

A systematic review of
parenting interventions
to prevent child abuse tested
with RCT designs in
high income countries

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Executive Summary

Child maltreatment in the forms of physical abuse and neglect pose among the most extreme risks to children's well-being and future adjustment. Parenting interventions generally target parents who have abused their children, or who show some of the risk indicators of potential abuse and neglect. Such interventions have the aim of minimizing the chance of abuse recurring or improving parenting skills which can also mitigate the risk of future abuse.

The objectives of this review are to evaluate how parenting programs succeed at: (1) eliminating child abuse as manifest in official reports and in-person assessments; (2) altering parenting behaviors or attitudes associated with abuse; (3) enhancing parent-child relationships and positive parenting skills as buffers against abuse. The review included published papers from high income countries on parenting interventions tested with randomized control trial designs. Studies were identified through web-based searches, U.S. government databases, and citations from previously published reviews. This paper complements, and is to be read in conjunction with, the SVRI commissioned desk review entitled, "Parenting and the Prevention of Child Maltreatment in Low- and Middle-Income Countries" (Knerr, Gardner & Cluver, 2011).

Parenting interventions reviewed range from psycho-educational to behavioral to attachment-focused. All 22 studies included in the review were selected because they met this highest standard of evidence for clinical science, namely a Random Control Trial (RCT). The results are based on these 22 studies with a total of 5160 parents in clinical trials and an additional 18,000 in a population-based trial.

Two-thirds of the studies showed positive effects of parenting interventions on either child abuse rates in official records or according to parents' self-reports. Studies which included multiple measures of parental attitudes or behavior tended to report more significant results. Despite the relative success of some programs, several home visiting evaluations reported almost entirely null results. Portability of these programs may be of limited value. Any intervention would need to be adapted to suit local realities.

I. Background

There are many different sources of risk for child maltreatment ranging across cultures and countries. Despite vast cultural and economic differences between countries some common risk factors prevail. In both affluent and poor countries, children from the poorest strata are the most likely to suffer abuse and neglect with some of the worst consequences, including premature mortality. Often related to the backdrop of poverty are further risk factors such as substance abuse, mental illness, and intimate partner violence.

There are many reasons for abuse and neglect. One primary source is the family of origin for both the perpetrator and victim. Researchers have found links between gender-based violence and other forms of assault, and child abuse. Based on a number of studies, it was found that men who batter women usually have a history of child abuse or witnessing domestic violence (Murphy, Meyer & O'Leary, 1994; Sugarman & Hotaling, 1989). It is estimated that 60-80% of abusive men come from violent and abusive homes (Rosenbaum & O'Leary, 1981). Men who grew up exposed to physical child abuse are nearly 10 times more likely to abuse their wives or partners (Murphy et al., 1994). According to retrospective reports of men who perpetrate physical, and especially psychological abuse against women, they report experiencing three forms of abuse in their own families of origin: physical child abuse, rejection by fathers, and insecure attachment to mothers (Dutton, Starzomski & Ryan, 1996). Such findings indicate the need to intervene, and in the case of attachment disorders, to intervene early.

Men who assault women are also more likely to physically abuse their children (Appel & Holden, 1998). In a national survey of over 6,000 American families, it was estimated that between 53% and 70% of male batterers (i.e., they assaulted their wives) also frequently abused their children (Straus & Gelles, 1990). McCloskey et al. (1995) also found that children of mothers who were beaten by their partners were at risk for child abuse and that domestic violence predicts children's general psychopathology. Witnessing domestic violence in childhood exacts a serious toll on children's socio-emotional functioning (Appel & Holden, 1998; McCloskey, Figueredo & Koss, 1995; Rosenbaum & O'Leary, 1981).

Understanding and responding to this threat to child safety is essential. Parenting interventions can stem the cycle of events by which child abuse elevates the societal risk years later for wife abuse, sexual aggression, and heightened violent crime. Focusing attention on parenting interventions, even in early childhood, may reduce gender-based violence, child abuse and other forms of aggression in adulthood.

Defining child abuse

The complex problem of abuse in families takes many forms. According to the World Health Organization (1999) "Child abuse or maltreatment constitutes all forms of physical and/or emotional ill-treatment, sexual abuse, neglect or negligent treatment or commercial or other exploitation, resulting in actual or potential harm to the child's health, survival, development or dignity..." (pp 17-20). It may begin at birth and continue until a child reaches the legal age of 18, or occur only at certain developmental stages. Adding to the complexity of studying abuse in families, definitions and understandings of what constitutes child abuse vary across sources and settings.

Measuring forms of child maltreatment

Several indicators of child maltreatment are generally used to measure forms of child maltreatment. Child abuse variables are assessed at enrollment and then collected post-treatment. Both official reports and unofficial assessments of child abuse practices or potential for abuse are used. Official documentation is often hard to obtain as the researcher must rely solely on the state agencies for such information. Although abuse records have the advantage of being “non-reactive”, that is unrelated to the potential bias of the assessor or the demand characteristics of the situation, (Patterson & Sechrest, 1983) they almost certainly underestimate abusive practices in the home because only a fraction of abusive families are ever identified by the State. Therefore, measures that include: (1) parental self-reports of disciplinary practices or “harsh parenting”; (2) observations of parents interacting with their children; (3) and assessor and parent reports of parental sensitivity, improved attitudes, lower parental stress, provide additional windows into either actual expressions of abusive or neglectful behavior, or the *risk* for such behaviors. Standardized self-report instruments are generally preferable to more idiosyncratic choices in measurement.

Risk factors for child maltreatment

Child abuse is not a stand-alone family problem, and is associated with multiple risk factors (Duggan, McFarlane, Fuddy, Burrell, Higman & Windham, 2004; McDonald, Jouriles, Tart & Minze, 2009). Therefore, many interventions that include a parenting component also include one or more other components designed to change other potential mediators (e.g., children's coping skills) or to reduce barriers to using effective parenting (e.g., parental depression, economic strain).

Demographic risk factors correlating with abuse include:

- low income and less than high school education (Dubowitz, Jongeun, Black, Weisbart, Sematin, & Magder, 2011);
- Lower financial and social resources (Sedlak & Broadhurst, 1996);
- family structure indicators such as primiparous birth before age 18 and mother unmarried (Oliver, Kuhns & Pomeranz, 2006).

Psychosocial risk factors include:

- drug or alcohol dependency;
- major clinical depression (Dubowitz et al., 2011);
- parents' criminal history is also associated with a heightened risk of child abuse or neglect.

Maternal functioning and mother-child relationship quality risk factors include:

- coercive discipline (Patterson & Sechrest, 1983);
- lack of knowledge of child's needs;
- negative attributions of why children behave in certain ways;
- negative verbal exchanges;
- child conduct problems (McDonald, Jouriles & Skopp, 2006).

Finally, parenting stress may be linked to the ways that parents reprimand their children, and there is research that associates harsh parenting or discipline with child abuse (Chaffin, Silovsky, Funderburk, Valle, Brestan, Balachova, Jackson, Lensgraf & Bonner, 2004).

Another form of abuse that is sometimes unreported in studies is a child's exposure to severe domestic violence. Chronic exposure to fathers, stepfathers or partners who beat or coerce mothers, results in child conduct and mental health problems, partially offsetting the adverse effects of being a direct target of abuse (McCloskey et al., 1995; McDonald et al., 2009). Childhood exposure to violence in the home in turn sets in motion a potential cycle of violence, with children, most notably boys, growing up to adopt violent behaviors in intimate relationships (McCloskey & Lichter, 2003). Boys who come from such households are more likely than other boys to develop patriarchal and proprietary attitudes towards women and sexual relationships, which later can give rise to intimate partner violence and sexual violence (Perepletchikova & Kaufman, 2010; Jewkes, Dunkle, Koss, Levin, Nduna, Jama & Sikweyeya, 2006; Knight & Sims-Knight 2003; Lichter & McCloskey, 2004).

Multiple forms of family violence pose a threat to children's cognitive and social-emotional development, and often the various forms of family violence co-occur (e.g., intimate partner violence and mother-child aggression) (McDonald et al., 2009; Slep & O'Leary, 2005). Exposure to domestic violence relates to children's externalizing problems (i.e., conduct problems and aggressiveness) (McCloskey & Lichter, 2003) and other problems. These issues can have detrimental long-term effects on the children's mental and physical health.

Effects of child abuse

The lasting effects of abuse indicate that fractured parent-child relationships hinder the development of even very young children. Language delay, attachment problems, and even dysfunctional peer relations such as excessive aggression or withdrawal, and depression have been documented consequences of abuse and neglect (Toth, Manly & Cicchetti, 1992).

Child maltreatment is associated with later adjustment failures, heightened aggression, crime, and gender based violence - specifically partner violence and sexual abuse (McCloskey et al., 1995). Child abuse history and the removal of the child from the family are heavily implicated in adolescent and adult crime (Widom, Schuck & White, 2006). Individuals with child abuse histories face a heightened risk of adverse health conditions across the lifespan which may result for some in premature mortality from disease (Brown, Anda, Tiemeier, Felitti, Edwards, Croft, & Giles, 2009; White & Wisdom, 2003). Child maltreatment is also a strong predictor of adult psychopathology (Ta, Juon, Gielen, Steinwachs, McFarlane & Duggan, 2009; McDonald et al., 2009).

There is strong evidence that girls who are sexually abused in childhood face an elevated risk of sexual assault in adolescence and young adulthood (Lalor & McElvany, 2010). The link between early and subsequent sexual victimization has been found in many U.S. studies but also in sub-Saharan Africa and elsewhere. The cycle of gender-based violence can be seen across the life-course and often has early roots in witnessing gender-based violence within the family (Abrahams & Jewkes, 2005).

Parenting interventions

Defining Parenting Interventions

Parenting interventions broadly defined are designed to promote some aspect of effective parenting. There are different viewpoints about which aspect of effective parenting is most responsible for affecting youth developmental outcomes. For instance, some researchers emphasize attachment and self-regulatory capabilities (Dozier, Highly, Albus & Nutter, 2002), while others emphasize behavioral contingencies and a coercive reinforcement cycle (Patterson & Sechrest, 1983). There have been a variety of conceptual guides in existing parenting intervention studies. For instance, some parenting interventions draw from attachment theory (Cicchetti, Rogosch & Toth, 2006), emotion regulation model (Bugental & Schwartz, 2009), and behavioral training approaches (Chaffin et al., 2004).

The main goal of a parenting intervention is to promote effective parenting and eliminate the risk of child maltreatment. Some parenting programs focus on the child's cognitive outcome over time as a result of early interventions (c.f., Brooks Gunn, McCarton, Casey, McCormick, Bauer, Bernbaum et al., 1994; McCormick, Brooks-Gunn, Buka, Goldman, Yu, Salganik et. al., 2006). This review focuses on those parenting interventions which address child abuse and measure parenting effectiveness and child abuse incidents rather than the child's observed outcome.

Models of parenting interventions

Interventions for young parents are conducted in the home, or in the clinic or agency sponsoring the treatment. Programs typically do not mix the venues; if a home visiting program is in place for one year it will take place exclusively in the client's home. Interventions vary based on duration. In our analysis we classify any intervention as lasting more than six months as long-term, although many are completed within two to four months. The home visiting programs are usually the longest and have been adopted by many states. Two such programs, Healthy Start and Healthy Families, both can claim extensive evaluation, although most are unpublished. Most parenting intervention studies enlist *only* the mothers. Women are easier to recruit, are often single if they are in an "at-risk" group for child abuse, and are the primary caregivers in any event. Fathers typically have low rates of program completion. Nevertheless, some new programs have been developed to include young fathers at risk (Cowan, Cowan, Pruett, Pruett & Wong, 2009).

The current review

This current paper presents a systematic review of parenting interventions for the prevention of child abuse. Parents are the key players in the safety and health of their children and, therefore, are central to reducing the incidence of child maltreatment. Minimizing child abuse early on in families may confer protection for future generations against abuse within the family and even sexual violence. There is, therefore, an urgent need to synthesize research evaluating the effectiveness of various intervention approaches. Careful analysis of the features of experimental design, risk of bias, and overall impact of the interventions provide a much-needed filter of the study data.

This review aims to evaluate the effectiveness of parenting interventions designed to reduce the risk of child abuse and neglect in families. Interventions included in the review are mostly drawn from studies done in high income countries (HIC) that have been evaluated using randomized control designs. Reviewing such studies may offer lessons for advocates and practitioners developing culturally-appropriate interventions in other less resourced settings. However, the extent to which these lessons can be applied in less resourced settings remains untested. This review therefore complements, and is to be read in conjunction with, the review by Knerr, Gardner and Cluver (2011), “Parenting and the Prevention of Child Maltreatment in Low- and Middle-Income Countries” which details high quality studies of prevention programs in low-income countries worldwide. Many of the interventions described in Knerr et al., (2011) derive from intervention models developed in high-income countries, and especially the U.K. and U.S.A. Because of the synergy seen in adopted interventions globally, it is important to provide evaluation summaries of both high and low income countries.

Objectives

The objective of this review is to select and analyze different parenting interventions oriented towards abusive or at-risk parents implemented in high income countries evaluated with RCT designs. Specific aims are to:

- Evaluate the strength of the research design of the included studies;
- Describe important features of measurement;
- Provide an interpretation of the findings from a statistical and a meaning-based view;
- Compare and contrast studies to identify strengths and weaknesses;
- Provide a review of studies which center on children's gender role development in the family and identify any reports on parenting interventions.

II. Methodology

Criteria for study inclusion

The inclusion and exclusion criteria used in this review are detailed in the following sections.

Types of studies

The study design had to meet the criteria of random assignment of participants to a control or intervention condition. The control group could be no-intervention or wait-list; in some cases the control was an alternative form of intervention. Priority was given to studies with fully described random controlled trials. Some studies also had pre-post measures for longitudinal designs. Finally, only studies with direct measures of child abuse or closely related risk indicators were included. Only studies published in professional journals are presented in the main results. Unpublished RCT studies which are ongoing are listed in Appendix C. Studies with fatal flaws and very low sample sizes preventing generalization were also excluded

Types of participants

The participants were parents of infants, toddlers, or school-aged children under 12. It was expected that most of the participants would be mothers. The parent had to show either heightened statistical risk for child abuse or neglect (e.g., teenage parent, substance dependency) or a documented history of some form of child maltreatment. The majority of studies recruited poor parents, with a significant proportion belonging to racial or ethnic minorities and most interventions were with children under three.

Types of Parenting Interventions

The caveat for this review is that the intervention aims to promote effective parenting among mothers or fathers at risk for abusive behavior or with a prior record of child abuse or neglect. Parenting interventions must therefore include elements designed specifically to reduce abusive practices and to improve positive parent-child interaction. Some studies join parenting interventions together with multi-faceted treatment, but only those studies in which the parenting intervention component is measured separately and in which the effects of the parenting component are clearly identified are included for review.

For the present review parenting prevention or intervention programs were standardized and often “manualized” interventions designed specifically for the mitigation of child abuse. The duration of programs lasted from about two weeks to more than a year; the people delivering the intervention ranged from paraprofessionals to trained certified nurses and clinical psychologists; and the settings varied from clinic-based to the homes of parents.

Programs were often designed to change parental attitudes, modify behaviors, reduce parental stress, improve general parenting knowledge and skills, reinforce positive relationship dynamics, reduce coercion, and in some cases reduce child conduct problems associated with abuse histories.

Types of Outcome Measures

The outcome variables had to measure the target risk behavior (child maltreatment or harsh parenting), or measure a close correlate of abuse. Different methods of information gathering were used in the studies. Most can be categorized as (1) observational; (2) interview-based; (3) collection of records from state agencies monitoring reports of child abuse or hospitals with records of injuries. Interview data entailed non-standardized questionnaires and standardized instruments such as the Parenting Stress Index, or measures of parenting quality such as the Adult Adolescent Parenting Interview or Parenting Practices. Also within the self-report modality are measures about harsh parenting often using the Conflict Tactics Scale or a revised version to tap into abusive behavior. About half of the researchers also relied on videotaped interaction sessions which were later coded for parental warmth, parental sensitivity, positive or negative language, and other indicators of the emotional relationship between the parent and child. Finally, many of the researchers obtained official reports of abuse or neglect from either a State child reporting entity or in two cases a hospital and emergency department. In addition some researchers obtained information about a child's placement into foster care, compelling evidence of dysfunction in the household. Studies reporting exclusively on children's outcomes were not included.

Table 1. Inclusion Criteria

Inclusion Criteria	Description
CHILD AGE	parents have at least one child aged between 0-17
PARENTS	a target population of parents who have been abusive or show risk for abuse and neglect of their children
INTERVENTION	parenting intervention that is distinct from other components of treatment
STUDY DESIGN	RCT or a form of randomization
OUTCOME	abuse, harsh parenting or neglect; behavior or attitude known to correlate with parental abuse
SOURCE	peer-reviewed publication

Search methods to identify studies

Electronic searches

Only studies appearing in academic journals were included in the initial search (and omitting book chapters, unpublished reports, dissertations). The following academic search data sources were used to find published studies:

- (1) Medline
- (2) PubMed
- (3) PsychINFO
- (4) The Cochrane Library
- (5) ISI-Web of Science
- (6) Google Scholar

All searches were for articles dating from 1980 to April 2011. Search terms and specifications varied slightly based on the unique parameters of the search engine. The main search applying to most of the databases included the following categories: child abuse AND parenting intervention AND controlled trial with three alternative search terms for each category (e.g., child abuse OR neglect OR child maltreatment). Three algorithms were applied to each of the six databases until saturation occurred and the overlap made further searching redundant. The following search terms were further used as identifying terms for Title OR Abstract OR Anywhere OR keyword in the text:

Child abuse/OR
 infan\$ or toddler\$; (maltreat\$ or neglect\$) OR abuse (infan\$ or toddler\$)d
 AND
 parenting intervention\$ (program\$ or training\$ or promot\$ or intervent\$)
 AND
 RCT/OR
 (controlled trial\$ random\$ eval\$)

Appendix A offers further detail of the searches performed across each search engine with the number of hits, and the articles which were included or excluded. Articles generated from either the electronic databases or citation lists in these reviews were often redundant.

Additional sources

Review articles

References were culled from nine review papers on the general topic of parenting interventions, home visiting, and the prevention of child abuse (Allin, Wathen & McMillan, 2005; Barlow, Davis, McIntosh, Jarrett, Mockford & Stewart-Brown., 2007; Gomby, Culross & Behrman, 1999; Kendrick, Elkan, Hewitt, Dewey, Blair, Robinson et al., 2000; Lundahl, Nimer & Parsons, 2006; MacLeod and Nelson, 2000; Olds, Ecknrode, Henderson, Kitzman, Powers et al., 1997; Howard & Brooks-Gunn, 2009; Sweet & Appelbaum, 2004) The most relevant articles based on topic or description in the review paper were obtained and evaluated for inclusion.

Author contacts

The reviewer contacted seven researchers / authors by email or telephone (between September, 2010 and February, 2011) to confirm details sometimes absent in the publication (see Appendix B).

Grey literature

Sixty-five unpublished or ongoing federally funded studies were inspected through searching *ClinicalTrials.gov* (see Appendix D); three were identified as matching the criteria for exclusion in design, population and measured outcomes. In addition, a partial list of *Healthy Start* unpublished evaluations is included in Appendix C, all of which fail to meet the criteria of employing a Random Controlled Trial design or of being published in a peer-reviewed outlet.

Data collection and analysis

Selection of studies

Titles and abstracts of studies identified through electronic searches were reviewed to determine whether they met the inclusion criteria. Most of the articles were excluded based on the title alone.

Data extraction and management

Abstracts that appeared relevant were read and coded by the reviewer for inclusion in the study using the data extraction sheet (see Appendix E). Initial extraction and coding were performed by a graduate assistant and further extraction and review was conducted by the author.

Data were compiled describing the following features:

- Population characteristics;
- Risk for abuse or source of referral (child abuse prevention agency);
- Age of target child; and
- Program duration.

Some study design features were extracted:

- Sample size;
- Study design (e.g., RCT, longitudinal);
- Prevention of bias (e.g., sequential allocation);
- Outcomes (e.g., abuse-related);
- Attrition; and
- Main results regarding child abuse.

Evaluating quality of methods

Criteria were applied in the selection and evaluation of studies including elements of research design (randomization or RCT), risk of bias (especially according to the Cochrane Collaboration), levels A-C for a RCT (Cochrane Collaboration – see Table 2), and the quality of study measures (e.g., validity and reliability reported).

Table 2. Cochrane collaboration study design grade

Category	Criteria
A	RCT with allocation concealment described
B	RCT uncertain whether allocation concealment
C	RCT w/quasi-randomization and no concealment

Assessing risk of bias in studies

Studies were reviewed to address general guidelines of research quality and risk of bias as described in the table adopted below from the Cochrane Collaboration (c.f., Jaeschke, Guyatt & Sackett, 1994):

Table 3. Study Bias Criteria

Domain	Description
Sequence generation	Describe the method used to generate allocation in sufficient detail
Allocation concealment	Describe the method used to conceal the allocation in sufficient detail
Blinding of participants, personnel and outcome assessors	Describe methods to keep personnel blind to the condition allocation of subjects
Incomplete outcome data	Ensure outcome data for key goals are included
Selective outcome reporting	Ensure that authors do not emphasize positive findings at the expense of clearly describing negative ones
Other sources of bias	Describing and accounting for other sources of bias

(Source: Cochrane Collaboration Tools for Evaluating Sources of Bias in Research Quality assessment)

The Cochrane collaboration has also proposed a rating system based on the underlying methodology in a treatment study. The Cochrane ranking ranks any study using a Random Controlled Trial as “high.” Studies were selected to meet this highest standard. Studies ranked as “very low” or “low” were excluded. Although random controlled trials may not answer all questions relevant to treatment evaluation it provides a framework to identify at the least what interventions make a difference with which populations.

Assessment of publication reporting bias

Publication bias was not assessed in the current review.

Measuring effects of treatment

Different statistical tests were used across various studies. The main comparison for the present review is the comparison of the target treatment group on the indices relating to child abuse and neglect to the control, waitlisted or alternative treatment group. Such measures are typically obtained post-intervention and over time with varying time periods for follow-up. Some authors provide a computation of the “effect size” (Cohen) for the differences between groups, and some provide Odds Ratios with confidence intervals, which are also interpretable in terms of the putative size of the difference. In addition, descriptive statistics are often provided which offer a perspective on the type and size of the difference. In several cases there are no statistically significant differences between groups and further statistical comparisons are not provided.

Data synthesis

Because the main outcome variables, child abuse or neglect or risk indicators for the same, are measured differently across several of the studies it was not possible to fully synthesize the results for a meta-analysis. Home-visiting models (n=12) and clinic-based treatments (n=10) were compared for different outcomes (e.g., physical child abuse or neglect, harsh parenting, or parent-child interaction) and other related risk factors.

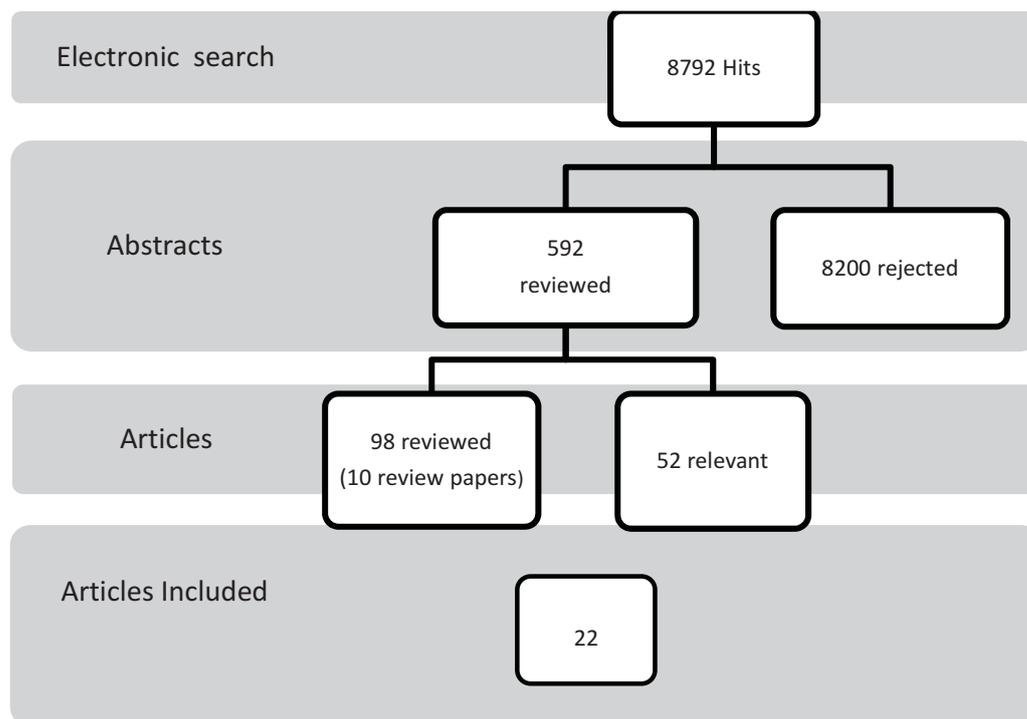
III. Results

Description of the studies

Search results

The study selection tree is presented below and in Appendix A. Across the six electronic databases including Google Scholar 8,792 references were generated. Most of these were irrelevant upon scanning the title or source. Only articles from peer-reviewed journals were included. A total of 592 abstracts were derived from the initial search, with 98 appearing relevant. These references included review papers on the topic of parenting interventions and child abuse risk. Out of these 98 articles, 10 were reviews and 39 described actual prevention trials; after combing the review papers for further citations and reading the empirical papers, 22 studies were finally selected for inclusion. It should be noted that across the data sources there was repeat appearance of citations. In addition, some prevention programs received more than one evaluation in which case only one has been selected for review and the second (or others) discussed and cited.

The figure below provides a graphic representation of the selection process.



Included studies

Included studies, the authors and intervention program, sample size, country and locale (e.g., rural v. urban), study type and grade (Table 2 refers) are noted in Table 4.

Table 4. Included studies by year

YEAR PUB	AUTHORS	PROGRAM TITLE	N	COUNTRY	Rural Urban	TYPE OF STUDY	GRADE
1983	Egan, K. J.	Child Management Training and Stress Management	41	USA	Urban	RCT	B
1987	Brunk, M.A., et al	Multisystemic therapy Parent training	33	USA	Urban	RCT	B
1994	Hutcheson J.J., et al	Failure-to-thrive (NOFTT) home interventions	116	USA	Urban	RCT	B
1996	Kolko, D.	Cognitive Behavioral Therapy (CBT) or Family Therapy (FT)	38	USA	Urban	RCT	B
1997	Olds, D., et al	Nurse home visitation (Nurse Family Partnership) Elmira NY	324	USA	Rural	RCT	A
2003	Sanders, M., et al	Triple-P	305	AU	Urban	RCT	A
2002	Olds, D., et al	Nurse Family Partnership (NFP): Denver	735	USA	Urban Sub.	RCT	A
2004	Duggan, A, et al.	Healthy Start-Hawaii	643	USA	Urban Sub.	RCT	B
2004	Hughes, J. R., et al	Webster-Stratton Parent Training	26	CA	Urban	RCT	B
2004	Chaffin, M., et al.	Parent-Child Interaction Training (PCIT)	110	USA	Urban	RCT	A

2005	Fergusson, D.M., et al	Early Start	443	NZ	Urban	RCT	B
2005	MacMillan, H.L., et al	Nurses Home Visiting	139	CA	Urban	RCT	A
2006	Cicchetti, D., et al.	Infant-Parent Psychotherapy (IPP); Psycho-educational parenting intervention (PPI)	137	USA	Urban	RCT	A
2006	Linares, L.O., et al	Incredible Years	128	USA	Urban	RCT	B
2007	Barlow J, et al.	Family Partnership	131	UK	Urban	Multi- ctr RTC	A
2006	Dawe, S. & Harnett, P.	Parents Under Pressure (PUP)	64	AU	Urban	RCT	B
2008	Dumont, K., et al	Healthy Families: New York	1173	USA	Urban	RCT	B
2009	Prinz, R.J., et al	Triple P	85k	USA	Semi- rural	RCT	A
2009	Jouriles, E.N., et al	Project Support	35	USA	Urban	RCT	B
2009	Bugental, D., & Schwartz, A.	Enriched Healthy Start	102	USA	Urban	RCT	B
2009	Cowan, P.A., et al.	Supporting Father Involvement Prevention	289	USA	Urban	RCT	B
2010	Oveisi, S., et al	Parent training	224	IRAN	Urban	RCT	B

Research design

All the studies (N=22) described a randomized controlled trial with at least two arms. Barlow et al. (2006) report on a multi-center RCT, which commands the highest study design ranking. The sample size and country of origin are presented in Table 3. Studies with the smallest sample size (N=26-41) tended to be among the earliest conducted. Studies ranged in sample size from 26 (Hughes & Gottlieb, 2004) to 1173 (Dumont et al, 2008). One evaluation of Triple P was population-based across counties encompassing about 85,000 parents (Prinz et al., 2009). Most studies had some risk of bias, and in many cases the authors failed to provide sufficient detail to evaluate how such bias would be contained. Further discussion of these design features is in the next section.

Study locations

Studies were conducted in English-speaking, high-income industrialized countries such as the United States (USA) (n=14), Canada (CA) (n=2), Australia (AU) (n=2), United Kingdom (UK) (n=1), and New Zealand (NZ) (n=1). One recent study evaluating a parenting intervention from a developing country, Iran, is included (Oveisi, et al., 2010). It should be noted that the populations served were usually among the poorest in their respective countries despite the high national incomes represented. This reflects the fact that child abuse rarely surfaces in a vacuum; it springs from conditions of environmental stress, poverty, low social status and parental psychopathology. Although the absolute wealth of a poor family in the U.K. may be several times higher than a poor family in India, their relative status within the hierarchy confers risk for abuse that is comparable to families lower on the most disadvantaged families in a country like India (Marmot, 2004).

Only two studies were conducted in rural or semi-rural settings; two of the urban locations also recruited from the suburbs. While most of the study locations were urban, there were differences in the size and type of city. For instance, MacMillan, et al. (2005) recruited families from Hamilton, Ontario with a population of 300,000. Dumont et al.'s (2008) evaluation of Healthy Families New York drew more than half of their sample from inner city areas in New York City, a very different urban environment in comparison to cities like Hamilton or Christchurch (Fergusson et al., 2005). Jouriles's sample was drawn from Houston, one of the largest cities in the U.S. with 2.25 million residents. The descriptive parameters surrounding "urban" therefore are wide, capturing different city environments with varying levels of population density, rates of poverty, and ethnic and racial concentrations.

Treatment settings

Nine of the parenting interventions were offered in university-affiliated clinics (e.g., Chaffin, et al., 2004; Cicchetti, et al., 2006) or in community settings or offices (e.g., Prinz, 2009). Twelve were conducted *only* in the home with home visiting nurses or paraprofessionals (e.g., Olds et al., 1997; 2002), and one (Kolko, 1995) conducted the intervention both at the home and at clinic.

Participants

From the 22 studies, 11 focused only on mothers, one exclusively on fathers (Cowan, et al., 2009), and nine on both mothers and fathers to varying degrees. Table 5 displays the target parent and, when available, the proportion of targets who were mothers. Families were referred from social services, had a child abuse record, or displayed other risk indicators including drug dependence, mental health problems, unmarried and poor. Further demographic variables are provided below, which were mostly shared across studies, although the blank values indicate that the information was occasionally unreported in any given study.

Parents' age ranged from under 17 (Barlow, et al., 2007) to early or mid-thirties (Brunk, et al., 1987). Most researchers reported that parents were around thirty years of age. Eight studies failed to provide parental ages.

Home-visiting programs (n=7) centered on parents of infants or young children (0-3). Clinic-based or community interventions typically included older children of preschool age or middle-childhood. The age range of the children and parents are provided at enrollment in the study and intervention (Table 5). Both parents and children were necessarily older at the point of the assessments.

Six of the 22 studies included predominantly White families and all but two had a significant representation of minority groups. Racial and ethnic groups represented were: Black or African-American (n=8); Hispanic (mostly Mexican American) (n=5); Native Hawaiian (n=1); Filipino (n=1).

The population was usually at high risk for child maltreatment. The studies were selected because the parents receiving the intervention were screened for official records of child abuse, self-report of abusive, neglectful or harsh parenting, official medical documentation of neglect (e.g., failure-to-thrive), or a profile of high risk for future child abuse or neglect.

The high-risk variables included mothers: (1) unmarried; (2) young; (3) unemployed; (4) low level of educational attainment; (5) receipt of welfare or government aid; (6) other indicators of poverty or coming from a poor community. Consistent with this screening is the high percent of families who fall under poverty guidelines. Many families were in receipt of welfare or state aid. Although most of the researchers provide an estimate of the proportion of families who meet a poverty threshold, some only indicate without specifically stating the proportion, that most were low-income. The low-income families were, on average, very low income for these settings.¹

Educational attainment of the parents was described in about half of the studies. The average parent had less than 12 years, or incomplete high school education. All parents completed some high school, and some had graduated. None had completed university or professional post-graduate education. The clinical population had on average lower educational attainment than the referents.

The families receiving interventions are usually poor within the context of their high income countries. Poor parents and children may benefit from the advanced infrastructure of the country, but such families also struggle against deprivation although possibly not as extreme as in low income countries. Nevertheless, poverty in any context still results in hunger and nutritional deprivation, increased risk of disease, exposure to violent crime, and, perhaps of greatest significance, a general lack of empowerment. It is the latter feature which would be common in poor populations worldwide and carry its own unique health risk according to Sir Michael Marmot (2004). Therefore, the findings from these studies are relevant to advocates and practitioners in low income nations.

Table 5. Characteristics of research participants

Authors	Target Parent	Parent Age	Child Age at intervention	Race-Ethnicity	Poor %	Unmarried %
Barlow, et al. (2007)	M	18%<17	0-12mos	92% Wh	60%	34%
Brunk, et al. (1987)	M (76%)	36.2	9.8 yrs	47% Wh 53% Bl	---	---
Bugental & Schwartz(2009)	M	27	2.5 mos	87% H	Most	---
Chaffin, et al. (2004)	M (65%)	32	---	52% Wh 40% Bl	62%	66%
Cicchetti, et al. (2006)	M	27 18-41	13.3 mos	74% Bl	100%	87%
Cowan, et al. (2009)	F	---	---	67% H	66%	27%
Dawe & Harnett (2007)	M (84%)	30.3	2-8 yrs	(?) Wh	>77%	---
Duggan, et al. (2004)	M	23.7	0-3	34% Nat H or F	63%	74%
Dumont, et al. (2008)	M	22.5	0-3	45% Bl 18% H	66% (2 yrs)	82%
Egan (1983)	M (63%)	---	2-12	---	85%	---

¹In MacMillan's (2005) Canada based study, the average family of four had an annual income of about CAD30,000 (approximately USD20,000)

Ferguson, et al. (2005)	M, F	24.4	0-3	27% M	90%	64%
Hughes & Gottlieb (2004)	M	32	3-8 yrs	96% Wh	99%	92%
Hutcheson, et al. (1997)	M	25.3	0-4 yrs	90% Bl	82%	83%
Jouriles, et al. (2010)	M	28.7	M=5.4 yrs	47% Bl 26% H	Most 10,300	66%
Kolko (1995)	M (74%)	---	M=8.6 yrs	50% Wh 42% Bl	Most	Most
Linares, et al. (2006)	M, F	32	3-10	53% Bl 34% H	Unknown	67%
Macmillan, et al. (2005)	M, F	---	M=5.2	---	90	---
Olds, et al. (1997)	M	---	0-24 mos	87% Wh	23% welfare	62%
Olds et al (2002)	M	---	0-24	46% H 35% Wh	Most low-income	85%
Oveisi, et al. (2010)	M	29.5	2-6 yrs	100% Persian	Unknown	10%
Prinz, et al. (2009)	M	---	0-8	---	21% estimate	---
Sanders, et al. (2002)	M (92%)	33.29	2-7	(95%) Wh	Most low- income	34%

Target parent: M=mother, F=Father
Parent age: M age, % in age range, or age range
Ch age: M age or age range
Race/ethnicity: % wh (white), bl (black), H (Hispanic), NH (Native Hawaiian), F=Filipino, M=Maori
% Poor=Under the national poverty guideline or in receipt of welfare
% Unmarried= single, divorced, separated, widowed and/or cohabitating
 *Demographics provided for the target intervention group although control groups were not statistically different.

Interventions

Intervention content

Interventions focusing on parents of infants or very young children are typically one-on-one meetings with a therapist or practitioner, usually at home with both the parent and infant present. Parents are encouraged to talk about how they are handling challenges with their newborn, and the practitioners offer guidance. One central aim of such interventions is to bring to the parent's awareness their own feelings about their child, about their child's demands, and about the reasons for their response. Such a dynamic is the centerpiece of individual psychotherapy as described in Cicchetti, et al.'s (2006) *Infant-Parent Psychotherapy (IPP)*. Parents build up a relationship with the practitioner often covering an entire year, and through such a relationship trust and accountability are established. In addition, the emphasis on parents self-disclosing suggests that relying on the practitioner as a confidante may enhance the parent's adjustment and control over her (or his) feelings.

Interventions with parents of preschool or school-aged children have various formats, from cognitive behavioral therapy (e.g., Kolko, 1995) to carefully structured behavioral interventions such as Parent-Child Interaction Therapy (PCIT) (Chaffin, et al., 2004). Therapists who administer PCIT are certified to offer this form of therapy and are well-trained in the highly scripted, systematic behavioral intervention. PCIT involves having the parent interact with the child whilst the therapist views them from behind a two-way mirror. A listening device is attached to the mother or father and the therapist provides guided behavioral coaching – to increase reinforcement and decrease coercion. The program originated with clinical psychology graduate students delivering the intervention; to what degree its success depends on the educational level of the therapist has yet to be tested.

Intervention setting

The context for the intervention may influence outcome. Where an intervention takes place may influence a program's effectiveness, with home visiting programs sometimes commanding superior results with abusive families (c.f., Halperin, 1981). As can be seen in Table 6 below, 13 out of the 22 studies described home visiting programs.

Program delivery

A range of personnel deliver the treatment or intervention across these studies. Although the sex, race and ethnicity of the personnel are unknown in any of the studies, several offer educational credentials. About ten of the studies describe intervention staff with professional training as nurses, or at least Masters level training as therapists. In the remaining studies the level of education and training is not listed, or the staff have less than a college education as is the case for most of the paraprofessionals. The educational background of the staff may be important to an intervention's success. Olds, et al. (2002) compared the efficacy of public health nurses and paraprofessionals. Paraprofessionals are less expensive than

credentialed professionals educated often at the graduate level, but Olds and his colleagues argue that the investment in personnel results in greater program returns. The research reveals that nurses with advanced degrees are more effective than paraprofessionals. The reasons for this finding are not entirely clear, and merits further research.

Program duration

The shortest intervention was for two weeks (Oveisi, et al., 2009); the longest stretched five years (Dumont, et al., 2008). On average home visiting extended for longer periods of time than clinic or agency-based interventions. Many of the clinic-based interventions lasted 8-16 weeks; home visiting continued closer to a year. The variations in intervention length make it hard to assess which feature of a program is most useful. While some might view home visiting as having a stronger impact than interventions provided in a clinic setting, the two different approaches are often confounded by the length of the intervention. Comparing studies over the same length of time is important because it bears on the costs of delivering the program.

Table 6. Describing the interventions

Authors	Description of the Intervention	Treatment Location	Intervention Staff	Duration
Barlow et al. (2007)	Family Partnership Model : parent education, support	Home	Health Visitors	Weekly for 18 months
Brunk, et al. (1987)	Multisystemic Family Therapy: therapy w/different family members/also parent training	Clinic	M.A. Psychologists	1.5 hrs. for 8 weeks
Bugental & Schwartz (2009)	Enriched Healthy Start	Home visit	Paraprofessionals	17 visits over a year
Chaffin, et al. (2004)	PCIT: parent behavioral therapy and coaching in p-c sessions (CDI=Child Directed Interaction)	Clinic	Therapists (MA, MFT, MSW)	6 orientation sessions; 12-14 CDI sessions
Cicchetti, et al. (2006)	Infant-Parent psychotherapy; psychodynamic emotion-focused	Home	MA (Psychology) Therapists	Weekly for 12 months
Cowan, et al. (2009)	Fathers' group focusing on importance of paternal involvement	Clinic	Mental Health Professionals	1-2 hr. sessions 16 weeks
Dawe, et al. (2007)	Strengthen parental competence and coping	Home	Case manager	10 1-2 hr. sessions over 10-12 weeks
Duggan, et al. (2004)	Home visits to provide support and education to mothers	Home	Paraprofessionals (Agency Home visitors)	Varied
Dumont, et al. (2008)	Improve p-c relationship by instruction, reinforcement, modeling and p-c activities	Home	Trained Family support workers (33% college-educated)	Weekly child's first year; reduced visits until child is 5
Egan (1983)	Focus on behavioral child management and stress management	Clinic/class	Unspecified	1/week 1-2 hrs for 6 weeks

Fergusson, et al. (2005)	Early Start: Actively involving parents to increase parental sensitivity; avoid punishment; mentoring	Home	Trained Family support workers (100% college-educated) w/additional nursing or social work education	Unspecified
Hughes & Gottlieb (2004)	Parent groups; Webster-Stratton videotaped program with facilitator to assist parents to play w/children, assist learning, use praise, handle misbehavior without punishment	Clinic	Mental health nurse	2 hour sessions over 8 weeks
Hutcheson et al. (1997)	Nutritional, medical, behavioral intervention including video observations.	Home	Unspecified	One-year; frequency unspecified
Jouriles (2010)	Project Support teaches mothers child behavior management and provides emotional support to mothers	Home	MA level licensed mental health service workers (therapists)	1-1.5 hrs weekly for 8 months
Kolko (1995)	Apply CBT to alter parents' cognitive, affective and behavioral-social repertoires	Home Clinic	Therapists (credentials unspecified)	Twelve weekly one-hour clinic visits plus home visits (unspecified #)
Linares et al. (2006)	Webster-Stratton manual promoting play, praise, limit setting and handling misbehavior including videotapes, role plays	Agency	Paraprofessionals Parent team leader	2 hr. sessions for 12 weeks
Macmillan et al. (2005)	Provide intensive family support, parent education esp. about infant development, link w/other health, social services	Home	Public Health Nurse	Weekly for 6 mos; then monthly for 12 mos
Olds et al. (1997)	Nurse-Family Partnership offers individualized support to mothers	Home	Public Health Nurse	
Olds et al. (2002)	Nurse-Family Partnership	Home	Nurse; Paraprofessional	
Oveisi et al. (2010)	SOS! Group intervention w/parents about parenting skills, common mistakes, role-playing	Health Clinic	Physician Certified in SOS!	2 hr weekly sessions for 2 weeks
Prinz et al. (2009)	Triple P uses media, parent training and behavioral family intervention targeting skills and family adversity	Clinic	Paraprofessionals	Unspecified
Sanders et al. (2002)	Enhanced behavioral intervention; parents watch videotapes of mothers, children also receive book w/17 core child-management strategies plus sessions focused on child abuse; group format	Clinic	Trained psychologists (M.A. students) and social workers	4 parent training sessions (2 hrs); 4 telephone consults (30 mins) plus 4 sessions on child abuse risk

Outcomes

Studies were selected for their attention to measuring child abuse through either official records or parental self-reports. Abuse outcomes were central to this review given the link of early abusive environments and the development of antisocial aggression, including sexual violence. Researchers used various methods to assess child abuse behaviors over time. It should be noted that many of the study participants were originally referred from state agencies providing case work in the aftermath of documented child abuse.

Child abuse reports were collected from agency staff, from documented state reports in a child abuse registry, and from parents' self-reports. Records from objective entities like state registries are valuable because they are, as referred to by Patterson and Sechrest (1983), nonreactive, meaning they aren't swayed by demand characteristics of the situation or the researcher-subject relationship.

Most child abuse incidents fall under the reporting radar. Therefore, relying exclusively on official sources creates the risk of a Type 2 error which is failing to see a statistical relationship when there is one.

Researchers used a variety of methods to assess either physical child abuse or neglect directly (see Table 7 for a complete list). Researchers obtained official nonreactive reports of child abuse or neglect through child welfare agencies (Chaffin et al., 2004; Duggan et al., 2004; Hutcheson, Black, Talley, Bubowits, Howard, et al., 1997; Jouriles, 2010; MacMillan et al., 2005; Olds et al., 1997; Prinz et al., 2009) or medical records and hospitalizations (Duggan et al., 2004; Ferguson et al., 2005; Prinz et al., 2009). In total nine studies reported outcomes based on official records.

Parents are likely to under-report their abusive practices, or the times they almost committed physical abuse. Nevertheless, when they do make such disclosures they are likely to be valid even if undetected by the State. Most, but not all of the studies, included the Conflict Tactics Scale (Straus, 1990) for parents' self-reports of abusive practices. Ten studies included self-report. The remaining twelve studies included *either* official records of abuse at follow-up or parental self-reports of physically abusive behavior.

Ten of the studies included observational measures where parents were either videotaped interacting with their infant or young child or where home visitors filled out the HOME inventory to record information about the quality of the household and child's environment. Fergusson et al. (2005) were mainly interested in addressing feeding and nurturance practices among mothers with infants, since all of the target children had been medically treated for failure-to-thrive. Therefore, video recordings were made during feeding so that sensitivity during feeding could be coded.

Nine studies addressed the future risk for child abuse and neglect. Future risk is usually established using questionnaires that assess unique risk profiles (parenting stress) or the social and cognitive potential for abuse as captured by the Child Abuse Potential Inventory or CAP(I) (Milner et al. 1984).

Another barometer of risk for child maltreatment is captured in the parents' own reports of his or her attitudes towards childrearing, towards his or her child, and the degree of emotional dysfunction that appears to be associated with family relationships. Other outcomes included parental self-report of abusive practices or uncontrolled temper (n=12). Parents were also interviewed about their attitudes toward their child, attributions of blame for children's behavior, and attitudes about harsh punishment. If parents display a shift in how they attribute blame to their child, use fewer harsh forms of punishment, and show a deeper, closer relationship and appreciation for their child's feelings as a result of the intervention, then it could be said that behaviors and beliefs favoring a positive relationship would help to buffer the parent against a repeat of abuse and neglect.

Table 7. Measured Outcomes

Study	Child abuse official reports	Observational	Parent self-report of harsh parenting or neglect	Parent self-report of child abuse potential	P-C relationship and parenting practices or attitudes assessed
Barlow et al. (2007)	YES	YES Coded m-c 3 min video	NO	NO	YES Self-reports and observation
Brunk et al. (1987)	NO	YES Parents videotaped and coded for coercion	NO	YES Non-standardized Parent Problem Questionnaire	YES Self-reports and observation
Bugental & Schwartz (2009)	NO	YES Coded home safety; child injury	YES Self-report CTS	NO	NO
Chaffin et al. (2004)	YES reports coded with standardized instrument (ADI) (CNI)	YES Dyadic PCI Coding system (DPICS-II)	NO	YES Standardized CAP (Milner)	YES
Cicchetti et al. (2006)	NO	YES Home observation and Maternal Behavior Q-set/attachment classification	YES	YES Parenting stress (Parenting Stress Inventory, PSI)	YES Adult-Adolescent Parenting Inventory (AAPI)
Cowan et al. (2009)	NO	NO	NO	NO	YES F-C self-report, instrument developed for study/Parenting style attitudes
Dawe et al. (2007)	NO	NO	NO	YES CAP; Parenting stress (PSI)	NO Although attitudes about parenting assessed w/CAP
Duggan et al. (2004)	YES State protective and medical/hospital records	YES HOME inventory to assess home quality	YES Conflict Tactics Scale (PC-CTS)	NO	YES
Dumont et al. (2008)	YES	NO	YES PC-CTS	NO	NO
Egan (1983)	NO	YES Therapists recorded Observations Taped role-play Coded for positive affect	YES Non-standardized self-reports	NO	YES Family Env Scale (Moos)
Ferguson et al. (2005)	YES Medical/hospital records	NO	YES PC-CTS/Parent report of contact w/State agency	NO	YES Standardized Child Rearing Practices Report
Hughes and Gottlieb (2004)	NO	YES Parenting Skills Observation Scale (PSO) – coded for support, involvement	NO	YES Chronic family problems – Difficult Life Circumstances Scale (DLC)	NO
Hutcheson, et al. (1997)	YES	YES P-C Early Relational Assessment code	NO	NO	YES Observational P-C warmth and negative affect
Jouriles, et al. (2010)	YES	YES Videotaped at home coded for hostility	YES CTS-R	NO	YES Parenting Locus of Control
Kolko (1995)	NO	NO	YES CTS	YES CAP/Family Assessment Device	YES Parenting Scale describing p-c relationship and attitudes

Linares, et al. (2006)	NO	YES Home Observation of the Environment; HOME also used	YES Parenting Discipline Q.	NO	YES Parenting practices interview (PPI)
Macmillan, et al. (2005)	YES	YES HOME inventory	YES Self-report of abusive parenting	YES CAP	YES Child-rearing attitudes
Olds, et al. (1997)	YES State agency reports; Maternal arrest records	NO	NO	YES Maternal drug use as a risk	NO
Olds, et al. (2002)	NO	YES M-C sensitivity in interaction coded	NO	NO	NO
Oveisi, et al. (2010)	NO	NO	YES PC-CTS	None reported	YES Parenting scale to assess dysfunction
Prinz, et al. (2009)	YES State agency abuse reports; hospital or ED visits; out-of-home placements	NO	NO	NO	NO
Sanders, et al. (2002)	NO	NO	YES Parental Anger Inventory	YES CAP	YES Parenting Scale; Parent Problem Checklist; Parent's Attributions

Risk of bias

All of the studies were random controlled trials, however, most lacked sufficient information to determine whether bias was eliminated through the procedures of (1) generating sequences for random assignment; (2) concealing the allocation of subjects to one or another condition; (3) blinding the assessors (it is virtually impossible to have subjects and personnel remain blind).

About half of the studies (n=11) described a rigorous method of sequentially generating random numbers for subject assignment or another method that was not based on convenience (e.g., every other caller, etc). Concealing which families or parents were allocated to an arm of the intervention, however, was only clear in four studies (MacMillan, et al., 2005; Olds, et al., 1997; Olds, et al., 2002; Prinz, et al., 2009). It is possible that measures were taken to conceal the allocation in other studies, but no mention is made in the papers.

When evaluating parenting programs it is a challenge to blind the facilitators, or for that matter the parents, to *which* condition or treatment is received. It is possible that facilitators who know they are implementing the intervention of interest may be more motivated and influence the quality of the intervention beyond what facilitators offering the non-experimental arm might do, introducing bias. To minimize bias it is therefore important to ensure that at least the assessors are blind. Among the present studies, eight were able to confirm that the assessors were blind to the treatment the subjects received. In the remaining cases, either the author did not mention blinding, although it may have occurred, or it was clear that blinding did not take place. For instance, the same person delivering the intervention within the home – a home visitor – would also code the household for quality and order as in the application of the HOME inventory. In such cases blinding does not occur, and there is potential for bias when data is collected by the same person providing the intervention.

According to Jaeschke, et al. (1994), key features of a rigorous experimental design in clinical research include: adequate sample size, random assignment, transparent sequence generation and allocation concealment, blinding of the personnel and reported attrition rates. The studies in this review were scored, 0-6 according to these criteria guidelines. All of the studies met the criteria of random assignment because they were selected to reflect this design feature. Studies meeting the highest number of criteria for a rigorous experimental research design are Macmillan, et al., (2005), Olds, et al. (1997; 2002), and Prinz, et al. (2009), all meeting 5/6. Most of the remaining studies met at least three out of the six criteria. Egan (1983) only met one of the six criteria since their sample size was small (N=41); Hughes and Gottlieb (2004) with a small sample size (N=26) and little information relating to study bias also only meets the criteria of randomization. In the case of Hughes & Gottlieb (2004) the first author delivered some part of the treatment, which could introduce further bias. There is some ambiguity as to whether the facilitator also collected some of the observational measures which would further threaten the study's validity. Hutcheson, et al. (1997) provided minimal information about study procedures, and therefore did not meet most of the criteria. The table below rank-orders the studies in terms of scientific rigor and minimization of bias; with 0-1 being of low quality according to the rating system; 2-3 meeting a minimum standard yet with notable sources of bias unaccounted for; and 4+ reflecting the strongest experimental research designs. Nine studies fall into the middle category. Jouriles et al., (2010) used a small sample size (N=35), and did not report whether assessors were blinded, and attrition rates were not provided. It should be noted that while the experimental criteria are important, other study features contribute to its ultimate value including the strength and validity of measurement, the mapping of measures to stated outcomes, the analytic plan, and the write-up and interpretation of results.

Table 7. Studies meeting 0-6 criteria for prevention of bias (Cochrane Collaboration, Jaeschke, 1995)

0-1 (0-1=Random Assignment)	2-3 (2=Sequence generation; 3=Allocation concealment)	4-6 (4=Blind assessors; 5=Adequate sample size; 6=Attrition reported)
Egan (1983)	Cowan, et al. (2009)	Barlow, et al. (2007)
Hutcheson, et al. (1997)	Dawes, et al. (2007)	Cicchetti, et al. (2006)
Hughes & Gottlieb (2004)	Duggan, et al. (2004)	Dumont, et al. (2008)
	Chaffin, et al. (2004)	Fergusson, et al. (2005)
	Brunk, et al. (1987)	Kolko (1995)
	Linares, et al. (2006)	MacMillan, et al. (2005)
	Oveisi, et al. (2010)	Olds, et al. (1997)
	Jouriles, et al. (2010)	Olds, et al. (2002)
	Bugental & Swartz(2009)	Prinz, et al. (2009)
		Sanders, et al. (2002)

All of the studies were RCT's, and one was a multi-center RCT (Barlow, et al., 2007). RCTs are considered the strongest clinical research design. Table 9 lists further criteria preventing study bias. Eight of the studies generated a random sequence for assignment to conditions; only four stated that the random assignment was concealed. The sample size appeared adequate in most of the studies. Four of the studies had rather small sample sizes of 38 or fewer participants but adequate for statistical tests (c.f., Jouriles, et al., 2010; Hughes & Gottlieb, 2004; Kolko, 1995; & Brunket, et al., 1987). None of the authors report performing power analyses to estimate the ideal sample size, although it is possible that such an analysis was performed and went unreported. Some studies (n=9) reported that the assessors were kept blind to either the treatment condition or the hypotheses of the study.

Attrition can be a threat to a study's validity. Program effects may be magnified if the subjects who are not showing desired results, drop out of the intervention. It was therefore of some surprise that as many as eight studies did not report their attrition statistics. In some cases the reports of attrition were confusing because the original number enrolled for the intervention did not always proceed with treatment; and the family members left the study at different points. The reasons for parents dropping out were not given. None of the studies included in this review analyzed subjects in the groups to which they were allocated were lost to follow-up (i.e. intention-to-treat). Attrition may result in bias when one group – for instance the treatment group – loses more clients than the control group. Results therefore may over-estimate the treatment effects.

Another source of bias could be confounding factors which are not properly distributed between the study arms or fully controlled by the process of randomization. This is of greater risk in RCTs of small sample size. That is, one group may be different in an important way from the other by chance which could influence the results. Most of the researchers collected demographic and other data relevant to assessment and compared the treatment and control groups along these variables. Between groups, differences were none to few. Differences which did surface were controlled for in subsequent analyses or were not hypothesized to make a systematic difference in treatment outcomes.

It should be noted that every study has multiple outcome variables. The fact that there are multiple outcomes means there are multiple statistical tests; the more between-group tests performed the more risk of a Type 1 error, capitalizing on chance. Many tests across a range of variables may result in selective bias, with the positive findings emphasized and the null results ignored. None of the researchers applied a correction for multiple comparisons such as a Bonferroni or similar adjustments. Such accommodation would not be needed for those studies which only compare groups on a few indicators, but for the others caution should be exercised when interpreting the results, especially when one or two significant tests are heralded against a backdrop of many more null results.

Table 9. Prevention of study bias

Study	Transparent Sequence Generation	Allocation Concealment	Assessor blind	Attrition	Other sources of bias
Barlow, et al. (2007)	YES	NO	YES	None Reported	NO
Brunk, et al. (1987)	NO	NO	YES	23%	NO
Bugental & Schwartz (2009)	NO	NO	NO	< 1%	Home visitors also collect observational and self-report data
Chaffin, et al. (2004)	NO	NO	YES	None Reported	NO
Cicchetti, et al. (2006)	NO	NO	YES	22%	NO
Cowan, et al. (2009)	NO	NO	NO	33%	NO
Dawe, et al. (2007)	YES	NO	NO	18%	NO
Duggan, et al. (2004)	NO	NO	NO	12%	The treatment staff also assesses
Dumont, et al. (2008)	YES	NO	NO	66%	Range of visits from 1 (8%) to 30 (22%)
Egan (1983)	NO	NO	YES	None reported	NO
Fergusson, et al. (2005)	YES	NO	NO	40%	Ch abuse assessed only fr/parent report
Hughes and Gottlieb (2004)	NO	NO	NO	None Reported	Author also delivered treatment
Hutcheson, et al. (1997)	NO	NO	Unclear	None Reported	NO
Jouriles, et al. (2010)	NO	NO	NO	None reported	Research staff communicated w/referring agency; Families attended 25-100% of sessions so wide range of participation
Kolko (1995)	YES Efron's coin toss	NO	NO	10%	NO
Linares, et al. (2006)	YES	Unknown	Unknown	None reported	NO
Macmillan, et al. (2005)	YES	YES	YES	2%	NO
Olds, et al. (1997)	YES	YES	YES	19%	6 women rec'd same treatment as housemates; analyses revealed no effect
Olds, et al. (2002)	YES	YES	YES	19%	NO
Oveisi, et al. (2010)	YES	NO	Unknown	None reported	NO
Prinz, et al. (2009)	YES	YES (implied)	Unknown	25% (estimated)	NO
Sanders, et al. (2002)	NO	NO	YES	12%	NO

Effects of interventions

Objective records of child abuse

Table 10 displays the findings relating to child abuse outcomes in the twenty-two studies with objective agency or hospital records in bold. Nine studies measured objective records on child removal from the home, child injuries, and medical records indicating injury or neglect. Hutcheson, et al. (1997) did not report on longitudinal records indexing failure-to-thrive or physical neglect, which was their target of intervention. Of the eight, four reported a significant difference in the number of agency or hospital reports compared to no-treatment controls or standard treatment controls (Chaffin, et al., 2004; Jouriles, et al., 2010; Olds, et al., 1997; Prinz, et al., 2009). Olds, et al. (1997) in the Elmira study, discovered a 48% reduction in child abuse reports among mothers who were receiving the intervention compared to mothers in the control groups. As many studies describe only null or negative objective record results (Barlow, et al., 2007; Dumont, et al., 2008; Duggan, et al., 2004; MacMillan, et al., 2005).

There are a number of reasons for the null results when the outcome measure is from an agency source. One is that the study sample size is too small, and child abuse is relatively rare. Indeed after two years in Dumont, et al.'s study (2008) five percent of families in both groups had reports. Across the board, child abuse rates in the study samples are fairly low. There is the chance therefore that some studies face a “floor” effect. Another rationale for the null findings is the prospect that the home visiting nurses are themselves submitting the reports, although the authors do not provide information on the source of the reports. Home visiting programs certainly raise the level of outside monitoring of a household. Abuse or neglect may be less likely to happen when the family know they are being monitored. None of the studies address this possibility or report whether some of the abuse incidents originated from the project's personnel.

Of special concern are two studies reporting that children in the intervention groups were more likely to have contact with child protection agencies post-treatment than controls (Barlow, et al., 2007; MacMillan, et al., 2005). For instance, Barlow, et al. (2007) report that children receiving the home visiting intervention were twice as likely as the control group to be in the abuse register 12 months on. Six percent of babies in the intervention were sent to foster care compared with none of those in the control group. Macmillan et al.'s (2005) study of home visiting programs also has higher rates of child abuse reports in the intervention (23%) versus the control group (11%). Similarly, in Dumont and colleagues' (2008), large-scale evaluation of Healthy Families showed that after one year 8% of the intervention and 6% of the controls had new substantiated child abuse reports.

Table 10. Intervention effects

Study	Intervention	Outcome	Between-group difference	Comment
Barlow, et al. (2007)	FPM Home visiting	Maternal sensitivity during interaction Child removal² Abuse report	$p=.04$ More likely to be removed In intervention group (6% v. 0); 2x more likely to have a report or court appearance for abuse	The effects are positive for sensitive mother-child. Some findings were in an unexpected direction, with mothers in the intervention twice as likely to either lose their children or have a court incident. Children in intervention were twice as likely to be in the abuse register 12 months later than controls. 6% of intervention babies were sent to foster care v. 0% of control. Although non-significant statistically, such group differences on such an important outcome should give pause.
Brunk, et al. (1987)	Multi-systemic Therapy Parent training	Self-report of family problems Increased attention to child	$p=.021$ $p=.033$	Parents who received multi-systemic therapy were compared to those receiving parent training. There were few differences favoring MST except for fewer family problems reported by therapist and increased attention to child during coded interactions.
Bugental & Schwartz (2009)	Enriched Healthy Start	Self-reports abuse (CTS) Home unsafe (observed)	$P=.05$ 21% of Enriched HV 35% of H.V. alone $P=.04$ but weak differences	Healthy Start benefitted from the extra stimulation in this study. The intervention adds "cognitive reframing" helping parents to analyze their own beliefs and feelings regarding their child. Given the mixed review of Healthy Start across many states, this method of augmenting the visits is cost-effective and produces results.
Chaffin, et al. (2004)	PCIT	Abuse reports 850 days post-treatment CAP	19% PCIT v. 49% controls ns	There were 3 arms including controls, PCIT, and enhanced PCIT. Although PCIT-only showed much lower rates of re-reports to CPS v. controls, curiously PCIT-enhanced treatment had only a slight improvement v. controls (36% v. 49%). No consistent differences between treatment and control on CAP, although scores in all groups declined.
Cicchetti, et al. (2006)	IPP/PPI	Attachment classification following observation follow-up 26 mos	Infants in IPP went from 85% disorganized to 30% in IPP group	Both the IPP and PPI result in attachment gains with % disorganized remaining near 80% in controls and dropping to 30-45% in treatment conditions. The findings are strong, with very large improvements in attachment. Other outcome measures are not reported.
Cowan, et al. (2009)	Supporting Fathers' Involvement Fathers' group/couples' group	F-C relationship Parenting stress Parenting style attitudes	Fathers' group had highest post-treatment scores on F-C rel. ($p=.001$) No differences in fathers on stress or attitudes	Fathers who participated in men only group showed gains in engagement and rel w/child. There were few significant differences for fathers in either the couples or father-only groups on other dimensions (non-significant on parenting stress or parenting attitudes). There were secondary benefits to children from the fathers' groups. Findings modest though in the right direction.
Dawe, et al. (2007)	Parents Under Pressure	Hi-risk clinical coding interaction Reliable Change Index CAP PSI	36% PUP parents improve v. decline in controls and brief treatment $p=.001$ $p=.001$	PUP is based on an ecological model and designed for methadone-maintained parents. The program showed parenting improvement in therapists coding them as hi-risk, their scores on the Reliable Change Index, the CAP (Child Abuse Potential), and the PSI. The brief form of the treatment was no different than the controls on most indices.
Duggan, et al. (2004)	Healthy Start Hawaii Home visiting	Observed parenting Self-reports CTS Parenting stress Abuse reports	ns ns ns ns	Despite a carefully performed RCT with more than 600 participants, neither parent observations and coding for positive interaction, nor self-reports of harsh parenting were different for treatment compared to controls. There were no differences between one- and two-year follow-ups. There were no differences on abuse reports: 2% intervention and 3% controls in 2-year follow-up. Results do not support program continuation in present form.
Dumont, et al. (2008)	Healthy Families: NY Home Visiting 12, 24 mos follow-up	Abuse self-reports Neglect self-reports CPS reports	ns ns ns	Although there were no between group differences on self-reports of abuse or neglect, for women with a psychiatric illness their rates were lower than controls over 24 mos. No differences on percent reported for abuse. Findings not promising.
Egan (1983)	Stress/child management	Role-play observations	Ch pos affect $p=.001$; P. fewer verbal attacks; Intervention P. < positive than controls	Since the main outcomes were based solely on observations and coding there appeared a risk of bias. The authors report that child management resulted in some positive features of interaction, but overall parents in this condition were more negative during observation. Many post-hoc comparisons were performed showing null results. Overall not a clearly effective intervention, but sample size is small with as few as 9 subjects in a treatment arm.

² Text in bold relates to findings from objective agency or hospital records.

Fergusson, et al. (2005)	Early Start Home Visiting	Self-reports-CTS Parenting coded Parent report of contact w/State agency	p=.01 less for severe abuse only p=.05 ns	Early Start Parents self-report using less severe physical punishment than controls, although there are no differences on other forms of coercion. Parents receiving the intervention are slightly better on parenting scores, but have the same rates of contact with Child Protective Services after 36 mos.
Hughes & Gottlieb (2004)	Webster-Stratton	Interaction coding	p=.03 in free play only	It is hard to judge the effectiveness of this program since only one non-standard measure was used which seemed subject to bias.
Hutcheson, et al. (1997)	Failure-to-thrive (NOFTT) Home visit	Interaction coding (PCERA) during feeding Medical records of neglect, other	ns results unreported	The intervention failed to eliminate negative m-c interaction especially observed during feeding. The authors fail to mention medical record data in the results.
Jouriles, et al. (2010)	Project Support	Observed p-c interaction Harsh parenting Abuse reports	p=.01 p=.05 Proj Sup parents 6% v. 28% controls	Authors defend power analysis and small sample size because of repeat measures. Growth curve analyses showed declines in harsh parenting, observed ineffective parenting. There do appear to be positive effects over time. Most impressive differences between treatment and control in official records of referral to state agency for child abuse (6% v. 27%).
Kolko (1995)	Cognitive Beh Therapy v. Family Therapy	Parental anger Self-report Family problems Self-report abuse CAP	.07 CBT slightly less than FT CBT>FT p=.05 CBT>FT p=.05 Not reported	The use of CBT showed an advantage over Family Therapy, although it was not strong. The lack of child abuse potential measures and official reports make it difficult to see whether this intensive treatment model is useful long-term.
Linares, et al. (2006)	Incredible Years	Self-reports Positive discipline Co-parenting HOME Harsh parenting	p=.05 P=.01 Not reported p=.02	The Incredible Years shows positive effects on parents' self-reported parenting behaviors. The differences between control and treatment are small.
Macmillan, et al. (2005)	Home Visiting	HOME CAP Fam func Ch abuse reports	ns ns ns 23.6% treatment v. 10.8% controls	This well-designed study with ample subjects shows no effect of a home visiting program on the reduction of child abuse or on child abuse potential and abuse-related measures. Of concern is the higher rate of reported child abuse in the intervention.
Olds, et al. (1997)	Nurse home visitation (NFP) Elmira NY	Abuse reports	Incidence lower in intervention condition esp if 2 years	Child abuse reports between the two control groups and two home visiting groups were different even a decade later. Incidence in control (.54) higher than 1-year treatment (.35). When intervention lasted two years effect strong (.29).
Olds, et al. (2002)	Home visitation Nurses v. Para-professionals Denver	M-C sensitivity Observed interaction	Nurse-visited > controls p=.05	Nurse-visited mothers scored higher on sensitivity to their child than controls but not on many other measures. Families visited by paraprofessionals were barely distinguishable from controls. Author recommends health professionals over paraprofessionals. Study findings overall are weak with many non-significant tests for either intervention.
Oveisi, et al. (2010)	SOS! Group training	Abuse self-reports CTS Parenting knowledge	p=.001 p=.001	This relatively brief intervention using health care providers shows strong 8-week findings with a drop in CTS self-reported abuse; the question would be whether they will persist over time because the follow-up was very close in timing to intervention.
Prinz, et al. (2009)	Triple-P	Abuse reports Out of home placements Injuries	Int v. Control: (11.74/1000) (15/1000) v. + (p=.03) 3.75 v. 4.46 p=.01 1.41 v. 1.69 p=.02	In this population-based study using mainly objective abuse records there was a significant impact of Triple-P on # abuse reports, out of home placements, and emergency room injuries. The very large sample size (85,000) may inflate some statistical differences.
Sanders, et al. (2002)	Triple-P Expanded v. Standard treatment	CAP Self-reported Parenting Anger Attributions	Triple-P expanded lower than standard intervention but same after 6 mos; ns between groups ns ns	The expanded version of Triple P including anger management and attributional re-training showed few advantages over the standard behavioral intervention program after six months. Both groups showed pre-post differences indicating a drop in hostile parenting, but the groups were not significantly different on many features. The authors performed dozens of post-comparisons which increase risk of bias.

Parental self-reports of abuse, neglect or harsh parenting

Child abuse was also measured through parental self-reports using standardized instruments like the Conflict Tactics Scale (Straus & Gelles, 1990) or harsh parenting scales (c.f., Jouriles, et al., 2010). Out of seven studies reporting results on parental self-reports of abuse, four reported a statistically significant difference between parents in the intervention and those in control groups, with less incidents of harsh parenting or abuse reported in the intervention group (Fergusson, 2005; Jouriles, et al., 2005; Linares, et al., 2006; Oveisi, et al., 2010). These findings suggest that self-reports are more sensitive measures than objective records. On the other hand Duggan, et al. (2004) and Dumont and colleagues (2008) found that parents receiving home visiting programs reported the same levels of abusive parenting as controls post-treatment. The exception is among first-time mothers in Dumont's study. First-time mothers receiving intervention self-reported far fewer incidents of "harsh parenting" than controls (62% v. 41%). Of interest is that among those studies relying on *both* parent's self-reports of abusive behavior and official records, the findings corroborate across measurement approaches. In the Elmira demonstration Olds et al., (1997) found that mothers in the Nurse-Family Partnership described less harsh parenting than controls.

One would expect that such measures would be more sensitive to subtle changes in parenting undetected by abuse reports. Official records capture rare occurrences, but many parents who eventually may be registered for child abuse could elude official notice for a long period. In many cases abuse incidents are never discovered. Yet self-report measures also have their drawbacks. Parents may under-report abusive practices for obvious reasons as well or comply with what they perceive to be "demand" characteristics. Multi-method approaches, which apply to most of the studies, are one way to lessen the reliance on any one mode of measurement, each of which carries some threat of bias.

Child abuse potential

Child abuse potential was assessed using the CAPI (Child Abuse Potential Inventory) (Milner, Gold, Ayoub, & Jacewitz, 1984) in five of the studies. In addition, several studies collected risk information that would clearly elevate the likelihood of future abuse. CAPI scores were lower post-treatment in two of the five studies; for another two the difference between intervention and controls either was negligible or attenuated after time (c.f., Sanders, et al., 2002). For the fifth study (Kolko, 1995) no findings on CAPI were reported despite apparently using the instrument.

Observational and self-reported risk indicators for abuse

Finally, some studies measured risk indicators for abuse rather than directly assessing abusive practices or potential. Various methods of data collection were used including observations of the home environment (HOME), coding of videotaped interactions, interviews eliciting self reports of attitudes and attributions, parenting knowledge, and attachment. Nine studies reported coding results for videotaped interaction. Maternal sensitivity and responsiveness, attachment, positive affect in parents and children, and parental attention coded from videotaped observations were among the key constructs reflecting the quality of the parent-child relationship. The duration of sessions and the coding schemes varied across studies.

For these reasons, less direct measures may better evince subtle parenting changes. Consistent with these predictions, most of the studies relying on observation showed effects of the intervention with the exceptions of Duggan, et al. (2004) and Hutcheson, et al. (1997). Perhaps the strongest result based on observation and extensive coding is reported in Cicchetti, et al. (2006). After receiving the Individual Parent Psychotherapy intervention (IPP) the mother-child attachment relationships dramatically improved based largely on the changes in the mother's behavior and affect. Infants in Cicchetti's study went from being classified as showing disorganized attachment 80% of the time to 35% of the time post-treatment, superior to the control group's profile. This is a stunning drop, and significant, especially since the disorganized attachment classification is associated with the most severe child psychopathology as the infant matures.

Parenting Sensitivity, Knowledge and Attitudes

Finally, parents were interviewed about attitudes, knowledge, and emotions relating to their child with a variety of standardized and custom-designed instruments. Interview responses, like the observational data, are likely to reflect broader change than reports of abuse directly. Only two studies failed to find intervention effects on self-reported attitudes or parenting stress (Duggan, et al., 2004; MacMillan, et al., 2005). Oveisi, et al. (2010) found that their two-week parenting program in Iran enhanced scores on parental knowledge ($p=.001$); Cowan et al. (2009) centering on fathers report that fathers reported a better relationship with their child post-treatment ($p=.001$). Fergusson, et al., (2005) in New Zealand found that intervention mothers expressed improved parent attitudes and especially less endorsement of harsh parenting than controls. They also had better parenting scores overall. On the other hand, Cowan, et al. (2009) found no group differences on parenting stress and negative attitudes. Of the ten studies that mainly used parent self-reports for risk indicators three reported largely non-significant differences between intervention and control (Duggan, et al., 2004; Macmillan, et al., 2005; Sanders, et al., 2002). Interventions that showed few consistent differences in these evaluations were two home visiting models and Triple-P (Sanders, et al., 2002).

Duration of the intervention

The length of the intervention represents the dose, and it is predicted that the longer the program duration the stronger and more comprehensive the results. Such a prediction is not upheld here. Some of the *shortest* interventions result in the strongest treatment effects. For instance Chaffin et al.'s (2004) evaluation of Parent-Child Interaction Therapy (PCIT) which lasts no more than four months, shows a robust decline in reports to child protective agencies. The home visiting programs evaluated in Barlow, et al., (2007), Duggan, et al., (2004) and MacMillan, et al. (2005) cover at least a year and in the case of Hawaii 2-5 years after the birth of a child. Yet none produced better outcomes than the controls, having no effect on child abuse measures. In sum, while we expect a dose-response the studies in this review do not support it.

Excluded Studies

Studies were excluded across different stages, from initial inspection of title and then abstract, to a detailed reading of the article and coding (see Appendix E, data extraction sheet). Appendix A represents in detail the steps in excluding a paper. Although a paper/study may have relevance to topic, if it failed to meet the key criteria listed below, it was excluded:

Reason for Exclusion	Details:
Wrong population	Population has no history of abuse or abuse risk; Child is developmentally delayed or has a mental illness (e.g., autism)
Wrong intervention	Not a parenting intervention
Wrong outcomes	No measure of subsequent child maltreatment, child abuse potential, or close risk indicators (e.g., parental stress)
Wrong study design	Not randomized controlled trial
Wrong publication type	Not a peer-reviewed empirical article but instead may be a review article, letter, editorial, results reported elsewhere, no original data
Non-English language	Only English language papers selected
Study performed in very low-income country	Research from low-income countries excluded/covered in Knerr & Gardner (2010)
Sample size too small Non-standardized measurement lacking validity	Details of study design which may compromise its value

A total of 592 abstracts were generated with 494 excluded on the basis of relevance. Out of the remaining 98 articles 10 were excluded because they were the wrong sort of publication; others were excluded because they failed to include measures of child abuse; yet more were excluded because the population was not at risk for child abuse. Thirty-nine articles crossed these hurdles, but lacked a randomized group assignment, the sample size was too small to draw conclusions (e.g., one study had nine subjects), and other reasons outlined in the table above.

Transporting interventions across cultures

Several of the child abuse prevention programs in this review have already been transported to new countries. Olds' Nurse Family Partnership has been replicated successfully in Germany; various versions of home visiting with paraprofessionals have been adopted by developing countries as well (Knerr, et al., 2011). Home visiting models are familiar in many developing countries. Community health workers³ have been successfully deployed in many low and middle income countries to expand health services personnel where resources are scarce and to undertake home visits to address priority community health needs such as HIV-AIDS. Although the home visiting framework is common to many societies, it remains unclear whether programs to foster positive parenting are sufficiently effective. The large-scale home visiting evaluations of Healthy Start (Dumont, et al. (2008) and Duggan, et al. (2004)) delivered only null results; Olds, et al. (2002) found that paraprofessionals visiting homes were mostly ineffective although his Elmira demonstration conferred significant benefit. Even when these interventions have been found to be effective, we can't assume they can be used in other settings without adaptation and evaluation. Key questions then for parenting interventions in developing countries are definitions of child abuse and neglect and adaptation and evaluation of promising parenting interventions.

³ Other names for CHW include community health aide, village health worker, health promoter, lay health advisor.

We need research on many aspects of the interventions, i.e. what does the intervention aim to achieve, who should be the focus of intervention, what should the intervention look like, when should we intervene, and what training and resources are required to implement the intervention?

The relatively short-term interventions like PCIT effectively reduced repeat child abuse reports. PCIT parent training in the U.S. requires a laboratory, one-way mirror, and other expensive audio-visual equipment. The person working with the parent is highly trained and is often a graduate student in psychology or a clinical psychologist or social worker. Exporting PCIT therefore requires creative adaptation to situations without elaborate technology, and also requires extensive staff training. While the therapy is highly successful in the United States, it has not been tried out of the U.S. and it is not certain that the style of the therapy would be easily replicated in countries without the unique staff and laboratory requirements.

There continues to be innovations in parenting interventions and while some may follow rather conventional scripts, others have expanded to incorporate social networks (c.f., Gaudin, Wodarski, Arkinson & Avery., 1991); to add “cognitive reframing” to the home visiting curriculum (Bugental, et al., 2009); and to reach new populations as in Cowan's focus on fathers (Cowan, et al., 2009). Such innovation is crucial for the development of new programs for global communities.

IV. Discussion

Overall, most of the intervention programs yielded encouraging results. Yet, one-third (seven of the 22) reported no differences between intervention and control groups on abuse-related measures. Sanders, et al. (2002) reported an initial difference with the Triple P program, but the results failed to sustain at the six-month re-test. Dumont, et al. (2008) and Duggan, et al. (2004) conducted well-designed evaluations for two major programs already widely adopted in the United States: Health Families and Healthy Start. The generally weak results for these large-scale home visiting programs is of concern given their widespread adoption and extensive investment of state funds.

The studies were classified for the number of strong study features they had, and also screened for various sources of bias including blinding and concealment. One might expect that the studies falling under the threshold for bias would have the null results, but this is not the case. For instance, Barlow, et al. (2007), MacMillan, et al. (2005) and Dumont, et al. (2008) have strong research designs and took measures to avoid bias. Yet they all report null results, and MacMillan reports what seems to be an iatrogenic effect of treatment. Children in her treatment condition were more likely to be removed from their homes than controls. Although MacMillan contends that this difference is not statistically significant, it carries practical weight. Further studies also reported null results, for example, Hughes and Gottlieb (2004), Hutcheson, et al. (1997), and Egan (1983), which may be due to way they were conducted. However, the weak findings do not appear to be fully accounted for by the strength of the research design. On the other hand the fact that the three weakest studies all had null results indicates that a strong research design may be “necessary by not sufficient” for positive outcomes.

Olds' (1997; 2002) studies are among the strongest in research design, controlling for bias. His 1997 findings with the Elmira demonstration are impressive, revealing a sharply reduced risk of child abuse reports among target mothers (by 48%). The results of his large Denver intervention in 2002 suggest a more complex story. Nurses in Denver, as in Elmira, are generally successful at improving mother-child relationships. No data on child abuse reports were collected unfortunately. Paraprofessionals, however, were unable to lead mothers to improvement.

Other than the strength of the research design, there are two questions that have bearing in the interpretation of results: How comparable are the interventions and how uniform is the outcome measurement across studies? The first question is difficult to answer, but it appears that virtually every program has its own idiosyncratic treatment philosophy and program. It is not as if one program is only slightly different than another and one is adding a component. Some of the home visiting programs share the most features relating to intervention. For example, Healthy Families and Healthy Start are two examples of programs with sufficient overlap to directly compare results. With such widely different approaches overall, though, it is difficult to ascertain what it is about a program that confers the benefit. Triple P (Prinz, et al., 2009; Sanders, et al., 2002), for instance, is a multi-faceted model attempting change at different levels. In contrast, PCIT is focused on behavioral changes in the parent-child relationship without invoking other societal or even psychological levels of intervention.

Two studies show promise. The first is Bugental et al.'s (2009) by which she introduces another "module" to the Healthy Families visiting program. This added component addresses mother's own cognitive abilities, her expressions of emotion with her child, and her success in labeling and identifying her emotions. Bugental names this "cognitive reframing." The addition is neither lengthy nor personnel-intensive and it turns around the findings for Healthy Families from null to positive. Such a clever add-on to the established home visiting program extends a cost-effective way to augment the current program. Bugental et al.'s (2009) original work advances a cost-effective model of program enrichment, transforming it into a dynamic intervention. This innovative approach also relates to transportability: adding a culturally competent unit to an established program could result in better program adoption.

The second promising program is Cowan, et al.'s (2009) intervention with fathers at risk. While findings are somewhat modest, one can imagine how this intervention could be implemented outside the United States. The program – without stating it directly – challenges the gender stereotypes surrounding childcare, enlisting young men to alter sex-typed self-schemas. Its premise is that if a man volunteers to spend time taking care of his child with coaching and support from a facilitator, he will be less prone to perpetrate abuse and show an increased capacity for empathy.

Some researchers have examined the secondary advantages of parenting interventions for the mothers' mental health (Duggan, et al., 2004) or exposure to domestic violence (Bair-Merritt, Jennings, Chen, Burrell, McFarlane, Fuddy & Duggan, 2010; Lieberman, Ippen & Van Horn, 2006). Working with the Healthy Families Hawaii team Bair, et al. (2010) found that within a year of the home visiting program women reported less domestic violence victimization (Incidence Rate Ratio=.86).

Over time, women in the intervention group were actually more likely to report verbal abuse several years later (IRR=1.14). It is unclear how the parenting intervention of Healthy Families conferred an advantage to abused women early on, or led to a higher risk over time. If such parenting programs also reduced domestic violence and improved mothers' mental health we would expect to see more robust effects over time for the children.

Many of the causes of child maltreatment share certain universal risk factors, which could make parenting interventions useful worldwide. The life-course adverse effects of child sexual abuse, for instance, do appear nearly universal: in Tanzania, women coerced during their first experience of sexual intercourse are more likely to have sexually transmitted infections and show some of the behavioral risk indicators seen among abused women in the U.S. across multiple studies and regions (Williams, McCloskey & Larsen, 2008). On the other hand, there are clear circumstances unique to individual countries that indicate the need for policy on a national scale. In South Africa, Jewkes and her colleagues (2002b) found that one-third of all sexual assaults against teenage girls were perpetrated by teachers. In addition, gender disparities give rise to domestic violence (Jewkes et al., 2002a). Intimate partner violence in South Africa and the associated gender inequities can ultimately lead to disease (Jewkes et al., 2010). Family-oriented interventions, therefore, would be insufficient to meet the challenges within the schools.

V. Conclusion

Some findings strongly support parenting interventions; others raise questions about their value. Home visiting programs which are an important context for the delivery of counseling and parenting training appear least effective insofar as their impact on child abuse rates. Still, the highly promising work of Bugental et al., (2009) suggests that there are ways to augment these programs and make them more effective. Parent-Child Intervention Therapy is consistently strong in directly reducing child abuse rates. It may be difficult to transport, but possibly worth the effort. It remains uncertain how enduring the effects of this treatment program are. Finally, Cowan, et al.'s (2009) program to transform men into compassionate fathers holds great promise, especially for those who want to reverse the trend in gender-based violence. More needs to be done in the field towards promoting uniform measurement.

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APPENDICES

APPENDIX A: Computer search procedures

Source	Search Terms: Keywords	# Hits	#Abstracts Reviewed	#Studies reviewed
PsychINFO	#1. Parenting interventions AND Child abuse OR Child neglect OR At-risk #2. Clinical trials AND Child Abuse AND Parenting <i>(at least one term in Title or Abstract)</i>	330	105	
WEB OF SCIENCE	#1. Parenting interventions AND Child abuse OR Child neglect OR At-risk #2. Clinical trials AND Child Abuse AND Parenting	213 142	55 32	
PUBMED	#1 Child abuse and Parenting intervention #2 clinical trial and Parenting intervention and Abuse	199 68	199 40	0 2
MEDLINE	#1 Parenting intervention and Child abuse	220	78	
GOOGLE SCHOLAR	#1 Parenting intervention AND RCT AND Child abuse #2 Parenting intervention AND Child abuse OR Child neglect AND Evaluation	7,620	83	
	TOTALS	8792	592	88

APPENDIX B: Personal contacts of researchers in the area of interventions and child abuse

NAME	POSITION	INSTITUTIONAL AFFILIATION
Dapahne Bugental	Professor	Department of Psychology University of California-Santa Barbara Santa Barbara, CA
Dante Cicchetti, Ph.D.	McKnight Presidential Chair, William Harris Professor	University of Minnesota Psychology and Psychiatry Minneapolis, MN
Ann Easterbrooks, Ph.D.	Professor	Tufts University Eliot Pearson Child Development Medford, MA
Ernest Jouriles, Ph.D.	Professor and Chair	Southern Methodist University Department of Psychology Dallas, TX
Sandra Graham-Bermann, Ph.D.	Professor	University of Michigan Department of Psychology Ann Arbor, MI
David Olds, M.D.	Professor and Director, Prevention Research Ctr.	University of Colorado-Denver School of Medicine, Dept of Pediatrics Denver, CO
Susan Timmer, Ph.D.	Research Scientist	PCIT Laboratory UC-Davis Medical School Sacramento CA

APPENDIX C: Unpublished studies

AUTHOR	SOURCE	N	INTERVENTION	RESULTS
Chambliss, J.W. (2000)	Dissertation	249	Healthy Families Georgia Paraprofessional home visiting	Abuse reports ns Parenting stress ns Child abuse potential + HOME + p-c interaction +
Caldera (1997-ongoing)	Reports	339	Healthy Families Alaska	No randomization; Pre-post showed improvement in drug use; 6% reports to Child protection
Black & Steir (1997)	Report	386	Healthy Families Connecticut	No randomization or controls reported; pre-post show slight improvement
Barrett (1993-1997)	Report	167	Healthy Families Virginia	No randomization or controls; 2% child abuse reports; few child abuse related measures
Holtapple (1995-1998)	Report	2150	Healthy Families Arizona	Control group, non-randomized; child abuse reports 3.3% intervention and 8% controls p=.05
Lecroy (1992-1996)	Report	443	Healthy Families Arizona	Child abuse reports 4.5% Treatment, 8.5% controls p=.05

APPENDIX D: Promising (unpublished) studies in progress

EXPECTED COMPLETION DATE	FUNDING AGENCY	SPONSORING INSTITUTION	INTERVENTION	OUTCOME	N	TYPE
Dec, 2011	NIMH	Duke University	PCIT EARLY BEHAVIORAL	N.C. State Maltreatment Records	124	RCT
Nov, 2014	NICHD	Univ of Washington	PROMOTING FIRST RELATIONSHIPS	Child Welfare Records/ Psychosocial outcomes	254	RCT
FEB 2004	NIMH	Johns Hopkins U.	HEALTH FAMILIES AK	Abuse records	380	RCT
JUNE 2003	NIMH		PSYCHOED HOME VISIT (PHV) v. IPP	Abuse records/ psychosocial	?	RCT

(Source: *clinicaltrials.gov*)

APPENDIX E: Data extraction sheet

Article (complete citation):

Is there more than one publication for this study/program? Yes or No

Country: United States or Canada

Are the participants parents or primary care givers (e.g., foster parents, grandparents or relatives) of children birth to 18 years of age?

Yes: Mothers Fathers Both/either Mother-child

Father-child

No (describe):

Not clear

INTERVENTION CHARACTERISTICS

Does the intervention include general parenting components?

Yes No (exclude) Not clear

Description/Comments:

What are the goals of the program?

What are the program components (e.g., topics covered, etc...)?

PROGRAM IMPLEMENTATION

Describe methods used to insure quality of services (supervision, training, consultation)

Is there any information on program implementation? Please include details about who was trained, delivered program, etc...

PROGRAM DELIVERY

Where was the program delivery site?

Home School Clinic (health setting) Unclear Other (describe):

Duration of treatment (e.g., number/length of sessions):

EVALUATION STUDY DESIGN

What are the outcomes?

Knowledge Skills Attitudes Parenting Behavior

Is it randomized?

Yes No(excluded) Not clear

Randomization:

Simple/Systematic (individuals/families) Stratified/blocked/Yoked pairs Cluster

Not Clear Other:

Notes on randomization:

Who performed group assignment?

Research staff Program staff Not clear *Other:*

How was random assignment performed?

Computer generated Random numbers table Coins or dice Not clear

Other:

How many separate sites were included in the study?

One Two Three Four Five or more Unclear

Was random assignment performed in the same way in all sites?

Yes No Unclear

How many different control/comparison groups were there?

One Two or more

Sample Characteristics (N/%):

	Total		Notes
Parent	<i>Male</i>	<i>Female</i>	
Child			

Age:

	Total		Range
	Mean	SD	
Mother			
Father			
Child			

Socioeconomic status (circle all that apply):

Lower Middle Upper Not clear

Describe:

Were there any differences between program and control groups at baseline?

Yes No Unclear

Describe:

Was there an analysis of retention between completers and dropouts in the sample (total, intervention, control group)?

Yes No Describe:

Is the intervention:

Targeted (e.g., at high-risk families or children)

Non-targeted/population based

Not clear

Other:

CONTEXT

Has this program been transported from one culture/context to another? Describe. Is there information about how the program was adapted?

SERVICES FOR CONTROL GROUP

Describe services to control group:

RESULTS/OUTCOME

Outcome	Measure	Reliability/validity of scale	Significance	Are effect sizes reported (Y or N)?	Comments
		Info from: -Other samples -This sample -Unclear info provided:			
		Info from: -Other samples -This sample -Unclear info provided:			
		Info from: -Other samples -This sample -Unclear info provided:			
		Info from: -Other samples -This sample -Unclear info provided:			

SUMMARY

When were data collected (e.g., baseline, post intervention :6 months, etc.)?

Were data collected in the same manner for treatment and control groups?

Yes

No

Not clear

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