selective reporting?	Unclear	It is not clear whether data relating to the PPVT was in fact collected (however, it is not reported).
Free of other bias?	Unclear	None identified.
Overall assessment	Unclear	This study is at unclear risk of bias.
Blinding of participants and personnel (performance bias)	No	Participants and personnel were not blinded.
Blinding of outcome assessment (detection bias)	Yes	Outcome assessors were blinded.

Sandler 1973	
Methods	RCT
Participants	18 mother-child pairs with a mean maternal age of 28.3 years and a mean child age of 43.2 months. 15 mother child pairs completed post-test assessments.
Interventions	Control group (n=9): a pre and post-test only condition. No further details are provided. Intervention group (n=6): The overall aim of the programme is to enable the mother to be a more effective educational change agent for her child. Families were visited once a week for 12 weeks by a para-professional home visitor who used behaviour modelling techniques and demonstrated how to use objects and events in the home for educational purposes.

Sandler 1973	
Outcomes	Child cognitive development and intelligence: Stanford Binet Intelligence Scale (Terman 1972) at pre test and the DARCEE Concept Test which measures the basic skills emphasised in the home visits at post-test. Parental behaviour: the Maternal Teaching Style Instrument at post-test only.
Notes	No means or standard deviations were reported - the study authors have been contacted for this information but as yet have not replied.

Risk of bias

Item	Judgement	Description
Adequate sequence generation?	Yes	Random sampling stratified by initial Stanford Binet IQ test scores and race. Quote: "White and Black groups were separately stratified into high, medium and low IQ groups and then randomly assigned to either the experimental or control group".
Allocation concealment?	Unclear	Not reported.
Incomplete outcome data addressed?	Unclear	83% (n=15) of the overall sample completed post-test assessments. All the attrition was from the experimental group for reasons that included: family moved out of the area or mother's working hours changed. ITT analysis is not reported.
Free of selective reporting?	Yes	As far as is possible to tell.
Free of other bias?	No	The sample size was extremely small (total n=15).
Overall assessment	No	This study is at high risk of bias.
Blinding of participants and personnel (performance bias)	No	Participants and personnel were not blinded.
Blinding of outcome assessment (detection bias)	Unclear	Not reported.

Scarr 1988	
Methods	**RCT**
Participants	125 mother-child pairs with a mean maternal age of 27.9 years and a child aged between 24 and 30 months. 117 mother-child pairs completed post-test assessments.
Interventions	Control group (n=43): standard care, although it is not reported what this consisted of. Intervention group (n=82): The Mother-Child Home Programme aims to teach mothers to maintain a cognitively stimulating mother-child interaction in the

Scarr 1988	
	home. The programme consists of 46 twice-weekly half hour home visits for the 10 month school calendar for two years. Visits are conducted by a trained home visitor called a 'toy demonstrator' who models play behaviours aimed at promoting cognitive and socioemotional development for 2-4 year olds.
Outcomes	Cognitive development and intelligence: Stanford Binet Intelligence Scale (Terman 1972). Socioemotional development: performance on maternal teaching task (Hess 1968); a delayed gratification task (Golden 1977, Toner 1980); Infant Behaviour Record (Bayley 1969); Cain-Levine Social Competency Scale (Cain 1963). Parenting behaviour: performance on a maternal teaching task (Hess 1968). Parenting attitudes: Parent Report companion instrument to the Childhood Personality Scale (Cohen 1977); Parent as Educator Interview which assesses different domains about attitudes towards parenting; Discipline Techniques Interview which assesses discipline styles. Other outcomes: achievement test designed to assess the curriculum of the Mother-Child Home Programme; parental verbal intelligence, educational beliefs and discipline style.

Risk of bias

Item	Judgement	Description
Adequate sequence generation?	Unclear	Randomisation was described as a 'lottery' but no further detail was reported.
Allocation concealment?	Unclear	Not reported.
Incomplete outcome data addressed?	Unclear	94% (n=117) of the overall sample completed post-test assessments. It is not possible to know whether attrition was greater in the intervention or control groups as the individual number of participants originally allocated to the intervention and control groups is not reported.
Free of selective reporting?	Yes	As far as it is possible to tell.
Free of other bias?	Yes	None identified.
Overall assessment	Unclear	This study is at unclear risk of bias.
Blinding of participants and personnel (performance bias)	No	Participants and personnel were not blinded.
Blinding of outcome assessment (detection bias)	Yes	The research team were blinded to allocation.

8.2 CHARACTERISTICS OF EXCLUDED STUDIES

Study	Reason for exclusion
Baker 1999	Contains a group parenting element (i.e. in addition to the home visits the intervention consisted of regular group or centre based parent training and/or support).
Barhava-Monteith 1999	Contains a group parenting element.
Love 2002	Contains a group parenting element.
Love 2005	Contains a group parenting element.
Necoechea 2007	Contains a group parenting element.
Nguyen 2003	Not a child development programme.
Olds 2003	Not a child development programme.
Olds 2006	Not a child development programme.
Olds 2008	Not a child development programme.
Olsen 2007	Contains a group parenting element.
Pieper 1974	Contains a group parenting element.
Renard 1996	Contains a group parenting element.
Sandler 1997	Contains a group parenting element.
van Tuijl 2001	Contains a group parenting element.
Wagner 1999	Contains a group parenting element.
Wagner 2001	Contains a group parenting element.
Wagner 2002	Contains a group parenting element.
Zigler 2008	Contains a group parenting element.

9 Summary of Findings

Home-based child development programmes compared with no home-based child development programme for improving development in preschool children from socially disadvantaged families

Patient or population	**Preschool children from socially disadvantaged families**					
Settings	Home					
Intervention	Home-based child development programmes					
Comparison	Standard care (no home-based child development programme)					
Primary outcomes and adverse effects	**Illustrative comparative risks* (95% CI)**		**Relative effect (95% CI)**		**Quality of the evidence (GRADE)**	**Comments**
	Assumed risk	**Corresponding risk**				
	Standard care	**Home based parenting programme**				
Cognitive development	The mean cognitive development score ranged across control groups from **98.6 to 114.9**	The mean cognitive development score in the intervention groups was on average **+0.30 SMD higher** (95% CI -0.18 to 0.78)		285 (4 studies)	⨁⊖⊖⊖ **very low**	
Socioemotional development	See comment	See comment	Not estimable	260 (3 studies)		Only three studies reported socioemotional outcomes and there was insufficient data to combine into a meta-analysis
Adverse effects	See comment	See comment	Not estimable	0 (0 studies)		No study reported adverse effects

***The basis for the assumed risk (e.g. the median control group risk across studies) is provided in footnotes. The corresponding risk (and its 95% confidence interval) is based on the assumed risk in the comparison group and the relative effect of the intervention (and its 95% CI).**
CI: Confidence interval;

GRADE Working Group grades of evidence

High quality	Further research is very unlikely to change our confidence in the estimate of effect**.**
Moderate quality	Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.
Low quality	Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.
Very low quality	We are very uncertain about the estimate.

10 Additional Tables

10.1 OUTCOME MEASURES USED BY STUDIES IN THE REVIEW

Outcome	Outcome measures	Time point	Study
Primary outcomes			
Child cognitive development	Brazelton Neonatal Behavior Assessment (Brazelton 1973)	Pre-test	Field 1982
	Denver Developmental Screening Test (Frankenberg 1967)	Mid-term assessment	Fied 1982
	Bayley Scales of Infant Development (Bayley 1969)	6 months post-intervention Post-test and follow-up	Infante-Rivard 1989 Field 1982
	Cattell Developmental and Intelligence Scale (Cattell 1940)	Pre-test for 1973 cohort	Madden 1984
	Stanford Binet Intelligence Scale (Terman 1972)	Post-test for both 1973 and 1975 cohorts Pre and post-test Pre-test	Madden 1984 Scarr 1988 Sandler 1973
	Peabody Picture Vocabulary Test (Dunn 1961)	Pre-test for 1973 cohort	Madden 1984
	Griffiths Mental Development Scales (Griffiths 1967, Griffiths 1970)	Pre and post-test	Powell 1989
	DARCEE Concept test (Gilmer 1969) - measures the skills of matching, recognition and identification	Post-test	Sandler 1973
Child socioemotional development	Carey Infant Temperament Questionnaire (Carey 1970)	Mid-term assessment and post-test	Field 1982
	Child Behaviour Trait Rating (Johnson 1976)	3 year follow-up for 1973 cohort	Madden 1984
	Bayley Scales of Infant Development: Infant Behaviour Record (Bayley 1969)	Pre and post-test	Scarr 1988
	Cain-Levine Social Competency Scale (Cain 1963)	Pre and post-test	Scarr 1988

Outcome	Outcome measures	Time point	Study
	Maternal Teaching Task (Hess 1968) - measures children's motivation to learn and cooperation with adults	Pre and post-test	Scarr 1988
	A delay of gratification task - measures child's willingness to cooperate in a 'game' in which they were asked to wait before obtaining a sweet/candy (Golden 1977, Toner 1980).	Pre and post-test	Scarr 1988
Secondary outcomes			
Child physical development	Bayley Scales of Infant Development (Bayley 1969)	6 months post-intervention Post-test and follow-up	Infante-Rivard 1989 Field 1982
Parenting behaviour	Mother-child interaction	Mid-term assessment	Field 1982
	Parent report of frequency of reading with child; playing games with child; using songs/nursery rhymes with child parent report of library use, supervision of: television viewing, homework and friends	Post-test and 7 year follow-up	Johnson 1993
	Maternal Interactive Behaviour Record - a measure developed specifically for the study to assess the mother's behaviour with the child during play including labelling, use of colour names, verbalisation of actions, verbalisation of number and shape, solicitation of information from the child, verbal praise, encouragement of divergent use of a toy, non-verbal indication of warmth, reply to child's vocalisation and failure to reply to child's vocalisation.	Post-test for 1975 cohort	Madden 1984
	Maternal Teaching Style Instrument (Sandler 1971) - mothers are instructed to help their child complete a specific task. Each session was videotaped and analysed however no information was reported relating to how maternal behaviours and responses were coded.	Post-test	Sandler 1973
	Maternal Teaching Task (Hess 1968) - measures how effective mothers are at teaching their children, specifically: whether the mother oriented her child to the task, helped her child to sort the toys by colour and kind, explained how to sort the toys, had a positive attitude and maintained positive control.	Pre and post-test	Scarr 1988
Parenting attitudes	Maternal self esteem (using mothers' self reported levels of tiredness, occurrence of headaches, feeling miserable and not wanting to go out); extent of positive or negative feelings towards child	Post-test and 7 year follow-up	Johnson 1993

Outcome	Outcome measures	Time point	Study
	Parent Report companion instrument to the Childhood Personality Scale (Cohen 1977) - a measure of maternal self esteem	Pre and post-test	Scarr 1988
	Parent as Educator Interview which measured ten different domains of attitudes about parenting including: playing activities, talking activities, sharing activities, authoritarian educational beliefs, progressive educational beliefs, rejection of child rearing role, need for family privacy, values conformity, values social skills, values self direction.	Pre and post-test	Scarr 1988
	Discipline Techniques Interview - measure discipline styles based on vignettes of typical child misbehaviour, to determine the degree to which mothers rely on reasoning versus physical punishment as discipline strategies. Responses were coded into 17 strategies.	Pre and post-test	Scarr 1988
Quality of the home environment	The HOME observation tool (Caldwell 1979)	2 months post-intervention Post-test and follow-up	Infante-Rivard 1989 Field 1982

10.2 METHODS THAT MAY BE NEEDED FOR UPDATES

Section	Details
Search methods: searching other resources	A draft list of included studies will be circulated to experts (as well as the authors of the studies on the list) requesting information relating to any ongoing, published or unpublished studies that have been missed by the methods described above. Where outcome data are only reported for participants completing the trial or who followed protocol the authors will be contacted for additional information to enable an intention-to-treat analysis.
Data synthesis	If trials have used clustered randomisation, we anticipate that study investigators will presented their results after appropriately controlling for clustering effects (robust standard errors or hierarchical linear models). If it is unclear whether a cluster-randomised controlled trial has used appropriate controls for clustering, the study investigators will be contacted for further information. Where appropriate controls are not used, individual participant data will be requested and an estimate of the intraclass correlation coefficient will be calculated. The data will be re-analysed using multilevel models which control for clustering. Following this, effect sizes and standard errors will be meta-analysed in RevMan using the generic inverse method (Higgins 2008). If appropriate controls were not used and individual participant data are not available, statistical guidance will be sought from the Cochrane Methods Group and external experts as to which method to apply to the published results in an attempt to control for clustering. If there is insufficient information to control for clustering, outcome data will be entered into RevMan using individuals as the units of analysis, and then sensitivity analysis will be used to assess the potential biasing effects of inadequately controlled cluster trials (Donner 2001). Furthermore, the outcomes of any study reporting binary/dichotomous data will be analysed by calculation of the risk ratio for the occurrence of an event (rather than a non-event) for its consistency as a summary statistic and ease of interpretation.

Section	Details
Assessment of reporting biases	If sufficient studies are found, funnel plots (estimated differences in treatment effects against their standard error) will be drawn. If a relationship is found, the clinical diversity of the studies will be examined in order to determine whether the relationship is indicative of publication bias or a relationship between trial size and effect size (Egger 1997).
Subgroup analyses	If there are sufficient data a subgroup analysis will be performed to assess effects by: • type of family visitor, that is, whether they are professional, paraprofessional or lay family visitor; • context of intervention provision, that is, whether interventions are delivered in the presence or absence of universal services (including playgroups).
Sensitivity analyses	A sensitivity analysis will be performed by restricting the analysis to studies with only low risk of bias. Separate analyses will be conducted to determine the specific effects of selection bias, performance bias and attrition bias. Furthermore the sensitivity of findings to any imputed data will also be assessed.

10.3 PARTICIPANTS

Study ID	Location	Mean maternal age	Mean child age at start of intervention	Child gender	Ethnicity	Eligibility criteria	Type of social disadvantage
Field 1982	Not reported	16.3 years	Not reported	Not reported	The sample was reported as all Black	Mothers were teens with an infant at the neonatal stage recruited from a large university hospital neonatal nursery. Infants were delivered at term without obstetric complications.	Teenage mother, low income and low socioeconomic status
Infante-Rivard 1989	Canada	24.4 years	Not reported	Not reported	Not reported	Mothers must have less than 12 years schooling and/or living below the poverty line according to the Canadian criteria at the time of the study; have Canadian nationality; French or English speaking; absence of a chronic or psychiatrically treated illness; absence of alcohol or drug abuse Participants were excluded after the birth of the baby if a hospital stay longer than a week was required for either mother or baby; congential malformation or disease of the child requiring regular medical care; maternal post-partum depression.	As per first eligibility criterion
Johnson 1993	Ireland	23.6 years	Not reported	49% male, 51% female	Not reported	All mothers who delivered a baby over a six month period in a defined deprived area of Dublin. It is not reported how deprivation was defined.	As per eligibility criteria
Madden 1984	US	28.5 years	26 months	51% male, 49% female	88% Black, 12% not Black	Must qualify for low-income housing; live in rented housing; neither parent have more than 12th grade education or an occupational level higher than semi-skilled; children must be testable in English and aged between 21 and 33 months at the start of the programme; no prior experience of the intervention.	As per first three eligibility criteria

Study ID	Location	Mean maternal age	Mean child age at start of intervention	Child gender	Ethnicity	Eligibility criteria	Type of social disadvantage
Powell 1989	Jamaica	78% of mothers were reported to be aged between 20 and 40 years	24.3 months	50% male, 50% female	The sample was reported as predominantly Black	Children from two poor neighbourhoods in Kingston, Jamaica aged between 16 and 30 months and who had not previously received the intervention. Children were excluded if they were twins, had an obvious physical or mental handicap, weighed less than 2.5 kg at birth or had a history of being small.	As per first eligibility criterion; 46% of mothers had only a primary education; 66% were unemployed and a further 26% were unskilled
Sandler 1973	US	28.3 years	43.2 months	67% male, 33% female	60% White, 40% Black	Mothers in low income housing with a pre-school child.	As per eligibility criteria; mothers had an average of 8.8 years of education
Scarr 1988	Bermuda	27.9 years	Not reported	Not reported	59.5% Black Bermudian, 16% White non-Bermudian, 13.5% White Bermudian, 7% Portuguese, 4% missing	All families in one Bermudian parish (one of nine parishes on the island) with a child aged 24 - 30 months.	88% of mothers had no more than a high school education; 58% were employed in semi-skilled occupations

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11.1.1 Field 1982

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12 Data and Analyses

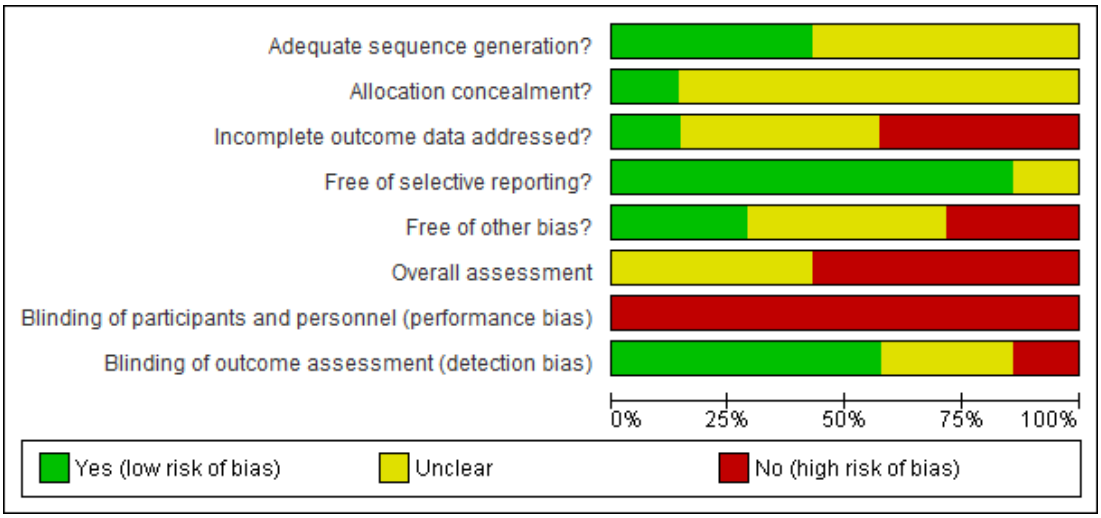
Intervention versus no intervention using random-effects meta-analysis

Outcome or Subgroup	Studies	Participants	Statistical Method	Effect Estimate
1.1 Cognitive development	4	285	Std. Mean Difference (IV, Random, 95% CI)	0.30 [-0.18, 0.78]

13 Figures

13.1 FIGURE 1: RISK OF BIAS

Review authors' judgements about each risk of bias item presented as percentage across all included studies.



14 Appendices

14.1 SEARCH STRATEGIES

14.1.1 Cochrane Central Register of Controlled Trials (CENTRAL)

#1 MeSH descriptor Socioeconomic Factors explode tree 2
#2 MeSH descriptor Psychosocial Deprivation, this term only
#3 (poor or poverty or impover* or unemploy* or non-employ* or non NEXT employ*)
#4 social* NEXT problem*
#5 (depriv* or disadvantag* or disparit* or inequal* or needy or underprivileg* or under NEXT privileg* or underserv* or under NEXT serv*)
#6 ((low or level) NEAR/5 (income* or wage* or earn* or resourc*))
#7 socioeconomic or socio-economic or socio NEXT economic
#8 ((social* or economic* or financ*) NEAR/5 (exclud* or exclusion or includ* or inclusion or status or security or welfare* or wellbeing or well-being))
#9 ((social or state or federal or welfare) NEAR/3 (benefit* or payment*))
#10 MeSH descriptor Minority Groups, this term only
#11 MeSH descriptor Ethnic Groups explode tree
#12 MeSH descriptor Vulnerable Populations, this term only
#13 MeSH descriptor Population Groups, this term only
#14 MeSH descriptor Continental Population Groups explode all trees
#15 (multi NEXT ethnic* NEAR/3 (group* or population*))
#16 (ethnic NEAR/3 (minorit* or group*))
#17 (multi NEXT racial*)
#18 indigen*
#19 MeSH descriptor Single Parent, this term only
#20 ((lone or one or single) NEAR/3 (parent* or mother* or father*))
#21 (#1 OR #2 OR #3 OR #4 OR #5 OR #6 OR #7 OR #8 OR #9 OR #10 OR #11 OR #12 OR #13 OR #14 OR #15 OR #16 OR #17 OR #18 OR #19 OR #20)
#22 MeSH descriptor Infant explode all trees
#23 MeSH descriptor Child explode all trees
#24 (baby or babies or infant* or toddler* or preschool* or preschool* or child* or kindergarten*)
#25 (#22 OR #23 OR #24)
#26 MeSH descriptor Community Health Nursing explode tree 2
#27 MeSH descriptor Social Support, this term only

#28 MeSH descriptor House Calls, this term only
#29 ((psychosocial* or psycho-social* or psychological* or social* or emotional*) NEXT (support* or resourc* or capital*))
#30 (home NEXT based)
#31 ((home* or in-home* or at-home* or house* or domicil* or communit* or neighbo*) NEAR/5 (visit* or support* or program* or intervention*))
#32 ((famil* or lay* or nurs* or midwife* or midwives or volunt* or non-professional* or nonprofessional* or para-professional* or paraprofessional* or professional* or para NEXT professional* or non NEXT professional*) NEAR/5 (visit* or support* or program* or intervention*))
#33 ((communit* or neighbo* or volun*) NEAR/3 (mentor* or outreach*))
#34 (health NEAR/5 visit*)
#35 (#26 OR #27 OR #28 OR #29 OR #30 OR #31 OR #32 OR #33 OR #34)
#36 (#21 AND #25 AND #35)

14.1.2 MEDLINE

1 exp POVERTY/
2 Socioeconomic Factors/
3 psychosocial deprivation/
4 (poor or poverty or impover$ or unemploy$ or non-employ$ or non employ$).tw.
5 (depriv$ or disadvantag$ or disparit$ or inequal$ or needy or underprivileg$ or under-privileg$ or underserv$ or under-serv$).tw.
6 ((low or level) adj5 (income$ or wage$ or earn$ or resourc$)).tw.
7 (social adj problem$).tw.
8 (socio-economic or socioeconomic).tw.
9 ((social$ or economic$ or financ$) adj5 (exclude$ or exclusion or includ$ or inclusion or status or security or welfare$ or wellbeing or well-being)).tw.
10 ((social or state or federal or welfare) adj3 (benefit$ or payment$)).tw.
11 Minority Groups/
12 exp Ethnic Groups/
13 (ethnic adj3 minorit$).tw.
14 (ethnic adj3 group).tw.
15 indigen$.tw.
16 Vulnerable Populations/
17 exp Continental Population Groups/
18 Population Groups/
19 ((multi?ethnic$ or multi ethnic$) adj3 (group$ or population$)).tw.
20 (multi?racial$ or multi racial$).tw.
21 ((underserve$ or disadvantage$) adj3 (group$ or population$)).tw.
22 single parent/
23 ((lone or one or single) adj3 (parent$ or mother$ or father$)).tw.
24 or/1-23
25 Community Health Nursing/

26 Social Support/
27 ((psychosocial$ or psycho-social$ or psychological$ or social$ or emotional$) adj (support$ or resourc$ or capital$)).tw.
28 house calls/
29 (home-based or home based).tw.
30 ((home$ or in-home$ or at-home$ or house$ or domicil$ or communit$ or neighbo?rhood$) adj5 (visit$ or support$ or program$ or intervention$)).tw.
31 ((famil$ or lay$ or nurs$ or midwi#e$ or volunt$ or non-professional$ or nonprofessional$ or para-professional$ or paraprofessional$ or professional$) adj5 (visit$ or support$ or program$ or intervention$)).tw.
32 ((communit$ or neighbo?rhood$ or volun$) adj3 (mentor$ or outreach$)).tw.
33 (health adj5 visit$).tw.
34 child/ or child, preschool/ or infant/
35 (baby or babies or infant$ or toddler$ or pre?school$ or pre school$ or child$ or kindergarten$).tw.
36 or/25-33
37 34 or 35
38 randomized controlled trial.pt.
39 controlled clinical trial.pt.
40 randomi#ed.ab.
41 placebo$.ab.
42 drug therapy.fs.
43 randomly.ab.
44 trial.ab.
45 groups.ab.
46 or/38-45
47 exp animals/ not humans.sh.
48 46 not 47
49 24 and 36 and 37 and 48

14.1.3 EMBASE

1 exp socioeconomics/
2 (poor or poverty or impover$ or unemploy$ or non-employ$ or non employ$).tw.
3 (social$ adj disadvant$).tw.
4 (socio-economic or socioeconomic).tw.
5 ((social$ or economic$ or financ$) adj5 (exclude$ or exclusion or includ$ or inclusion or status or security or welfare$ or wellbeing or well-being)).tw.
6 (social adj problem$).tw.
7 ((social or state or federal or welfare) adj3 (benefit$ or payment$)).tw.
8 (depriv$ or disadvantag$ or disparit$ or inequal$ or needy or underprivileg$ or under-privileg$ or underserv$ or under-serv$).tw.
9 ((low or level) adj5 (income$ or wage$ or earn$ or resourc$)).tw.
10 exp "ethnic and racial groups"/

11 minority group/
12 (ethnic adj3 minorit$).tw.
13 (ethnic adj3 group).tw.
14 ((multi?ethnic$ or multi ethnic$) adj3 (group$ or population$)).tw.
15 (multi?racial$ or multi racial$).tw.
16 indigen$.tw.
17 single parent/
18 ((lone or one or single) adj3 (parent$ or mother$ or father$)).tw.
19 or/1-18
20 exp community health nursing/
21 social support/
22 ((psychosocial$ or psycho-social$ or psychological$ or social$ or emotional$) adj (support$ or resourc$ or capital$)).tw.
23 (home-based or home based).tw.
24 ((home$ or in-home$ or at-home$ or house$ or domicil$ or communit$ or neighbo?rhood$) adj5 (visit$ or support$ or program$ or intervention$)).tw.
25 ((famil$ or lay$ or nurs$ or midwi#e$ or volunt$ or non-professional$ or nonprofessional$ or para-professional$ or paraprofessional$ or professional$) adj5 (visit$ or support$ or program$ or intervention$)).tw.
26 ((communit$ or neighbo?rhood$ or volun$) adj3 (mentor$ or outreach$)).tw.
27 (health adj5 visit$).tw.
28 or/20-27
29 exp child/
30 (baby or babies or infant$ or toddler$ or pre?school$ or pre school$ or child$ or kindergarten$).tw.
31 29 or 30
32 19 and 28 and 31
33 Clinical trial/
34 Randomized controlled trial/
35 Randomization/
36 Single blind procedure/
37 Double blind procedure/
38 Crossover procedure/
39 Placebo/
40 Randomi#ed.tw.
41 RCT.tw.
42 (random$ adj3 (allocat$ or assign$)).tw.
43 randomly.ab.
44 groups.ab.
45 trial.ab.
46 ((singl$ or doubl$ or trebl$ or tripl$) adj3 (blind$ or mask$)).tw.
47 Placebo$.tw.
48 Prospective study/
49 (crossover or cross-over).tw.

50 prospective.tw.
51 or/33-50
52 32 and 51

14.1.4 ASSIA

(((KW= (poor or poverty or impover* or unemploy* or non-employ* or non employ* or depriv* or disadvantag* or disparit* or inequal* or needy or underprivileg* or under-privileg* or underserv* or under-serv*)) or(KW=(socio-economic or socioeconomic)) or(KW=((social* or economic* or financ*) within 5 (exclud* or exclusion or includ* or inclusion or status or security or welfare* or wellbeing or well-being))) or(KW=((social or state or federal or welfare) within 3 (benefit* or payment*))) or(KW=(ethnic* or multi-ethnic* or multi-racial* or multi ethnic* or multi racial or minorit* or indigenous*)) or(KW=((lone or one or single) within 3 (parent* or mother* or father*)))) and(KW=(baby or babies or infant* or toddler* or child* or preschool* or pre school* or preschool* or kindergarten*))) and((KW= (psychosocial* or psycho-social* or psychological* or social* or emotional*) within 3 (support* or resourc* or capital*)) or(KW=((home* or in-home* or at-home* or house* or domicil* or communit* or neighbo*)within 5 (visit* or support* or program* or intervention*))) or(KW= (communit* or neighbo* or volun*) within 3 (mentor* or outreach*)) or(KW= ((famil* or lay* or nurs* or midwife* or midwives or volunt* or non-professional* or nonprofessional* or para-professional* or paraprofessional* or professional*) within 5 (visit* or support* or program* or intervention*))) or(KW= (health within 5 visit*)) or(KW= (home-based or home based or house call*)))

14.1.5 CINAHL

S56 S40 and S55
S55 S41 or S42 or S43 or S44 or S45 or S46 or S47 or S48 or S49 or S50 or S51 or S52 or S53 or S54
S54 TI (evaluat* study or evaluat* research) or AB (evaluate* study or evaluat* research) or TI (effectiv* study or effectiv* research) or AB(effectiv* study or effectiv* research) OR TI (prospectiv* study or prospectiv* research) or AB(prospectiv* study or prospectiv* research) or TI (follow-up study or follow-up research) or AB (follow-up study or follow-up research)
S53 "cross over*"
S52 crossover*
S51 (MH "Crossover Design")
S50 (tripl* N3 mask*) or (tripl* N3 blind*)
S49 (trebl* N3 mask*) or (trebl* N3 blind*)
S48 (doubl* N3 mask*) or (doubl* N3 blind*)
S47 (singl* N3 mask*) or (singl* N3 blind*)
S46 (clinic* N3 trial*) or (control* N3 trial*)
S45 (random* N3 allocat*) or (random* N3 assign*)
S44 randomis* or randomiz*

S43 (MH "Meta Analysis")
S42 (MH "Clinical Trials+")
S41 MH random assignment
S40 S19 and S36 and S39
S39 S37 or S38
S38 AG Infant, Newborn or Infant: 1-23 months or Child, Preschool: 2-5 years
S37 baby or babies or infant* or toddler* or preschool* or pre school* or preschool* or child* or kindergarten* S36 (S20 or S21 or S22 or S23 or S24 or S25 or S26 or S27 or S28 or S29 or S30 or S31 or S32 or S33 or S34 or S35)
S35 (intervention* N5 home*) or (intervention* N5 in-home*) or (intervention* N5 at-home*) or (intervention* N5 house*) or (intervention* N5 domicil*) or (intervention* N5 communit*) or (intervention* N5 neighbo*)
S34 (health N5 Visit*)
S33 (outreach* N3 communit*) or (outreach* N3 neighbo*) or (outreach* N3 volun*)
S32 (mentor* N3 communit*) or (mentor* N3 neighbo*) or (mentor* N3 volun*)
S31 (intervention* N5 famil*) or (intervention* N5 lay*) or (intervention* N5 nurs*) or (intervention* N5 midwife*) or (intervention* N5 midwives) or (intervention* N5 volunt*) or (intervention* N5 neighbo*) or (intervention* N5 non-professional*) or (intervention* N5 nonprofessional*) or (intervention* N5 nonprofessional*) or (intervention* N5 paraprofessional*) or (intervention* N5 para professional*) or (intervention* N5 para-professional*) or (intervention* N5 professional*)
S30 (program* N5 famil*) or (program* N5 lay*) or (program* N5 nurs*) or (program* N5 midwife*) or (program* N5 midwives) or (program* N5 volunt*) or (program* N5 neighbo*) or (program* N5 non-professional*) or (program* N5 non professional*) or (program* N5 nonprofessional*) or (program* N5 paraprofessional*) or (program* N5 para professional*) or (program* N5 para-professional*) or (program* N5 professional*)
S29 (support* N5 famil*) or (support* N5 lay*) or (support* N5 nurs*) or (support* N5 midwife*) or (support* N5 midwives) or (support* N5 volunt*) or (support* N5 neighbo*) or (support* N5 non-professional*) or (support N5 non professional*) or (support* N5 nonprofessional*) or (support* N5 paraprofessional*) or (support* N5 para professional*) or (support* N5 para-professional*) or (support* N5 professional*)
S28 (visit* N5 famil*) or (visit* N5 lay*) or (visit* N5 nurs*) or (visit* N5 midwife*) or (visit* N5 midwives) or (visit* N5 volunt*) or (visit* N5 neighbo*) or (visit* N5 non-professional*) or (visit* N5 nonprofessional*) or (visit* N5 nonprofessional*) or (visit* N5 paraprofessional*) or (visit* N5 para professional*) or (visit* N5 para-professional*) or (visit* N5 professional*)
S27 (program* N5 home*) or (program* N5 in-home*) or (program* N5 at-home*) or (program* N5 house*) or (program* N5 domicil*) or (program* N5 communit*) or (program* N5 neighbo*)
S26 (support* N5 home*) or (support* N5 in-home*) or (support* N5 at-home*) or

(support* N5 house*) or (support* N5 domicil*) or (support* N5 communit*) or (support* N5 neighbo*)

S25 (visit* N5 home*) or (visit* N5 in-home*) or (visit* N5 at-home*) or (visit* N5 house*) or (visit* N5 domicil*) or (visit* N5 communit*) or(visit* N5 neighbo*)

S24 home-based or home based

S23 (MH "Home Visits")

S22 (MH "Caregiver Support")

S21 (MH "Support, Psychosocial+")

S20 (MH "Community Health Nursing+") OR (MH "Family Nursing")

S19 (S1 or S2 or S3 or S4 or S5 or S6 or S7 or S8 or S9 or S10 or S11 or S12 or S13 or S14 or S15 or S16 or S17 or S18)

S18 (one N3 parent*)

S17 (single N3 parent*) or (single N3 mother*) or (single N3 father*)

S16 (lone N3 parent*) or (lone N3 mother*) or (lone N3 father*)

S15 ethnic* or minorit* or indigenous* or multi-ethnic* or multi ethnic* or multi-racial* or multi-racial*

S14 (financ* N5 exclude*) or (financ* N5 exclusion) or (financ* N5 includ*) or (financ* N5 inclusion) or (financ* N5 status) or (financ* N5 security) or (financ* N5 welfare*) or (financ* N5 wellbeing) or (financ* N5 well-being)

S13 (economic* N5 exclude*) or (economic* N5 exclusion) or (economic* N5 includ*) or (economic* N5 inclusion) or (economic* N5 status) or (economic* N5 security) or (economic* N5 welfare*) or (economic* N5 wellbeing) or (economic* N5 well-being)

S12 (social* N5 exclude*) or (social* N5 exclusion) or (social* N5 includ*) or (social* N5 inclusion) or (social* N5 status) or (social* N5 security) or (social* N5 welfare*) or (social* N5 wellbeing) or (social* N5 well-being)

S11 (payment* N3 social) or (payment* N3 state) or (payment* N3 federal) or (payment* N3 welfare)

S10 (benefit* N3 social) or (benefit* N3 state) or (benefit* N3 federal) or (benefit* N3 welfare)

S9 (level N5 income*) or (level N5 wage*) or (level N5 earn*) or (level N5 resourc*)

S8 (low N5 income*) or (low N5 wage*) or (low N5 earn*) or (low N5 resourc*)

S7 social problem*

S6 socio-economic or socioeconomic

S5 (depriv* or disadvantag* or disparit* or inequal* or needy or underprivileg* or under-privileg* or underserv* or under-serv*)

S4 poor or poverty or impover* or unemploy* or non-employ* or non employ*

S3 (MH "Single Parent") OR (MH "Adolescent Parents+")

S2 (MH "Ethnic Groups+") OR (MH "Immigrants+") OR (MH "Indigent Persons") OR (MH "Minority Groups")

S1 (MH "Socioeconomic Factors+")

14.1.6 ERIC

"((((Economic-Status#.DE.) OR (Socioeconomic-Status.DE.) OR (poor OR poverty OR impover$ OR unemploy$ OR non-employ$ OR non ADJ employ$) OR (depriv$ OR disadvantag$ OR disparit$ OR inequal$ OR needy OR underprivileg$ OR under-privileg$ OR underserv$ OR under-serv$) OR (social ADJ problem$) OR ((low OR level) NEAR (income$ OR wage$ OR earn$ OR resourc$)) OR (socio-economic OR socioeconomic) OR ((social$ OR economic$ OR financ$) NEAR (exclude$ OR exclusion OR includ$ OR inclusion OR status OR security OR welfare$ OR wellbeing OR well-being)) OR ((social OR state OR federal OR welfare) NEAR (benefit$ OR payment$)) OR (Minority-Groups.DE.) OR (Ethnic-Groups#.DE.) OR (multi ADJ ethnic) OR (minority NEAR (group$ OR population$)) OR (ethnic$ NEAR (group$ OR population$)) OR (Indigenous-Populations#.DE.) OR (One-Parent-Family#.DE.) OR ((lone OR one OR single) NEAR (parent$ OR mother$ OR father$))) AND ((Community-Health-Services.DE.) OR (SOCIAL-SUPPORT-GROUPS.DE.) OR (SOCIAL-CAPITAL.DE.) OR ((psychosocial$ OR psycho-social$ OR psychological$ OR social$ OR emotional$) ADJ (support$ OR resourc$ OR capital$)) OR (Home-Visits.DE.) OR (home-based OR home ADJ based) OR ((home$ OR in-home$ OR at-home$ OR house$ OR domicil$ OR communit$ OR neighbo$) NEAR (visit$ OR support$ OR program$ OR intervention$)) OR ((famil$ OR lay$ OR nurs$ OR midwi#e$ OR volunt$ OR non-professional$ OR nonprofessional$ OR non ADJ professional$ OR para-professional$ OR paraprofessional$ OR para ADJ professional$ OR professional$) NEAR (visit$ OR support$ OR program$ OR intervention$)) OR ((communit$ OR neighbo$ OR volun$) NEAR (mentor$ OR outreach$)) OR (health NEAR visit$))) AND ((Children#.W..DE. OR Young-Children#.DE.) OR (baby OR babies OR infant$ OR toddler$ OR preschool$ OR pre ADJ school$ OR preschool$ OR child$ OR kindergarten$) OR (play ADJ group OR play-group OR playgroup) OR (nursery))) AND ((CONTROL-GROUPS.DE.) OR (EXPERIMENTAL-GROUPS.DE.) OR (LONGITUDINAL-STUDIES.DE.) OR (FOLLOW-UP-STUDIES.DE.) OR (PROGRAM-EFFECTIVENESS.DE.) OR (((PROSPECTIVE$ OR FOLLOW ADJ UP OR EVALUAT$ OR COMPAR$ OR BLIND$) NEAR STUDY) .TI,AB.) OR ((EVALUAT$ NEAR RESEARCH$) .TI,AB.) OR (((COMPAR$ OR CONTROL$) NEAR GROUP$) .TI,AB.) OR (RANDOM$.TI,AB.) OR (INTERVENTION$.TI,AB.) OR (EXPERIMENT$.TI,AB.) OR (TRIAL$.TI,AB.))"

14.1.7 PsycINFO 1887 to current

S1 DE "Poverty" OR DE "Disadvantaged" OR DE "Income (Economic)" OR DE "Lower Income Level" OR DE "Socioeconomic Status" OR DE "Family Socioeconomic Level" OR DE "Income Level" OR DE "Lower Class" OR DE "Social Class"

S2 DE "Minority Groups" OR DE "Alaska Natives" OR DE "American Indians" OR DE "Arabs" OR DE "Asians" OR DE "Chinese Cultural Groups" OR DE "Japanese Cultural Groups" OR DE "Korean Cultural Groups" OR DE "South Asian Cultural Groups" OR DE "Southeast Asian Cultural Groups" OR DE

"Vietnamese Cultural Groups" OR DE "Blacks" OR DE "Cultural Sensitivity" OR DE "Hawaii Natives" OR DE "Indigenous Populations" OR DE "Alaska Natives" OR DE "American Indians" OR DE "Inuit" OR DE "Pacific Islanders" OR DE "Inuit"OR DE "Jews" OR DE "Latinos/Latinas" OR DE "Mexican Americans" OR DE"Pacific Islanders" OR DE "Hawaii Natives" OR DE "Racial and Ethnic Groups" OR DE "African Cultural Groups" OR DE "Arabs" OR DE "Asians" OR DE "Blacks" OR DE "Indigenous Populations" OR DE "Latinos/Latinas" OR DE "Romanies" OR DE "Whites"

S3 DE "Single Mothers" OR DE "Single Parents" OR DE "Single Fathers" OR DE "Single Mothers"

S4 poor or poverty or impover* or unemploy* or non-employ* or non employ*

S5 (depriv* or disadvantag* or disparit* or inequal* or needy or underprivileg* or under-privileg* or underserv* or under-serv*)

S6 socio-economic or socioeconomic

S7 social problem*

S8 (low N5 income*) or (low N5 wage*) or (low N5 earn*) or (low N5 resourc*)

S9 (level N5 income*) or (level N5 wage*) or (level N5 earn*) or (level N5 resourc*)

S10 (benefit* N3 social) or (benefit* N3 state) or (benefit* N3 federal) or (benefit* N3 welfare)

S11 (payment* N3 social) or (payment* N3 state) or (payment* N3 federal) or (payment* N3 welfare)

S12 (social* N5 exclude*) or (social* N5 exclusion) or (social* N5 includ*) or (social* N5 inclusion) or (social* N5 status) or (social* N5 security) or (social* N5 welfare*) or (social* N5 wellbeing) or (social* N5 well-being)

S13 (economic* N5 exclude*) or (economic* N5 exclusion) or (economic* N5 includ*) or (economic* N5 inclusion) or (economic* N5 status) or (economic* N5 security) or (economic* N5 welfare*) or (economic* N5 wellbeing) or (economic* N5 well-being)

S14 (financ* N5 exclude*) or (financ* N5 exclusion) or (financ* N5 includ*) or (financ* N5 inclusion) or (financ* N5 status) or (financ* N5 security) or (financ* N5 welfare*) or (financ* N5 wellbeing) or (financ* N5 well-being)

S15 ethnic* or minorit* or indigenous* or multi-ethnic* or multi ethnic*

S16 (lone N3 parent*) or (lone N3 mother*) or (lone N3 father*)

S17 (single N3 parent*) or (single N3 mother*) or (single N3 father*)

S18 (one N3 parent*)

S19 S1 or S2 or S3 or S4 or S5 or S6 or S7 or S8 or S9 or S10 or S11 or S12 or S13 or 14 or S15 or S16 or S17 or S18

S20 (DE "Community Services" OR DE "Community Mental Health Services" OR DE "Community Welfare Services" OR DE "Crisis Intervention Services" OR DE "Home Visiting Programs" OR DE "Public Health Services" OR DE "Outreach Programs" OR DE "Social Support")

S21 home-based or home based

S22 (visit* N5 home*) or (visit* N5 in-home*) or (visit* N5 at-home*) or (visit* N5

home*) or (visit* N5 in-home*) or (visit* N5 at-home*) or (visit* N5 house*) or (visit* N5 domicil*) or (visit* N5 communit*) or (visit* N5 neighbo*)

S23 (support* N5 home*) or (support* N5 in-home*) or (support* N5 at-home*) or (support* N5 house*) or (support* N5 domicil*) or (support* N5 communit*) or (support* N5 neighbo*)

S24 (program* N5 home*) or (program* N5 in-home*) or (program* N5 at-home*) or (program* N5 house*) or (program* N5 domicil*) or (program* N5 communit*) or (program* N5 neighbo*)

S25 (visit* N5 famil*) or (visit* N5 lay*) or (visit* N5 nurs*) or (visit* N5 midwife*) or (visit* N5 midwives) or (visit* N5 volunt*) or (visit* N5 neighbo*) or (visit* N5 non-professional*) or (visit* N5 non professional*) or (visit* N5 nonprofessional*) or (visit* N5 paraprofessional*) or (visit* N5 para professional*) or (visit* N5 para-professional*) or (visit* N5 professional*)

S26 (support* N5 famil*) or (support* N5 lay*) or (support* N5 nurs*) or (support* N5 midwife*) or (support* N5 midwives) or (support* N5 volunt*) or (support* N5 neighbo*) or (support* N5 non-professional*) or (support* N5 non professional*) or (support* N5 nonprofessional*) or (support* N5 paraprofessional*) or (support* N5 para professional*) or (support* N5 para-professional*) or (support* N5 professional*)

S27 (program* N5 famil*) or (program* N5 lay*) or (program* N5 nurs*) or(program* N5 midwife*) or (program* N5 midwives) or (program* N5 volunt*) or (program* N5 neighbo*) or (program* N5 non-professional*) or (program* N5 non professional*) or (program* N5 nonprofessional*) or (program* N5 paraprofessional*) or (program* N5 para professional*) or (program* N5 para-professional*) or (program* N5 professional*)

S28 (intervention* N5 famil*) or (intervention* N5 lay*) or (intervention* N5 nurs*) or (intervention* N5 midwife*) or (intervention* N5 midwives) or (intervention* N5 volunt*) or (intervention* N5 neighbo*) or (intervention* N5 non-professional*) or (intervention* N5 nonprofessional*) or (intervention* N5 nonprofessional*) or (intervention* N5 paraprofessional*) or (intervention* N5 para professional*) or(intervention* N5 para-professional*) or (intervention* N5 professional*)

S29 (mentor* N3 communit*) or (mentor* N3 neighbo*) or (mentor* N3 volun*)

S30 (outreach* N3 communit*) or (outreach* N3 neighbo*) or (outreach* N3 volun*)

S31 (intervention* N5 home*) or (intervention* N5 in-home*) or (intervention* N5 at-home*) or (intervention* N5 house*) or (intervention* N5 domicil*) or (intervention* N5 communit*) or (intervention* N5 neighbo*)

S32 (health N5 Visit*)

S33 (S20 or S21 or S22 or S23 or S24 or S25 or S26 or S27 or S28 or S29 or S30 or S31 or S32)

S34 S19 and S33

S35 baby or babies or infant* or toddler* or preschool* or pre school* or child* or kindergarten*

S36 (ZG "neonatal (birth-1 mo)") or (ZG "preschool age (2-5 yrs)") or (ZG"infancy (2-23 mo)")
S37 S35 or S36
S38 randomis* or randomiz*
S39 (random* N3 allocat*) or (random* N3 assign*)
S40 (clinic* N3 trial*) or (control* N3 trial*) S
S41 (singl* N3 mask*) or (singl* N3 blind*)
S42 (doubl* N3 mask*) or (doubl* N3 blind*)
S43 (trebl* N3 mask*) or (trebl* N3 blind*)
S44 (tripl* N3 mask*) or (tripl* N3 blind*)
S45 crossover*
S46 cross over*
S47 (DE "Random Sampling" or DE "Clinical Trials") or (DE "Experiment Controls")
S48 DE "Placebo" or DE "Evaluation" or DE "Program Evaluation" OR DE "Educational Program Evaluation" OR DE "Mental Health Program Evaluation"
S49 (effectiveness N3 stud* or effectiveness N3 research*)
S50 (evaluation N3 stud* or evaluation N3 research*)
S51 S38 or S39 or S40 or S41 or S42 or S43 or S44 or S45 or S46 or S47 or S48 or S49 or S50
S52 S34 and S37 and S51

14.1.8 Social Science Citation Index 1970 to current

Searched 8 October 2010

#24 #23 AND #17
#23 #22 OR #21 OR #20 OR #19 or #18
#22 TS= (mask* or blind* or follow-up or followup* or longitud*)
#21 TS=((random*) SAME (allocat* or assign* or group* or trial*))
#20 TS= random* effectiv* trial*
#19 TS=((singl* blind*) or (singl* mask*) or (doubl* blind*) or (doubl* mask*) or (tripl* blind*) or (doubl* blind*) or (doubl* mask*) or (tripl* blind*) or (tripl* mask*) or (trebl* blind*) or (trebl* mask*))
#18 TS= (random* controlled trial* or rct)
#17 #16 AND #9
#16 #15 OR #14 OR #13 OR #12 OR #11 OR #10
#15 TS=(home-based or home based or house call*)
#14 TS=(health SAME visit*)
#13 TS= ((famil* or lay* or nurs* or midwife* or midwives or volunt* or non-professional* or nonprofessional* or para-professional* or paraprofessional* or professional*) SAME (visit* or support* or program* or intervention*))
#12 TS=((communit* or neighbo* or volun*) SAME (mentor* or outreach*))
#11 TS=((psychosocial* or psycho-social* or psychological* or social* or emotional*) within 3 (support* or resourc* or capital*))
#10TS= ((home* or in-home* or at-home* or house* or support* or program* or

intervention*))
#9 #8 AND #7
#8TS= (baby or babies or infant* or toddler* or child* or preschool* or pre school* or preschool* or kindergarten*)
#7 #6 OR #5 OR #4 OR #3 OR #2 OR #1
#6TS= ((lone or one or single) SAME (parent* or mother* or father*))
#5TS= (ethnic* or multi-ethnic* or multi-racial* or multi ethnic* or multi racial or minorit* or indigenous*)
#4TS= ((social or state or federal or welfare) SAME (benefit* or payment*))
#3TS=((social* or economic* or financ*) SAME(exclud* or exclusion or includ* or inclusion or status or security or welfare* or wellbeing or well-being))
#2TS=(socio-economic or socioeconomic)
#1TS=(poor or poverty or impover* or unemploy* or non-employ* or non employ* or depriv* or disadvantag* or disparit* or inequal* or needy or underprivileg* or under-privileg* or underserv* or under-serv*)

14.1.9 Sociological Abstracts

((((KW= (poor or poverty or impover* or unemploy* or non-employ* or non employ* or depriv* or disadvantag* or disparit* or inequal* or needy or underprivileg* or under-privileg* or underserv* or under-serv*)) or(KW=(socio-economic or socioeconomic)) or(KW=((social* or economic* or financ*) within 5 (exclud* or exclusion or includ* or inclusion or status or security or welfare* or wellbeing or well-being))) or(KW=((social or state or federal or welfare) within 3 (benefit* or payment*))) or(KW=(ethnic* or multi-ethnic* or multi-racial* or multi ethnic* or multi racial or minorit* or indigenous*)) or(KW=((lone or one or single) within 3 (parent* or mother* or father*)))) and(KW=(baby or babies or infant* or toddler* or child* or preschool* or pre school* or preschool* or kindergarten*))) and((KW= (psychosocial* or psycho-social* or psychological* or social* or emotional*) within 3 (support* or resourc* or capital*)) or(KW=((home* or in-home* or at-home* or house* or domicil* or communit* or neighbo*)within 5 (visit* or support* or program* or intervention*))) or(KW= (communit* or neighbo* or volun*) within 3 (mentor* or outreach*)) or(KW= ((famil* or lay* or nurs* or midwife* or midwives or volunt* or non-professional* or nonprofessional* or para-professional* or paraprofessional* or professional*) within 5 (visit* or support* or program* or intervention*))) or(KW= (health within 5 visit*)) or(KW= (home-based or home based or house call*)))) and(KW=(effectiv* or random* or control* or trial* or groups* or evaluat* or intervention*)