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**Programs for the Promotion of Family Wellness and
the Prevention of Child Maltreatment:
A Meta-Analytic Review**

By

Jennifer MacLeod

Honours Bachelor of Arts, Carleton University, 1989

THESIS

**Submitted to the Department of Psychology
in partial fulfilment of the requirements
for the Masters of Arts degree**

Wilfrid Laurier University

1999

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Abstract

This thesis is a meta-analytic review of interventions that focus on the promotion of family wellness and the prevention of child maltreatment. Fifty-six evaluations which met the inclusion criteria were coded and effect sizes were calculated for each of the studies. I identified five key elements or “moderator variables,” through a review of the literature, which I believed might have an impact on the effectiveness of interventions. These moderator variables were: an ecological framework, an empowerment/strengths-based focus, the duration/intensity of the intervention, and the availability of social support and concrete support.

A three step model testing process was used to evaluate the impact of the moderator variables on the effectiveness of the interventions. In Step 1, the impact of the moderator variables was tested across the entire sample of 56 studies. In Step 2, the studies were subdivided according to program type before testing for the impact of the moderator variables. There were eight distinct types of programs; four were proactive and four were reactive. In Step 3, testing for the impact of the moderator variables occurred after the studies were subdivided by both program type and outcome measure. Lastly post-assessment and follow-up effect sizes were examined separately to identify any possible trends.

Findings indicated that although the proactive and reactive interventions had similar mean effect sizes (.37 and .43, respectively), the effect sizes for the proactive interventions tended to be larger at follow-up than post-assessment,

while the effect sizes for the reactive interventions tended to have higher effect sizes at post-assessment than follow-up. This indicates that gains made through proactive interventions are sustained, and even enhanced, over longer periods of time, compared with those of reactive interventions.

Other findings revealed that for home visiting interventions, higher effect sizes were found for interventions which were longer in duration and higher in intensity, and that interventions with components of social and concrete support had lower effect sizes than interventions without those components. Intensive family preservation interventions with high levels of participant involvement in program planning and implementation, an empowerment/strengths-based focus, and a component of social support had higher effect sizes than interventions without those elements. Lastly, both home visiting and intensive family preservation interventions achieved higher effect sizes with participants having mixed socio-economic status than those working solely with participants having low socio-economic status.

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I thank my husband, Mark, for his support and encouragement while I worked on this thesis and, of course, I am also grateful to my son, Connor, who has been my companion throughout this process. Connor has patiently spent many hours at "mommy's school" over the past few years and has been a constant reminder to take time out to play.

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INTRODUCTION AND BACKGROUND

Statement of Purpose

Child maltreatment is all too prevalent and has devastating effects on children, families, and society (Cameron, 1990; Garbarino & Stocking, 1980; Krugman, 1993; MacMillan, Fleming, Trocmé, Boyle, Wong, Racine, Beardslee, & Offord, 1997; Melton & Barry, 1994; Willis, Holden & Rosenberg, 1992). For some time now researchers have been espousing the potential benefits of prevention programs (MacMillan et al., 1997; Olsen & Spatz Widom, 1993; Peters, 1994; Rae-Grant, 1994). A number of child maltreatment prevention programs have been implemented and evaluated (Finklehor & Strapko, 1992; Oates & Bross, 1995; Olds & Kitzman, 1993; Olsen & Spatz Widom, 1993). There is wide diversity in the theoretical assumptions, program components, and implementation practices among prevention programs and for that reason it is difficult to reach any conclusions about the effectiveness of prevention. It is particularly difficult, in light of this diversity, to compare prevention programs with one another.

Program planners, policy-makers, and funders could benefit from a comprehensive review of the literature of child maltreatment prevention programs especially if the review offers a comparison of the effectiveness of different program approaches. Meta-analysis is a powerful statistical tool that can be used to review a body of literature and compare outcomes. A meta-analytic review can suggest conclusions about what works. Although meta-analytic reviews are now being commonly conducted, there have been few in the area of community psychology (Durlak & Lipsey, 1991).

In this thesis, I will promote the values of community psychology by building a

research model around the concepts of empowerment, strengths-based approaches, an ecological framework, and informal social support.

Literature Review

Child Maltreatment: The Extent of the Problem

Definitions of maltreatment tend to be arbitrary and range on a continuum from any form of physical punishment to severe harm (Melton & Barry, 1994). Melton and Barry (1994) cited a national incidence study in the U.S. that defines physical and emotional abuse and neglect as acts that cause “significant physical, mental, or emotional injury or impairment” (p. 136). The U.S. Child Welfare League defines abuse as denial of “normal experiences that produce feelings of being loved, wanted, secure, and worthy” (Willis et al., 1992, p. 4).

While the focus of child abuse prevention programs is generally parents (the potential abusers), sexual abuse prevention programs usually focus on teaching skills to children (the potential victims) (Olsen & Spatz Widom, 1993). As a result, the approaches of these programs are quite distinct. Also, Rispen, Aleman, and Goudena (1997) have published a meta-analytic review of child sexual abuse prevention programs. For these reasons, it was decided to limit the focus of this thesis to physical abuse and neglect prevention programs.

Statistics Canada recently reported that six in 10 victims of physical abuse are under the age of 18 years (Statistics Canada, 1997). In 1990 the U.S. Advisory Board on Child Abuse and Neglect declared that child abuse and neglect in the United States should be considered “a national emergency” (Krugman, 1993). Statistics from the Review of the

Ontario Child Abuse Register (1987) show that incidents of substantiated maltreatment have steadily increased from 1980 to 1986 (see Table I).

Table I

Incidents of Substantiated Maltreatment

Year	Total # of children abused	Deaths	Total # of abusers
1980	686	5	730
1981	601	1	640
1982	681	1	741
1983	1,150	11	1,276
1984	1,541	13	1,661
1985	2,042	6	1,211
1986	2,152	9	2,314

A study of reported child maltreatment in Ontario described by Begin (1996) found that in 1993 approximately 46,638 children were investigated for abuse and/or neglect. Of the 58% of these incidents that were substantiated by CAS workers, "... 36% involved neglect, 34% involved physical abuse, 28% [involved] sexual abuse and 8% [involved] emotional maltreatment" (p. 5). Family members were responsible for 75% of the incidents of child maltreatment.

Results of the Ontario Incidence Study of Reported Child Abuse and Neglect (OIS) (Trocmé, McPhee, & Kwok Kwan, 1995) revealed that maltreatment was reported for 21 per thousand children in Ontario and substantiated for 27% of those children. Of the investigated maltreatment incidents, 41% involved physical abuse, 25% involved

sexual abuse, 30% involved neglect, 10% involved emotional maltreatment, and 2% involved some other form of maltreatment. These proportions of types of abuse are similar to those reported by Begin (1996).

Trocmé et al. (1995) compared the incidence rates of maltreatment in Ontario with rates in other provinces and the United States. They revealed that reported maltreatment incidence rates in Alberta in 1991/1992 were approximately 26 per thousand children while in New Brunswick, also in 1991/1992, rates were approximately 38 per thousand children. They cited a study (Daro & McCurdy, 1994) which found reported maltreatment incidence rates in the United States to be 45 per thousand children. The differences in incidence rates between the Canadian provinces may be attributed to differences in rates of unemployment/poverty. Poverty has been found to be associated with maltreatment (Leventhal, 1996; Trocmé et al., 1995; Wolfe, 1996). Unemployment rates in Ontario and Alberta are comparable (6.4% and 5.9%, respectively) while the rates in New Brunswick are substantially higher (10.5%) (Statistics Canada as cited in Laver, 1999). Also, because the detection of maltreatment is a provincial, rather than a federal, responsibility (Trocmé et al., 1995) different incidence rates may reflect differences in methods of recording information about child maltreatment. Trocmé et al. (1995) suggested that the difference between Canadian and American incidence rates may reflect differences in social policies or differences in procedures for gathering maltreatment data.

A report on violent death among children in Canada, released by Statistics Canada in 1991 (Begin, 1996), found that “from 1980 to 1989, 542 children under 12 were killed in this country” (p. 4). Seventy-six percent (76%) of these children were killed by

relatives; 70% of them were younger than five years old; and almost one-third of them were younger than one year of age.

However, it is generally accepted that not all incidents of child abuse are reported and of those that are reported it is difficult to confirm that abuse has taken place.

Therefore, the true prevalence of child maltreatment is actually substantially higher than the reported rates. A recent study (MacMillan et al., 1997) surveyed almost 10,000 households in Ontario in order to determine prevalence of child maltreatment retrospectively. Adult participants were asked to respond to abuse-related questions about their childhood. MacMillan et al. (1997) found that 31.2% of male respondents and 21.1% of female respondents reported having been a victim of physical abuse as children. The abuse was considered to be severe (including being choked, burned, scalded, physically attacked or often hit, kicked, bit or punched) for 10.7% of males and 9.2% females.

Research Context

It is generally felt that the public's current priorities concerning government spending are reduction of the national deficit and tax cuts at the federal and provincial levels. Inherent in these priorities is a call for the reduction of spending including funding for social service programs such as those for the prevention of child maltreatment.

In the Canadian system each province is responsible for the detection of and provision of services for child maltreatment (Begin, 1996). The federal government is responsible for cost-sharing with provinces, providing research grants and addressing child maltreatment in the Criminal Code. Trocmé et al. (1995, pp. 564-565) described the

system in detail.

Canada's child welfare legislation and services in most provinces are delivered by centralized government agencies. Ontario child welfare services are delivered by a provincially regulated system of independent Children's Aid Societies (CAS). These agencies are private nonprofit organizations funded primarily by the provincial government. The agencies operate under the same overall mandate, but their budgetary priorities and interpretation of child protection mandates vary considerably. This unique blend of government financing and an autonomous private service delivery system has allowed for the development of innovative programs and agencies with strong community links, but it has not supported the development of province wide documentation of these services.

In 1984 the Child and Family Services Act (CFSA) was legislated. The CFSA sets the mandate of Ontario's Children's Aid Societies (CAS) (Trocmé et al., 1995). In 1989 the United Nations adopted the first Convention on the Rights of the Child. In 1990 the federal government appointed a Children's Minister and created a Children's Bureau (Begin, 1996).

Examples of federal government spending in the area of child maltreatment include:

- 1986 - \$20 million over five years for government efforts to help abused children

(including coordination efforts, research, public information and legislation)

- ▶ 1988 - \$40 million over four years on programs for the reduction of family violence (over half of the money went to battered women's shelters, the rest was divided between research, counselling programs, education and demonstration projects).
- ▶ 1990 - \$750,000 over three years for a national program for monitoring child injuries
- ▶ 1991 - \$136 million over four years for the elimination of family violence (including prevention strategies).

One recent example of provincial government spending in the area of child maltreatment is:

- ▶ 1997 - The Ontario Ministry of Health (1997) allocated \$10 million a year for a province-wide assessment/home visiting initiative ("Healthy Babies, Healthy Children") for families with children (prenatal to age six). The funding has been given to public health units which are responsible for coordinating a community planning process for the implementation of the program. The assessment process selects "families with children who are at risk of physical, cognitive, communication and/or psychosocial problems (p. 6)" for participation in the program.

In the United States, the U.S. Advisory Board on Child Abuse and Neglect was

formed in 1988 through amendments to the Child Abuse Prevention and Treatment Act (Melton & Barry, 1994). The advisory board has since released two reports, one in 1990 and a second one in 1993. In their first report, the U.S. Advisory Board on Child Abuse and Neglect declared that child abuse and neglect in the United States represents “a national emergency” and included 31 specific recommendations (Krugman, 1993). Further the Board criticized the system’s tendency to spend “billions of dollars on programs that deal with the *results* of ... abuse and neglect (p. 3)” rather than spending money to prevent its occurrence. The first report was well received by Congress and a second report with more concrete recommendations was requested. The Board’s second report offered 29 recommendations with the main recommendation being universal home visiting for new mothers. Private organizations were highly pleased with the recommendations but the government was less than enthusiastic and the recommendations have, for the most part, been ignored.

Levels of Prevention and Promotion

In light of the high prevalence of child abuse and neglect many professionals believe that emphasis needs to be placed on prevention (MacMillan, MacMillan, Offord, Griffith & MacMillan, 1994; Rae-Grant, 1994; Willis et al., 1992). Willis et al. (1992) defined prevention as an “... intervention that occurs before the development of a disorder to either prevent the disorder itself or prevent some manifestation of the disorder. With respect to child maltreatment, this refers to efforts to reduce the actual occurrence...” (p. 5). Traditionally, prevention has been separated into three distinct levels: primary, secondary, and tertiary. Thompson (1994) described primary prevention as services that

are offered to the general population to prevent the occurrence of abuse. Primary prevention also includes services that are offered to high-risk groups of people. Secondary prevention can be described as early intervention in which services are made available to families to shortly after abuse has occurred. Tertiary prevention involves treatment or rehabilitation in well established cases of abuse. It can be described as interventions provided to abusers to prevent the further occurrence of abuse or provided to victims of abuse to reduce its harmful effects such as the prevention of the development of related problems at a later age.

Rae-Grant (1994) described another system for classifying preventive interventions. It is conceptualized as a continuum with promotion at one extreme and intervention at the other. The three levels of prevention within this continuum are universal, selective and indicated. She defined universal prevention as "...desirable for everyone in the eligible population" and gave as examples "...prenatal care, immunization, and the use of seat belts" (p. 19). Universal prevention is a type of primary prevention. Selective prevention was defined as prevention for "...a subgroup of the population [that is] at risk for a particular condition..." and examples included "...home visitation and infant day care for high risk mothers and preschool programs for all children from disadvantaged neighbourhoods" (p. 19). Selective prevention is another form of primary prevention. Indicated prevention was defined as interventions that "...are targeted to high-risk individuals with detectable symptoms or signs.." and examples included "...the provision of a parent/child training program for parents of preschool children with aggressive behaviour" (p. 19). Indicated prevention is equivalent to secondary prevention.

Dunst, Trivette and Thompson (1990) made a distinction between promotion and prevention. They argued that the definition of prevention centres around inhibiting negative impacts and is deficit-based, while, conversely, promotion focuses on enhancing positive impacts and is strengths-based. Dunst et al. (1990) further suggested that "...the prevention of poor outcomes will not necessarily result in enhancement and strengthening of positive functioning" (p. 38). Nelson, Prilleltensky, Laurendeau, and Powell (1996) pointed out similarities between prevention and promotion.

... In practice there is a great deal of overlap between primary prevention and promotion. Both primary prevention and promotion programs focus on the reduction of risk factors and the development of protective/growth promotion factors; both use a proactive approach; and both have a population-wide focus (p. 163).

Nelson, Laurendeau, Chamberland, and Peirson (1999) discussed yet another framework for the categorization of programs. They examined programs in light of being either proactive (i.e., programs which "seek to promote family wellness and/or prevent child maltreatment") (p. 3) or reactive (i.e., programs which "have a goal of preventing other negative outcomes") (p. 3). Therefore proactive interventions involve families before any maltreatment has occurred while reactive interventions involve families who already have a history of child maltreatment, in order to prevent further occurrences. Typically the difference between proactive and reactive programs is also reflected in the timing of the interventions. Proactive interventions tend to begin prenatally, at birth or

during early infancy, while reactive interventions tend to begin when the child is school-aged. For the purposes of this thesis, universal and selective interventions are considered to be proactive, and indicated programs are considered to be reactive.

Types of Prevention Programs for Child Maltreatment

My review has revealed a diversity of types of prevention programs for child abuse. Proactive programs include home visiting, multi-component, mutual aid, and media interventions. Reactive programs include intensive family preservation, multi-component, mutual aid, and parent training interventions. Each of these program types is briefly described below.

1. home visiting (proactive) - these interventions centre around the relationship between home visitors and mothers. Home visitors provide support and information to mothers in areas such as child health and development, mother-child attachment, and parenting strategies. There is also sometimes a focus on individual growth in social, occupational, and educational realms. One example of a large scale home visiting program is that of Olds and his colleagues (Kitzman et al., 1997; Olds & Korfmacher, 1998). In these interventions specially trained nurses visited first-time mothers in their homes on a regular basis. Most of the mothers were single parents, younger than 19 years of age, and of low socioeconomic status. The home visits began prenatally and continued until the child's second birthday. During the home visits the nurses helped to nurture prenatal and infant health, parenting skills, and personal development for the mother in the areas of employment, education and family planning.

2. multi-component (proactive) - these interventions provide a variety of different program components, including family support, social network building, and community development. An example of a proactive multi-component intervention is the Parent Child Development Centre (PCDC) (Andrews, Blumenthal, Johnson, Kahn, Ferguson, Lasater, Malone & Wallace, 1982). PCDC interventions were implemented in three different cities and each followed a similar program model. The intervention consisted of “a comprehensive curriculum for mothers, consisting of information on child development and child-rearing practices, home management, nutrition and health, mothers’ personal development, and government and community resources; a simultaneous program for their children; and extensive support services for participating families” (Andrews et al., 1982, p. 1). The age of the children at the beginning of the intervention ranged from 2 months to 12 months old.
3. mutual aid (proactive) - these interventions focus on building the social network of parents. Helpers introduce participants to informal sources of support, and promote involvement with community resources. An example of a proactive mutual aid intervention is one in which a group of parents of premature infants met for seven to ten weeks (Minde, Shosenberg, Marton, Thompson, Ripley & Burns, 1980). The group sessions were facilitated by a parent who had also given birth to a premature baby within the previous nine to 12 months. The primary objective of the group sessions was to provide the parents with a format in which to discuss issues related to coping with a premature baby. Resource speakers and materials

were also provided in some of the group sessions.

4. **media (proactive)** - these interventions provide parenting information through media (such as newsletters). The focus is often on developmental stages of childhood and parenting strategies. An example of a media intervention is the distribution of Parents Magazine (Laurendeau, Gagnon, Desjardins, Perreault & Kishchuk, 1991). Parents Magazine is a newsletter that was designed to “improve the child-rearing knowledge, attitudes, and behavior of parents and to increase the use of resources available in their milieu” (Laurendeau et al., 1991, p.211). It contained information about child development, health, safety, care, age-appropriate activities, parenting strategies, social relationships, and family support resources. The newsletter was distributed to 400 families who were registered in prenatal classes in a Montreal hospital. The families received the newsletter monthly for the first year of life and bimonthly for the next two years.
5. **intensive family preservation services (reactive) (IFPS)** - these are home visiting programs for families in which abuse has already occurred. The focus is on the prevention of further maltreatment (of the child or younger siblings) or out-of-home placement. An example of intensive family preservation services is the Homebuilders program (Pecora, Fraser & Haapala, 1991). The Homebuilders intervention provides a wide range of services in the family’s home including counseling, advocacy, training, and concrete services. Each home visitor works with only two to four families at a time. Services are of short duration (four weeks) and are intensive (10 hours a week initially and then five to eight hours a

week). The goal of the intervention is to prevent the necessity of placing children in substitute (out-of-home) care.

6. multi-component (reactive) - similar to the *proactive* multi-component interventions these interventions provide a variety of different program components, including family support, social network building, and community development. However, reactive interventions provide support for families in which abuse has already occurred. An example of a reactive multi-component intervention is Project 12-Ways (Lutzker & Rice, 1987). Participants were families who had been identified as having maltreated their child. Home visiting services included stress reduction, parent-child training, problem solving, self-control, social support, assertiveness training, basic skills, leisure time, home safety, home cleanliness, job placement, alcoholism referral, money management, marital counselling and pre- and postnatal prevention services.
7. mutual aid (reactive) - similar to the *proactive* mutual aid interventions these interventions focus on building the social network of parents. Helpers introduce participants to informal sources of support and promote involvement with community resources. However reactive interventions provide support for families in which abuse has already occurred. An example of a reactive mutual aid intervention is the Parent Mutual Aid Organization (PMAO) model (Cameron, Hayward & Mamatis, 1992). Parents involved in this intervention were already participants of child welfare agencies. A range of activities were offered to the parents including recreational activities, discussion groups, educational speakers,

and volunteer work. Opportunities were also provided for participants to make connections with other group members outside of scheduled meetings or activities. Depending on which activities the participants chose to join, intervention contacts could be as often as several times a week.

8. **parent training (reactive)** - these interventions focus on teaching parenting strategies, and helping parents to improve their skills in managing their children's behaviour. The chosen format for parent training interventions is usually group sessions. These interventions provide support for families in which abuse has already occurred. An example of a parent training intervention is the program evaluated by Wolfe, Edwards, Manion, and Koverola (1988). The participants were generally single mothers, with young children (range: 9 months - 5 years) and low incomes who were under supervision from a child protective service. The intervention included both parent training and information groups. Parent training involved training in fundamental child management skills, and appropriate child development activities. Information groups were operated by the child protection agency and they consisted of social activities and discussion of parenting topics with the goal of personal growth in the areas of self-esteem and social support. Daycare activities were provided for the children during the mothers' group sessions.

Personal Interests

Two main areas in my life have led me to a deeply held belief of the essential need for the prevention of child maltreatment and the promotion of family wellness - my career

and motherhood. Immediately after graduating with a B.A. in psychology I worked for one year at a residence for adult psychiatric consumer/survivors. This was a challenging time for me partially because I was unable to see any gains being made by the people with whom I was working and thus I began to experience a sense of hopelessness toward their life circumstances. I noted a pattern of social isolation and descriptions of troubled childhoods amongst the residents and began to wonder if intervention at a much younger age would have indeed made a difference to the path their lives had taken. I decided that I would like to work with young children and gained a job at a children's mental health centre first as a school-based "Social Skills Facilitator" and later as a researcher/program evaluator. The centre works exclusively with children ranging in age from six to 12 years who were considered "aggressive and non-compliant." I worked at the centre for five years and while I was there questioned our approach in labelling the children and their families as problematic rather than the context in which they were living. I also despaired of the futility of offering a 12-week program to children who had acquired at least six years of difficult life circumstances often including abuse and/or neglect. These experiences led me to a conviction that intervention must occur much earlier, optimally before a child is even born, and must embrace an ecological perspective.

During the time I was working at the children's mental health centre I became a new mother and experienced first-hand the difficulties and joys of parenting. None of the risk indicators such as single parenthood, substance abuse, family violence, isolation, poverty, inexperience, youth, a difficult baby (e.g., colicky, premature, or disabled), an unplanned pregnancy and/or an unwanted baby were applicable to my situation. Despite

my advantages I began to depend on my support network to an extent that I never had before, and yet I still experienced feelings of isolation and anxiety. This impressed on me the impact *any one* of the risk factors would have on intensifying the difficulties associated with parenthood.

Two years ago, when my child was a year and a half old, I became an active member of a parent-child resource centre, Our Place. My involvement with Our Place has reinforced my belief in the value of informal social support. Other parents at Our Place have described to me many different ways in which mutual support at the centre has had a tremendous impact on the quality of their lives. Our Place is a universal prevention program (available for all parents) which builds on parent/members' strengths by involving them, in an integral way, at all levels of the planning, organizing and implementation of the organization. I believe that universal prevention programs such as this one have the potential to stimulate social change including the establishment of supportive communities and the reduction of stressful living situations (e.g., poverty, and lack of opportunities for education and employment) with which a segment of our society must cope.

Meta-analysis

I reviewed the literature on child abuse and neglect prevention programs. In order to increase the generalizability and reliability of the findings, this review is in the form of a meta-analysis. Meta-analysis allows for a systematic examination of the reported effectiveness of these programs and, further, for an examination of component similarities of effective programs.

Meta-analysis has been described by some researchers as a powerful approach for

comparing outcome effects across studies (Durlak & Lipsey, 1991; Sandler, 1997). In their guide to meta-analysis, Durlak and Lipsey (1991) described some of the advantages and unique aspects of meta-analytic reviews. They appreciated the ability of meta-analyses to fully utilize outcome data by examining "...both the direction and the magnitude of effects obtained in each study as well as the distribution of effects across studies" (p. 293). Further, a multitude of variables can be coded in meta-analytic review which allows for the analysis of many different relationships and interactions and key research findings can be compared across studies which provides a large sample size for the analysis. Cook (1985) emphasized the contribution of meta-analyses to the generalization of findings

... through syntheses of multiple studies one will be able to identify relationships of such stability that they hold across a wide range of populations, settings, and times, as well as across a wide range of operational representations and previously unexamined threats to internal validity (p. 41).

Durlak and Lipsey (1991) suggested that due to a general acceptance of the strength of meta-analysis "... many social policy implications can emanate from meta-analytic reviews" (p. 293).

Although meta-analytic reviews are now being commonly conducted, there have been few in the area of community psychology (Durlak & Lipsey, 1991). Durlak and Lipsey (1991) believe that meta-analysis can play a unique role in increasing the understanding of community issues. Some recent meta-analytic reviews include Durlak

and Wells' reviews of primary prevention (1997) and secondary prevention (1998) mental health programs for children and adolescents, a review of attachment-based interventions on infant security (van Ijzendoorn, Juffer & Duyvesteyn, 1995), and a review of school-based drug prevention programs (Tobler & Stratton, 1997).

Durlak and Wells' (1997) review of primary prevention mental health programs covered a wide range of interventions such as environmental (school-based, parent training), transition (divorce, school entry/change, first-time mothers, medical/dental procedure) and person-centred (affective education, problem solving, behavioural, and nonbehavioural) programs. Durlak and Wells' (1998) review of secondary prevention mental health programs also covered a wide range of interventions, such as behavioural, cognitive-behavioural, and nonbehavioural programs.

In conducting a meta-analytic review of a literature, it is beneficial to formulate specific a priori hypotheses (Durlak & Lipsey, 1991). These hypotheses can then guide the review towards the collection of rich information based on well thought-out premises. The research hypotheses are outlined on pages 26-27.

Theoretical Perspective

The theoretical framework for this paper is based on an examination of prevention programs in light of qualities which may have an impact on their effectiveness. These qualities include an ecological framework, an empowerment/strengths-based focus, the duration/intensity of the intervention, a component of social or mutual support as a helping approach, and the availability of concrete support.

An Ecological Framework

Many researchers have utilized Bronfenbrenner's (1986) ecological model of family functioning (Bogenschneider, 1996; Nelson, Prilleltensky & Peters, 1999; Peters & Crill Russell, 1996; Willis et al., 1992). The ecological model is a comprehensive, holistic and context-sensitive means of understanding families and the systems in which they function.

Bronfenbrenner (1986) explained the significance of perceiving families in the context of mesosystems, exosystems, and chronosystems. Mesosystems were described as those contexts in which the focal family member directly participated such as school. He emphasized the importance of examining a reciprocal relationship between home and school contexts in attempting to understand the impact of each of these settings on a child. Exosystems are those contexts in which other family members participate such as the workplace and social networks and which have an indirect effect on the child. Lastly, chronosystems are changes that occur over time both in an individual (developmental changes) and in the environment in which the individual functions. An understanding of the reciprocal relationship between time-related individual and environmental changes is a meaningful part of chronosystems. Transition periods such as pregnancy, entrance to school, and moving are primary examples of chronosystems.

Bronfenbrenner (1986) described the ecological model as one which incorporates the elements of "person-process-context" (p. 725). He explained that in a process-context paradigm a family is understood within the *context* of a larger community and the *process* of the relationship between the family and community is explored. Adding *person* to the

paradigm is the recognition that individual differences exist within similar processes and contexts.

The ecological model contributes much to the understanding and prevention of child maltreatment. The ecological perspective is described by Nelson, Prilleltensky, and Peters (1999) as one which “considers multiple levels of analysis.” These levels include the individual, the family and the community. Risk and protective factors can be identified at each contextual level (Bogenschneider, 1996; Nelson, Prilleltensky, & Peters, 1999). In discussing prevention, Peters and Crill Russell (1996) contended that “successful prevention programs understand that the child lives in the family and the family in the community, so components of successful programs address the wholeness of the child and environment” (p. 24). Willis et al. (1992) stated that “ecological models assume multivariate causality, and assume that interactional effects across different levels of the social ecological context influence the incidence and prevalence of child maltreatment” (p. 10). Thus in adopting the ecological model, prevention programs address risk and protective factors in the multiple contexts in which a family functions and consider the interaction of these contextual influences in their drive to prevent maltreatment and promote family wellness.

One alternative approach to an ecological model is the person-centred (micro-level) model which emphasizes a focus on the individual. Durlak and Wells (1997) described person-centred programs as those which “... work directly with children and often use or adapt change techniques drawn from the clinical and counseling literature...” (p. 118). Febrarro (1994) provided an insightful critique of individualistic approaches.

She argued persuasively that person-centred models are not only of limited effectiveness due to their inability to address the root problem but that they can be destructive in their tendency to promote victim-blaming and to ignore social injustices.

An Empowerment/Strengths-based Focus

Rappaport (1987) has defined empowerment as “a process, a mechanism by which people, organizations, and communities gain mastery over their affairs” (p. 122). Through his experience with a community-based prevention program, Cochran (1988) concluded that “empowerment was a process rather than an end state” (p. 14). Empowerment as a *process* is a concept that should be adopted by prevention programs in that empowering practices such as integral participant involvement in all key program decisions are fulfilled. Trivette, Dunst, and Hamby (1996) described “family-centered” programs as those which:

view professionals as instruments of families, and intervene in ways that are individualized, flexible, and responsive. Help-seekers are viewed as having existing capabilities as well as the capacity to become more competent, and help-giver practices aim to strengthen functioning and optimally empower people as part of their involvement in these kinds of human services programs (p. 275).

The above program description emphasizes a high level of participant involvement in planning, implementation, and decision-making and clearly outlines the dynamic interaction between empowerment and strengths-based ideology in program implementation.

Cochran (1987) advised that all families have strengths and that citizens, including

parents and family members, have more useful knowledge about child rearing than do “experts” and “professionals.” Parents, he suggested, know their child better than anyone else and therefore should be considered experts in matters concerning their children.

Dunst et al. (1990) stated that “... there is near universal acceptance that primacy be given to promotion and enhancement of family competencies and capabilities as the way to support and strengthen families” (p. 26). They went on to contend that “... by building on strengths rather than rectifying deficits, people become more adaptive in not only dealing with difficult life events but in setting growth-oriented goals and achieving personal aspirations” (p. 31). It is clear that a belief in, and adoption of a strengths-based approach leads to practices which allow for empowerment and, reciprocally, that practices which promote empowerment lead to strengths-based approaches.

Duration/Intensity of the Intervention

In a study examining the impact of various intervention characteristics on the success of interventions, Dagenais and Bouchard (1996), as cited in Nelson, Laurendeau, et al. (1999), found that interventions which were more intense (i.e., a greater number of hours) resulted in fewer children being removed from their homes because of concerns about child maltreatment (out-of-home placement). Based on their review of child abuse prevention programs, Nelson, Laurendeau et al. (1999) found that the length of interventions and the number of visits had an impact on the outcomes of the interventions. They reported that home visiting interventions which lasted longer than a year and those which provided at least 20 home visits resulted in lower rates of child maltreatment and associated measures than comparison groups.

A Component of Social or Mutual Support as a Helping Approach

Cameron (1990) defined social support interventions as “small-scale efforts to augment the personal resources and/or the social resources available to an individual or family” (p. 146). He described the components of social support as concrete support, educational support, emotional support, and social integration. It has been empirically demonstrated that a strong connection exists between social isolation and child maltreatment (Willis et al., 1992).

Bronfenbrenner (1986) cited several studies that have demonstrated the detrimental impact of social isolation on parenting and, conversely, the beneficial influences of social support. Some examples of the findings are that socially isolated families are more likely to be neglectful of their children (Giovanni & Billingsley, 1970); there are higher incidences of child maltreatment among families that are experiencing social isolation and economic stress (Garbarino, 1976); and pregnant women who have healthy social support networks experience less stress, anxiety and depression during their pregnancy and report better marital adjustment and a more positive attitude toward pregnancy (Tietjen & Bradley, 1982). Further, mothers with low levels of social support are more likely to treat their children with hostility, indifference and rejection while mothers with high levels of social support have more positive attitudes toward their children (Colletta, 1981), and children who demonstrated resilience despite having many risk factors had access to a healthy informal social support network (Werner & Smith, 1982).

Concrete Support

Cameron et al. (1992) described concrete support as “providing some form of material aid such as money, clothing, accommodation, and/or assistance with carrying out everyday tasks such as parent relief, homemaking services, transportation” (p. 16). They suggested that concrete supports are “specific benefits received by an individual that are directly relevant to managing problems or to being personally able to take advantage of available socially supportive relationships” (p. 17). Some examples of concrete support which were offered to families during the intervention implemented by Cameron et al. (1992) are child care, emergency financial resources, and exchanges between participants (e.g., child care, transportation, clothes).

Dagenais and Bouchard (1996) reported a finding that interventions which provide concrete support to participants are more successful in reducing out-of-home placement rates than those which provide little or no concrete support.

Further Intervention Characteristics

Nelson, Laurendeau et al. (1999) identified eight characteristics of successful programs. These characteristics are programs that are comprehensive (i.e., which address multiple risk and protective factors in different contexts), those that strengthen families’ informal support, those that begin early (i.e., prenatally or immediately following the birth of the baby), those that are long-term, those that are community-owned, flexible and responsive, those that build respectful, trusting relationships between staff and participants, those in which the staff are well-trained and competent, and those which include a component of research and evaluation. Some of these characteristics are discussed in the research hypotheses (i.e., comprehensive [ecological] interventions;

informal [social] support; flexibility and responsivity [empowerment/strengths-based focus]; timing of intervention commencement [proactive vs. reactive, age of child]; duration). Others were not operationalized as research hypotheses because of the difficulty in finding and reliably coding the information (i.e., community-ownership; quality of relationships between staff and participants; training and competency of intervention staff).

Research Hypotheses/Questions

I formulated two research questions and five research hypotheses. The research questions invite an examination of different types of programs and outcome constructs measured. The research hypotheses centre around elements which I believe have an impact on the effectiveness of child maltreatment interventions (an ecological framework, an empowerment/strengths-based focus, the intensity and duration of the intervention, the provision of social support, and the provision of concrete support).

Research Questions

1. There may be differential outcome effects between different types of programs (i.e., home visiting, multi-component [proactive], mutual aid [proactive], media, intensive family preservation, multi-component [reactive], mutual aid [reactive], and parent training). Which program types are most successful in the prevention of child maltreatment? What do the successful program types have in common?
2. There may be differential effects on different types of outcomes measured (i.e., child maltreatment, parent attitude, parent behaviour, home environment, and placement rates). Which outcomes are most affected by prevention programs?

Research Hypotheses

1. Interventions that embrace an *ecological framework* will be more successful than micro-level programs.
2. Interventions that have an *empowerment/strengths-based* focus will be more successful than those that are expert-driven/deficit-based.
3. Interventions with a longer *duration* and/or a higher level of *intensity* will be more successful than those that are short in duration and/or have a low level of intensity.
4. Interventions that involve a component of *social or mutual support* as a helping approach and therefore build on informal support networks will be more successful than those that rely solely on a professional helping approach.
5. Interventions which offer *concrete support* will be more successful than those which concentrate solely on parenting support.

Research Framework

The research framework (see Table II) is a visual conceptualization of the research questions/hypotheses. It outlines the categorizations of timing, program types, outcomes measured and principles involved in intervention implementation. The program types are described in the Introduction (see pp. 11-15), measurement outcomes are defined in the Methods section - Coding Procedures (see pp. 34-35), and implementation principles are discussed in the Introduction - Theoretical Perspective (see pp. 19-26).

Table II**Research Framework**

Timing	Type of program	Outcomes measured	Implementation Principles
Proactive	Home visiting Multi-component Mutual aid Media	Placement rates Maltreatment Parent attitude Parent behaviour HOME	Ecological framework Empowerment focus Duration/intensity Social support Concrete support
Reactive	IFPS Multi-component Mutual aid Parent training		

METHODS**Assumptions**

For the purposes of this thesis I have adopted postpositivist assumptions. In their review of postpositivism, Guba and Lincoln (1994) compared and contrasted the assumptions of positivism and postpositivism. Both paradigms hold that interventions can be evaluated; that evaluations are conducted for the purpose of explanation; and that cause and effect can be determined. However, while positivists maintain that objectivity is required of a researcher, postpositivists believe that objectivity, although ideal, is improbable.

Cook (1985) emphasized the divergence of postpositivism from positivist assumptions. Postpositivism, he contends, has taken the form of critical multiplism. A primary assumption of critical multiplism is that "... there is a real world and we can know it imperfectly through multiplistic procedures" (Cook, 1985, p. 59). Cook and Shadish

(1986) explained that critical multiplism has grown out of the realization that “scientific observation” is not, in fact, objective but rather is influenced by theory. As a response to the perception that no single hypothesis or procedure is indisputably correct, critical multiplism fosters the triangulation of question generation and methods. One part of critical multiplism is multiple operationalism which entails the use of multiple measures or manipulations for the purpose of ascertaining whether or not similar results are obtained through the various methods (Cook, 1985). This has the result of establishing replication and of ruling out other explanations for the generation of the findings.

Cook (1985) asserted that causal determination is an important part of critical multiplism. The premise of causal determination is that interactions in the social world are complex. In recognition of the complex interactions, multidimensional determinants are explored through theory. Simplistic dual cause and effect relationships are rejected in favour of intricate explanations. Further, findings are considered to be reasonable but not irrefutable.

Based on the premise of complex and diverse interactions it follows that “few relationships are so dependable that they hold across a wide variety of persons, settings and times” (Cook, 1985, p. 41). While positivists maintain that generalizations of study findings to similar settings can be made based on the stringent methods (i.e., objectivity, validity, reliability) of the evaluation, postpositivists more often rely on causal explanations of program effectiveness (e.g., program settings, participant characteristics, program components, and theoretical frameworks) as a guide for generalization (Cook & Shadish, 1986). Cook (1985) asserted that literature reviews are valued by critical multiplists for

their ability to examine relationships across multiple settings, populations and times. Meta-analytic reviews offer the added feature of a statistical amalgamation of study findings.

Procedures in Meta-analyses

Durlak and Lipsey (1991) specify six steps in conducting a meta-analysis. These steps are the formulation of research questions, a literature search, coding procedures, effect size calculation, statistical analyses, and conclusions and interpretations.

Formulation of Research Questions

I formulated research question/hypotheses based on findings and insights from the literature on the prevention of child maltreatment. I also proposed a research framework to outline and organize the research questions (see pp. 27-28).

Literature Search

Durlak and Lipsey (1991) outlined important issues for consideration in conducting a literature search: the identification of a representative and unbiased sample of studies, the inclusion of unpublished studies, the use of several methods of searching, the disclosure of the number of relevant but nonusable studies, an assessment of the robustness of obtained findings, and an available list of the sampled studies. I addressed each of these issues.

This meta-analysis built on previous reviews of the literature on primary prevention of child abuse (MacMillan et al., 1994) and secondary prevention of child abuse (Cameron & Vanderwoerd, 1996; Hayward & Cameron, 1993). MacMillan et al. (1994) delineated some very specific inclusion/exclusion criteria for study selection for their review. They outlined four criteria: children as the target population, a primary prevention program, an

outcome associated with maltreatment, and a prospective controlled trial study design.

The selection was limited to those studies published in journals between January 1979 and May 1993.

The same inclusion/exclusion criteria were utilized in this thesis with the following exceptions:

- a) all types of prevention programs were included (universal, selective, and indicated);
- b) sexual abuse prevention programs were excluded;
- c) the inclusion criteria were extended to book chapters and unpublished reports as well as journal articles;
- d) studies were included only if the results were reported in a format from which effect sizes could be calculated; and
- e) the review covered the period from 1979 to 1998.

As the reviews of MacMillan et al. (1994), Cameron and Vanderwoerd (1996), and Hayward and Cameron (1993) were not meta-analytic reviews, this thesis re-examined the studies they selected. MacMillan et al. (1994) identified 11 studies of the prevention of physical abuse as relevant to their review. Hayward and Cameron (1993) conducted a review of evaluated family preservation and family support programs. These studies were not included in the review of MacMillan et al. (1994), as they examined secondary (indicated) prevention programs. The studies from the review that met the inclusion criteria were included in this meta-analysis. Cameron and Vanderwoerd (1996) reviewed an additional four family preservation studies that met the inclusion criteria for this thesis.

References listed in other relevant review articles (i.e., Finklehor & Strapko, 1992; Oates & Bross, 1995; Olds & Kitzman, 1993; Olsen & Spatz Widom, 1993) were also reviewed. The Child Abuse and Neglect, ERIC, Psychlit, Medline, and the Criminal Justice Periodical Index databases were searched using the keywords: “child abuse”; “child neglect”; and “prevention.” This search method was used by MacMillan et al. (1994). As a result of this search of the databases, the abstracts of over 5,000 studies were reviewed.

A manual search of seven key journals (1993-1998) was conducted. The journals were the *American Journal of Community Psychology*, *Child Abuse & Neglect*, *Child Development*, *Child Welfare*, *Journal of Community Psychology*, *Journal of Consulting & Clinical Psychology*, *Prevention in Human Services* (now the *Journal of Prevention and Intervention in the Community*), and *Journal of Primary Prevention*.

In an attempt to find unpublished studies, the “Dissertation Abstracts” database was also searched, references from review and other articles were examined, and eight unpublished studies were ordered from ERIC based on abstracts that seemed promising. Several unpublished studies which met the inclusion/exclusion criteria were found.

Due to the impossibility of conducting an exhaustive literature search on any topic, it is necessary to assess the robustness of the sample obtained in the search. It is generally known that studies which are published are more likely to have significant results than those that are not published (Hedges & Olkin, 1985; Hunter & Schmidt, 1990; Rosenthal, 1984). Rosenthal (1984) referred to the bias in favour of including a greater number of published studies in a review as a “file-drawer problem” because of the tendency of studies with null findings to be filed away and forgotten. Hedges and Olkin (1985, p. 306)

discussed the use of Orwin's (1983) "fail-safe" procedure to determine robustness. This procedure involves calculating the number of studies with non-significant findings which would be needed to reduce the combined effect size to a "negligible level." The calculation formula and findings for the fail-safe n will be discussed in the Results section.

Coding Procedures

Through the literature search described above, 56 studies were found which met the inclusion criteria (studies included in the meta-analysis are marked with asterisks in the References section). A total of 47 variables were coded for each study in order to allow for an examination of variables which were not included in the research hypotheses but which might have an impact on the effectiveness of interventions (see Appendix A for a detailed coding manual). The variables coded were grouped into four major categories which were participant characteristics, intervention characteristics, methodological characteristics and study context.

A "methodology score" was calculated for each study in order to evaluate the methodological rigour with which the study was conducted. The methodology score is based on the validity criteria score developed by MacMillan et al. (1994). Items such as method of sample allocation, comparison of intervention and comparison groups, inclusion/exclusion criteria, definition of population, follow-up duration, and quality, extent and reliability of measurement are coded and scored. If a study satisfied all of the criteria it received a score of 25, which is the highest score possible (see Appendix A for the detailed codes).

The programs reviewed were categorized as those which are proactive (i.e., the

goal is to *prevent* the occurrence of maltreatment), and those which are reactive (i.e., the goal is to prevent the *reoccurrence* of maltreatment). They were further subdivided into eight different types of programs based on distinct implementation philosophies and practices. The proactive program types are: home visiting, multi-component, mutual aid, and media interventions. The reactive program types are: intensive family preservation, multi-component, mutual aid, and parent training interventions. Each of the program types was described in the Introduction (see pp. 11-15).

Outcomes measured include; a) out-of-home placement rates; b) direct and proxy measures of child maltreatment; c) measures of parent attitudes (questionnaires); d) observations of parent behaviour, and; e) measures of the home environment.

Out-of-home placement rates are often the outcome which is measured for intensive family preservation services (IFPS) interventions. These are the numbers of children who are taken from their homes, during or after the intervention, due to a decision made by child welfare workers that the child is in danger of being maltreated.

Child maltreatment is measured directly by the examination of child welfare records of substantiated abuse and is assessed indirectly through proxy measures such as numbers of accidents, admissions to hospitals and services provided by hospital emergency departments (MacMillan et al., 1994).

Parent attitudes are measured as indicators of child maltreatment potential. This is a more indirect measurement method. Attitudes are assessed through a variety of questionnaires which examine expectations of children's behaviour. One of the most common questionnaires used is the Child Abuse Potential Inventory (CAP) (Milner,

1986).

Another less direct measurement of child maltreatment potential is the assessment of parent behaviour through observational methods. Typically parents are observed while interacting with their child and are assessed on a number of categories such as eye contact, touch, and positive statements.

Lastly, the Home Observation for Measurement of the Environment (HOME) (Caldwell & Bradley, 1979) is often used to measure the environment of the home in areas such as stimulation and mother-child interaction. This is also an indirect measure of the potential for child maltreatment.

These outcomes can be conceptualized as lying on a continuum with the promotion of family wellness at one extreme and the prevention of child maltreatment at the other extreme.

In accordance with the a priori hypotheses of this thesis, special care was also taken to code for ecological framework (number of components offered in the intervention; ecological framework), empowerment focus (strengths-based focus; participant involvement in program planning and implementation), duration/intensity (length of intervention; number of visits), social support, and concrete support (see Appendix A for coding definitions).

Durlak and Lipsey (1991) cautioned that “unreported or uncertain information”

should be coded as “unknown” and reported in summaries of study characteristics.

Therefore an “unknown” category was utilized for this thesis.

Inter-coder Reliability

In order to assess the reliability of coding procedures a student was trained in the procedures by the primary coder. She then independently coded 10 studies (one or two studies were chosen at random from each of the different program types). The 10 studies represent 18% of the total sample. Other meta-analytic studies have calculated reliability on 15% (Durlak & Wells, 1998) and 21% (DuPaul & Eckert) of the total sample. The percentage agreement corrected for chance (kappa) across all variables was 71% (s.d. = .24; range: 6 - 100%). Although the lower end of the range was 6% this does not accurately reflect the distribution of agreement scores because the next lowest score was

33%. The formula for the calculation of kappa is
$$k = \frac{p_o - p_c}{1 - p_c}$$

(where k = “the proportion of agreement after chance agreement is removed from consideration”; p_o = “the proportion of units in which the coders agreed”; and

p_c = “the proportion of units for which agreement is expected by chance” [Cohen, J., 1960, p. 39]).

Percentage agreement for the key moderator variables was as follows: ecological framework, 80%; number of components, 70%; strengths-based focus, 71%; participant involvement, 86%; length of intervention, 86%; number of visits, 100%; social support, 100%; and concrete support, 82%.

Calculation of Effect Sizes

Effect sizes (g) were calculated using formulas outlined by Wolf (1986). For studies which provided means and standard deviations, the effect size was calculated by simply subtracting the post-test mean of the comparison group ($\bar{x}_c$) from the post-test mean of the intervention group ($\bar{x}_i$) and dividing the result by the pooled standard

deviation (sd):
$$g = \frac{\bar{x}_i - \bar{x}_c}{Sd}$$

For studies which reported counts or proportions, effect sizes were calculated using chi squares χ^2 (where n = the sample size):

$$r = \sqrt{\frac{\chi^2}{n}} \quad g = 2 \frac{r}{\sqrt{1-r^2}}$$

For studies which reported F statistics, effect sizes were calculated using the following formula (where F = the reported F statistic; and df (e) = the degrees of freedom of the error):

$$g = \frac{2\sqrt{F}}{\sqrt{df(e)}}$$

A limitation of this formula was that it was restricted to the comparison of only two group means.

For studies which reported *t* statistics, effect sizes were calculated using the following formula (where *t* = the reported *t* statistic; and *df* = the degrees of freedom):

$$g = \frac{2t}{\sqrt{df}}$$

A total of 273 effect sizes were calculated for the 56 studies. The mean number of effect sizes calculated per study was five (range: 1-33). Within each study effect sizes were pooled for each outcome measured (out-of-home placement rates, maltreatment, parent attitude, parent behaviour, and HOME) and were also pooled by time of assessment (post and follow-up). Effect sizes were then pooled for each study to generate total post-assessment, total follow-up, and total overall effect sizes. The same effect sizes (separated and pooled) were then weighted according to sample size. Lastly, weighted effect sizes were calculated separately for each outcome measured but collapsed across time of assessment (post and follow-up).

It has been suggested that findings which are reported as “not significant” (with no accompanying numbers) should be translated into effect sizes of 0 (Durlak, Fuhrman & Lampman, 1991; Durlak & Wells, 1997; Rosenthal, 1995; Tobler & Stratton, 1997). It is agreed that this is a conservative approach. I adopted that approach for this thesis. Four studies examined in this thesis (three home visiting programs and one mutual aid program) reported some of their findings as being not significant. These findings were associated

with outcomes of maltreatment, parent behaviour, HOME, and parent attitude.

Statistical Analyses

Effect sizes (g) were adjusted for small sample bias using the formula provided by

Hedges and Olkin (1985, p. 81):
$$d \approx (1 - \frac{3}{4N-9})g$$

(where g = effect size; d = the adjusted effect size; and N = the sample size).

A comprehensive process of model testing was utilized to test the previously described research framework (p. 28) (see Figure I, p. 43).

The first step in model testing is to combine the effect sizes of all of the studies to “produce an overall estimate of effect magnitude.” (Hedges & Olkin, 1985, p. 147). It is then necessary to test the homogeneity of the effect sizes for reasons described by Hedges and Olkin (1985, p. 147).

If, as is often the case, the underlying (population) effect sizes are not identical in all of the studies, the representation of the results of a set of studies by a single estimate of effect magnitude can be misleading. For example, suppose a treatment produces large positive (population) effects in one-half of a collection of studies, and large negative (population) effects in the other half of a collection of studies. Then the representation of the overall effect of the treatment as zero is obviously misleading, since all the studies

actually have underlying effects that are different from zero.

The homogeneity of the effect sizes was tested using the *Q statistical test* developed by Hedges and Olkin (1985) which weights an overall effect size “by the inverse of its variance to provide a more efficient estimate of true population effects” (Durlak & Wells, 1998, p. 779). The null hypothesis of the *Q statistic* is that all of the effect sizes in the sample are equal $H_o: \delta_1 = \delta_2 = \dots = \delta_k$ (δ_i = the weighted effect size)

(Hedges & Olkin, 1985, p. 122). In practice the weighted effect size is approximated by substituting d for δ (Hedges & Olkin, 1985, p. 86).

The *Q statistic* was calculated by determining “the sum of squares of the d_i (weighted effect size) about the weighted mean d_t , where the i th square is weighted by the reciprocal of the estimated variance of d_i ” (Hedges & Olkin, 1985, p. 123). Hedges and Olkin (1985) provided a formula for the calculation of the estimated variance of the effect size, $\hat{\sigma}^2(d_i)$ on page 86:
$$\hat{\sigma}^2(d) = \frac{n^E + n^C}{n^E n^C} + \frac{d^2}{2(n^E + n^C)}$$

(where n^E = the sample size of the intervention group; n^C = the sample size of the comparison group; and d = the weighted effect size).

The *Q statistic* equation is provided on p. 127:

$$Q = \sum_{i=1}^k \frac{d_i^2}{\hat{\sigma}^2(d_i)} - \frac{\left(\sum_{i=1}^k d_i\right)^2}{\sum_{i=1}^k \frac{1}{\hat{\sigma}^2(d_i)}}$$

(where d_i = weighted effect size).

Once the Q statistic is calculated, it is compared to the 95-percent critical value of the chi-square distribution (with n-1 degrees of freedom). If Q exceeds the critical value then the null hypothesis (that the effect sizes of all studies are derived from the same population) is rejected. If the null hypothesis is rejected it is necessary to proceed to the next step.

The next step in model testing is to use moderator variables (variables which were identified in a priori hypotheses as possibly having an impact on the effectiveness of interventions) to attempt to divide the group of studies into homogeneous subgroups. In order to test models using moderator variables, two further types of Q statistic must be calculated:

1. **Q_w** (the within-group fit statistic). This is calculated using the same equation as that of the overall Q statistic. This test allows the determination of whether or not a subgroup, for example, of universal/selective programs which employ an ecological model do, in fact, share a common effect size. If the Q value is significant then this subgroup is actually a heterogeneous, or dissimilar, group and

the model will need to be adjusted accordingly.

2. Q_b (the between-group fit statistic). $Q_B = Q_T - Q_W$ This test allows the determination of whether or not the subgroups are significantly different from one another. If the Q_B value is not significant, then the subgroups are actually similar rather than distinct and the model will need to be adjusted accordingly.

Confidence intervals were calculated for effect size means. This allows for the examination of the significance of mean effects (Durlak & Wells, 1998). Subgroup confidence intervals which do not overlap indicate that subgroup means are significantly different from one another. Confidence intervals which do not include zero indicate that the mean effect sizes are significantly different from zero. The equation used to calculate

confidence intervals is $\bar{x} \pm \frac{t_{\alpha}}{2} \left(\frac{sd}{\sqrt{n}} \right)$ (where $\frac{t_{\alpha}}{2}$ = the critical t statistic at $p=.025$; and sd

= the standard deviation). In order to use this equation, the assumption of normality must not be violated so normal probability plots were run for all obtained means. The results indicated that the assumption of normality can be accepted (see Appendix B for an example).

Model Testing Flowchart

Figure 1

Outliers

The identification and examination of outliers is an important step in conducting a meta-analysis (Durlak & Lipsey, 1991; Hedges & Olkin, 1985; Hunter & Schmidt, 1990; Light & Pillemer, 1984; Rosenthal, 1995). There are a variety of suggested methods for dealing with identified outliers including examining them for their influence on homogeneity (Hedges & Olkin, 1985), excluding them from the data (Hunter & Schmidt, 1990), and inspecting the extreme studies for variables that may account for their excessively high or low effect sizes (Light & Pillemer, 1984).

For the purposes of this thesis I decided that identified outliers would first be examined for their influence on homogeneity and excluded *only if* a significant influence was found. Lastly, I would examine the moderator variables of outlying studies for possible clues as to their influence on the extreme effect sizes.

Outliers were identified through looking for effect sizes which were more than two standard deviations above or below the mean as well as an examination of a stem and leaf plot of effect sizes (see p. 54).

RESULTS

Descriptive Information

Most of the participants had prenatal and/or preschool-aged children (57%) and interventions tended to have either predominantly black (32%) or predominantly white (20%) participants. A large majority of intervention participants had low socio-economic status (75%) and most interventions were not limited to working with first-time mothers (91%). See Table III for descriptive characteristics of participants.

The three most highly represented type of interventions examined in this thesis are home visiting (41%), intensive family preservation (IFPS) (18%), and multi-component (proactive) (11%). Most interventions were selective (52%) and relied on professional and/or paraprofessional helpers (68%). Thirty-six percent (36%) of the interventions were coded as having a strengths-based approach; 41% were coded as having an ecological framework; and 32% were coded as having a high level of participant involvement in program planning and implementation. Most of the interventions occurred in the participants' homes (68%). Interventions had a mean of 54 visits (range: 3-536), a mean sample size of 204 (range: 18-1536), and a mean of six program components (range: 2-11). See Table IV for descriptive characteristics of interventions.

The types of intervention components most likely to be offered were parent training (96%), home visiting (80%), child development information (80%), and parent-child interaction (79%). See Table V for information about components offered.

Effect sizes were calculated primarily using chi square (50%), means and standard deviations (25%), and F statistics (11%). Most studies reported outcomes only at post-intervention (52%). There was a mean of five effect sizes calculated per study (range: 1-33), and the mean methodology score was 15 (range: 1-25). Most studies were from journals (70%). See Table VI for methodology information and see Appendix A, pp. 124-126 for details on how the methodology score was calculated.

The total mean weighted effect size was .41. Mutual aid (reactive) interventions had the highest effect size (.61, although this was based on only two studies) followed by multi-component (proactive) interventions (.56) and home visiting interventions (.41).

Media (proactive) interventions had the lowest effect size (.13). See Table VII for a summary of weighted effect sizes. Also, see Appendix C for a list of studies included in the meta-analysis and their individual effect sizes.

Cohen (1977) suggested that effect sizes at a .2 level should be considered small, medium effect sizes are at a .5 level and large effect sizes are at a .8 level. Therefore the mean weighted effect size of the combined studies in this thesis (.41) can be considered to be at a medium level.

Fail-safe n

As discussed in the Methods section it is necessary to assess the robustness of the sample of studies obtained in the search. In other words, to determine the number of studies with non-significant findings that, if added to the sample, would reduce the combined effect size to a selected level. This was done through the use of the “fail-safe n” formula. The calculation formula is as follows (Hedges & Olkin, 1985, p. 306):

$$k_o = k(\bar{d} - d_c) / d_c \quad (\text{where } k_o = \text{the number of studies necessary to reduce the observed}$$

average effect size to a negligible size; k = the number of studies in the sample [i.e., 56];

$\bar{d}$ = the mean effect size of the sample [i.e., .41]; and d_c = a selected negligible effect

size [i.e., .2]).

Using the above formula it was discovered that in order to reduce the mean effect size of the combined studies to a small (.2) effect size, 59 studies with non-significant findings would need to be added to the sample. It is probably safe to conclude that there

are not 59 missing studies with null results and therefore the findings can be considered to be robust.

Table III

Descriptive Characteristics of Participants

Variable	n	%
Age		
Prenatal and/or preschool	32	57.1
Prenatal and/or preschool and school-age	18	32.2
School-age	3	5.4
Not reported	3	5.4
Ethnicity		
Predominantly black	18	32.1
Predominantly white	11	19.6
Mixed ethnicity	12	3.6
Not reported	13	23.2
Socio-economic status		
Low	42	75.0
Mixed	5	8.9
Not reported	9	16.1
First-time mothers		
No	51	91.1
Yes	5	8.9

Table IV**Descriptive Characteristics of Interventions**

Variable	n	%
Type of program		
Home visiting (proactive)	23	41.1
Multi-component (proactive)	6	10.7
Mutual aid (proactive)	3	5.4
Media (proactive)	2	3.6
Intensive family preservation (reactive)	10	17.9
Multi-component (reactive)	5	8.9
Mutual aid (reactive)	2	3.6
Parent training (reactive)	5	8.9
Program category		
Universal	5	8.9
Selective	29	51.8
Indicated	22	39.3
Helpers		
Formal (professionals and/or paraprofessionals)	38	67.9
Informal (volunteers)	2	3.6
Mixed (both formal and informal)	3	5.4
Not reported	13	23.2
Strengths-based		
No	25	44.6
Limited	7	12.5
Yes	20	35.7
Uncertain	4	7.1

Variable	n	%
Ecological		
Micro-level	32	57.1
Ecological	23	41.1
Uncertain	1	1.8
Level of participant involvement		
None	23	41.1
Low	10	17.9
High	18	32.1
Uncertain	5	8.9
Setting of intervention		
Home	38	67.9
Home & agency	6	10.7
Agency	3	5.4
Variety	3	5.4
Nursery	2	3.6
Community	1	1.8
Pediatrician's office	1	1.8
Hospital	1	1.8
Not reported	1	1.8

Variable		n	%
Length of intervention			
0-6 months		22	39.3
7-12 months		11	19.6
13-18 months		7	12.5
19-24 months		6	10.7
25-30 months		2	3.6
31-36 months		2	3.6
55-60 months		3	5.4
>60 months		1	1.8
Not reported		2	3.6
	Range	Mean	SD
Number of visits during intervention	3-536	53.59	94.59
Sample size	18-1536	204.71	267.78
# of components	2-11	6.02	2.50

Table V**Components of Interventions**

Component	n	%
Parent training	54	96.4
Home visiting	45	80.4
Child development information	45	80.4
Parent-child interaction	44	78.6
Social support	32	57.2
Concrete needs	32	57.1
Education/work	24	42.9
Child care	20	35.7
Parents' group sessions	17	30.3
Family planning	13	23.2
Children's group sessions	8	14.3

Table VI**Methodology**

Variable		n	%
How effect sizes were calculated			
Chisquare		28	50.0
Means and standard deviations		14	25.0
F statistic		6	10.7
t statistic		3	5.4
Regression		2	3.6
Means/standard deviations and chisquare		1	1.8
F statistic and chisquare		1	1.8
t statistic and chisquare		1	1.8
Source of publication			
Journal		39	69.6
Book		9	16.1
Report		8	14.3
Assessment periods			
Post only		29	51.79
Follow-up only		9	16.07
Post & follow-up		18	32.14
	Range	Mean	SD
Number of effect sizes calculated per study	1-33	4.86	6.05
Methodology score	1-25	15.00	4.95

Table VIIWeighted Effect Sizes

Program type	Effect size (post)	Effect size (follow-up)	Effect size (total)
Home visiting (proactive)	.378	.493	.406
Multi-component (proactive)	.470	.581	.578
Mutual aid (proactive)	.286	.531	.375
Media (proactive)	.125	---	.125
IFPS (reactive)	.500	.350	.382
Multi-component (reactive)	.406	.219	.369
Mutual aid (reactive)	.748	.607	.613
Parent training (reactive)	.357	.246	.340

Rosenthal (1995) outlined the advantages of the use of a stem-and-leaf plot. "As a single example of an often useful visual display, Tukey's stem-and-leaf display is a versatile picture of data that perfectly describes the distribution of results and retains each of the recorded effect sizes" (p. 186). The digits in the "stem" column represent the first numbers in the effect size and each digit in the "leaf" column represents the subsequent number in the effect size. Therefore, if there are seven digits in the "leaf" column they represent seven separate effect sizes, each beginning with the digits in the "stem" column. In the following stem-and-leaf plot the stem width is .10 which informs us that the decimal place belongs between the two digits. Therefore, the first row should be understood as - 0.14 and the last row as 1.42. The plot below reveals that the effect sizes, for the most part, cluster between -.14 and .99 with two inflated effect sizes (1.10 and 1.42). These

two effect sizes are the same ones that were identified as being outliers by being more than two standard deviations above the mean.

Table VIII

Stem-and-Leaf Plot of Unweighted Effect Sizes (N=56)

Stem	&	Leaf
-01	.	4
00	.	-345+2559
01	.	1224467888
02	.	2223688
03	.	12679
04	.	155677
05	.	25668889
06	.	35
07	.	4
08	.	78
09	.	03789
10	.	
11	.	0
12	.	
13	.	
14	.	2

Model Testing

A three step analysis process was used in order to find patterns or “models” among the 56 studies (see Figure I, p. 43). In *Step 1* the total sample was tested for homogeneity and moderator variables were examined across all 56 studies. Based on the findings in *Step 1*, *Step 2* examined moderator variables within the subgroup of program types (i.e., home visiting, multi-component [proactive], and intensive family preservation programs). In *Step 3* these program types were further subdivided into type of outcome construct used in the assessment (i.e., abuse/ neglect, parent behaviour, HOME, or placement rates)

and examined through moderator variables.

It is important to emphasize that *Step 1* is an examination of variables *across all studies* regardless of program type or outcomes measured. Although *Step 2* takes into account the type of program it also does not consider which outcomes were measured. Therefore *Steps 1* and *2* should be seen as preliminary analyses, leading up to *Step 3* which is the analysis based on the research framework outlined earlier in this thesis. *Step 3* involves an examination of effect sizes, taking into account both the type of program and outcomes measured. This is an important distinction to make because different types of programs tend to measure particular outcomes which vary widely on a continuum from direct to indirect measurement of child maltreatment. For example, IFPS programs often measure out-of-home placement rates, while home visiting programs more often measure outcomes such as child maltreatment, and parent attitudes and/or behaviour.

Step 1

The total sample was tested for homogeneity and selected moderator variables were examined for homogeneity (Q) across all 56 studies: participant characteristics (socio-economic status, age, and 1st time mothers), intervention characteristics (type of program, approach [i.e., strengths-based vs. deficit-based], type of helpers, category of program, extent of intervention [ecological vs. micro], length of intervention, setting, level of participant involvement in program planning and implementation, social support, concrete support, total sample size [low/high], number of components [low/high], and number of visits [low/high]), and methodological characteristics [calculation method and methodology score (low/high)].

The overall Q statistic for the sample ($Q_{\text{obtained}}=203.82$) was found to exceed the critical value for the 95% confidence interval with 55 degrees of freedom ($Q_{\text{critical}} = 79.08$) which indicates that it is a heterogeneous sample of studies.

The only significant finding resulting from examination of the moderator variables for the overall effect size (significant differences between-groups and no significant differences within-groups) was in the *type of program* variable (see Figure II). Only three program types (home visiting, multi-component-proactive, and IFPS) indicated significant differences within-groups. This made it necessary to examine these program types further to determine whether there were moderator variables that could account for the heterogeneity of the groups (i.e., are there variables with which the group could be divided in order to create homogeneous groups?).

Table IX
Homogeneity Analyses and Mean Effect Sizes for Moderator Variables (Step 1)

Variable	Qw	M	s.d.	95% CI
Program type				
Home visitation (proactive) (n=23)	97.654*	.412	.342	.323-.501
Multi-component (proactive) (n=6)	21.001*	.560	.524	.200-.920
Mutual aid (proactive) (n=3)	3.653	.375	.317	-.26-1.01
Media (proactive) (n=2)	0.069	.125	.021	-.114-.364
IFPS (reactive) (n=10)	45.283*	.382	.308	.237-.527
Multi-component (reactive) (n=5)	2.049	.369	.101	.284-.454
Mutual aid (reactive) (n=2)	1.939	.613	.346	-3.29-4.51
Parent training (reactive) (n=5)	4.031	.340	.348	.047-.633
	Qb=28.14*			

Weighted Effect Sizes by Type of Program

Program Type

Figure II

Step 2

Possible moderator variables were examined for home visiting, multi-component (proactive) and intensive family preservation (IFPS) program types: participant characteristics (socio-economic status, age), intervention characteristics (approach [i.e., strengths-based vs. deficit-based], ecological, length of intervention, setting, level of participant involvement in program planning and implementation, social support, concrete support, number of components [low/high], length [short/long], and number of visits [low/high]), and methodological characteristics (calculation method).

Two moderator variables were found to have an impact on effect sizes of the home visiting interventions. These were socio-economic status and the method of calculation. Interventions which served only participants with low incomes had lower effect sizes than those which served participants with mixed levels of income (see Figure III). Effect sizes calculated using F statistics (n=3) were highest, followed by those calculated using means and standard deviations (n=7). Effect sizes calculated using chisquares (n=9) were lowest (see Figure IV).

Three moderator variables were found to have an impact on effect sizes of the intensive family preservation interventions. These were socio-economic status, participant involvement and a strengths-based focus (see Figure V). Similar to the home visiting interventions, those which served only participants with low incomes had lower effect sizes than interventions which served participants with mixed levels of income. Effect sizes were low for interventions with no participant involvement in program planning and implementation, and higher for those with a high level of participant involvement. Effect

sizes were low for interventions without a strengths-based approach, higher for those with a limited strengths-based approach, and highest for the one intervention with a strengths-based approach.

There were no significant findings for the multi-component (proactive) interventions.

Table X

Homogeneity Analyses and Mean Effect Sizes for Moderator Variables (Step 2)

Program type and moderator variable	Qw	M	s.d.	95% CI
Home visiting (proactive) Socio-economic status				
Low (n=17)	76.132*	.351	.348	.243-.459
Mixed (n=3)	1.105	.756	.270	.402-1.11
	Qb=19.47*			

Program type and moderator variable	Qw	M	s.d.	95% CI
Home visiting (proactive) Method of calculation				
Mean & s.d. (n=7)	32.194*	.538	.422	.514-.562
Chisquare (n=9)	15.382	.233	.192	.143-.323
F statistic (n=3)	.944	.835	.190	.585-1.09
	Qb=49.13*			

Program type and moderator variable	Qw	M	s.d.	95% CI
IFPS (reactive) Level of participant involvement				
None (n=5)	4.333	.300	.219	.135-.465
Low (n=1)	0	-.050	--	--
High (n=2)	1.398	.767	.306	.014-1.52
	Qb=37.84*			

Program type and moderator variable	Qw	M	s.d.	95% CI
IFPS (reactive) Strengths-based				
No (n=5)	4.333	.300	.219	.135-.465
Limited (n=2)	24.475*	.467	.730	-1.33-2.27
Yes (n=1)	0	.550	--	--
	Qb=31.95*			

Program type and moderator variable	Qw	M	s.d.	95% CI
IFPS (reactive) Socio-economic status				
Low (n=8)	34.673*	.333	.330	.163-.503
Mixed (n=2)	.001	.577	.002	.574-.580
	Qb=10.61*			

Home visiting Effect Size by Socio-economic Status

Figure III

Home visiting

Effect Size by Method of Calculation

Method of calculation

Figure IV

Intensive Family Preservation Services

Effect size by moderator variables

Figure V

Step 3

Effect sizes from the three main types of programs (home visiting, multi-component [proactive] and IFPS) were separated by type of outcome construct used in the assessment (i.e., maltreatment, parent attitude, parent behaviour, HOME, or placement rates). These were examined through moderator variables (ecological framework, number of components, strengths-based approach, level of participant involvement, length of intervention, number of visits, social support, concrete support, and SES).

There were 11 effect sizes calculated for the maltreatment outcome for home visiting interventions. The moderator variables which were found to have an impact on effect sizes were the length of the intervention, the number of visits, the number of components and social support. Effect sizes increased as the length of the intervention increased with the exception of low effect sizes for studies ($n=2$) with an intervention length between 55-60 months (see Figure VI). Effect sizes were low for interventions with 1-12 visits, high for those with 13-32 visits, low again for those with 33-50 visits, and high for the one study which reported more than 50 visits (see Figure VII). Effect sizes were fairly similar for interventions with 1-5 and 6-7 components, lower for interventions with 8-9 components and high for the one intervention with 10-11 components (see Figure VIII). Effect sizes were lower for interventions with a component of social support than for those without a component of social support (see Figure IX).

There were 10 effect sizes calculated for the parent behaviour outcome for home visiting interventions. One moderator variable was found to have an impact on effect sizes: the number of visits. Effect sizes were highest for interventions with 1-12 visits, lowest

for those with 13-50 visits, and in-between for those with more than 100 visits (see Figure X).

There were eight effect sizes calculated for the HOME outcome for home visiting interventions. One moderator variable was found to have an impact on effect sizes: the availability of concrete support. Effect sizes were lower for interventions that addressed the concrete needs of participants than for those which did not address concrete needs (see Figure XI).

There were five effect sizes calculated for the parent behaviour outcome for multi-component interventions. No moderator variables were found to have an impact on effect sizes.

There were nine effect sizes calculated for the placement rate outcome for intensive family preservation (IFPS) interventions. The moderator variables which were found to have an impact on effect sizes were level of participant involvement and social support. Effect sizes were low for interventions with no participant involvement in planning and implementation and higher for those with a high level of participant involvement (see Figure XII). Effect sizes were high for interventions with a component of social support and low for those without a social support component (see Figure XIII).

Table XI**Homogeneity Analyses and Mean Effect Sizes for Moderator Variables (Step 3)**

Program type and moderator variable	Qw	M	s.d.	95% CI
Home visiting - maltreatment construct				
Length of intervention				
1-6 months (n=2)	.064	.025	.035	-.061-.111
13-18 months (n=2)	.161	.212	.103	-.228-.278
19-24 months (n=2)	1.917	.285	.176	-.148-.718
25-30 months (n=2)	7.477*	.304	.303	-.442-1.05
55-60 months (n=2)	.485	.102	.069	-.068-.272
>60 months (n=1)	0	.469	--	--
	Qb=9.93*			

Program type and moderator variable	Qw	M	s.d.	95% CI
Home visiting - maltreatment construct				
# of visits				
1-12 visits (n=3)	.270	.063	.070	-.029-.16
13-32 visits (n=2)	.350	.464	.077	.275-.653
33-50 visits (n=3)	.417	.101	.054	.030-.172
> 50 visits (n=1)	0	.469	--	--
	Qb=18.80*			

Program type and moderator variable	Qw	M	s.d.	95% CI
Home visiting - maltreatment construct # of components				
1-5 components (n=4)	4.021	.221	.159	.072-.370
6-7 components (n=3)	7.833*	.240	.245	-.081-.561
8-9 components (n=3)	.680	.083	.080	-.022-.188
10-11 components (n=1)	0	.469	--	--
	Qb=7.50*			

Program type and moderator variable	Qw	M	s.d.	95% CI
Home visiting - maltreatment construct Social support				
No (n=5)	7.258	.280	.191	.136-.423
Yes (n=4)	.0003	.113	.051	.065-.161
If identified (n=2)	5.773*	.235	.332	-.582-1.05
	Qb=7.00*			

Program type and moderator variable	Qw	M	s.d.	95% CI
Home visiting - parent behaviour construct # of visits				
1-12 visits (n=2)	.586	1.109	.272	.440-1.78
13-50 visits (n=4)	6.165	.268	.291	-.005-.541
>50 visits (n=2)	5.039	.574	.561	-.806-1.95
	Qb=15.41*			

Program type and moderator variable	Qw	M	s.d.	95% CI
Home visiting - HOME Concrete support				
No (n=3)	.518	.790	.150	.593-.987
Yes (n=4)	1.238	.429	.122	.315-.543
	Qb=18.02*			

Program type and moderator variable	Qw	M	s.d.	95% CI
IFPS - placement rates construct Participant involvement				
None (n=5)	5.095	.299	.219	.134-.464
High (n=2)	1.398	.767	.306	.014-1.52
	Qb=9.94*			

Program type and moderator variable	Qw	M	s.d.	95% CI
IFPS - placement rates construct Social support				
No (n=4)	1.938	.219	.174	.056-.219
Yes (n=5)	7.242	.598	.244	.415-.781
	Qb=8.96*			

Home Visiting Maltreatment Outcome

Length of intervention

Figure VI

Home Visiting Maltreatment Outcome

Figure VII

Home Visiting Maltreatment Outcome

of components
Figure VIII

Home Visiting Maltreatment Outcome

Figure IX

Home Visiting Parent Behaviour Outcome

Figure X

Home Visiting - HOME

Figure XI

Intensive Family Preservation Out-of-home Placement Outcome

Level of participant involvement
Figure XII

Intensive Family Preservation Out-of-home Placement Outcome

Social support
Figure XIII

Comparing Post-Intervention and Follow-up Effect Sizes

Of the total sample of 56 studies, 29 reported post-intervention results only, nine reported follow-up results only, and 18 reported both post-intervention and follow-up results. Weighted effect size means were separated into post-intervention and follow-up effect sizes in order to look for patterns.

Follow-up effect sizes were somewhat larger than post-intervention effect sizes for the proactive program types (i.e., home visiting, multi-component, and mutual aid). Conversely, post-intervention effect sizes were somewhat larger than follow-up effect sizes for the reactive program types (i.e., IFPS, multi-component, mutual aid, and parent training) (see Figure XIV).

In examining post and follow-up effect sizes by outcome construct measured, follow-up effect sizes were somewhat larger than post-intervention effect sizes for the maltreatment and parent attitude outcome constructs. The parent behaviour, HOME, and placement rate outcome constructs all had fairly equal post-intervention and follow-up effect sizes (see Figure XV).

A similar trend was found within home visiting programs. Follow-up effect sizes were again somewhat larger than post-intervention effect sizes for the maltreatment outcome construct. The parent attitude, parent behaviour, and HOME outcome constructs had fairly equal post-intervention and follow-up effect sizes (see Figure XVI).

Weighted Effect Sizes by Type of Program

*Figure
XIV*

Weighted effect sizes by outcome construct

Figure XV

Home Visiting Programs

Effect Size by Outcome Construct

Figure XVI

Outliers

Two studies were revealed to be possible outliers (effect sizes were 1.42, and 1.10). One of the studies was a home visiting intervention and one was a multi-component (proactive) intervention.

Homogeneity statistics were calculated with the outlying two studies eliminated from the total sample. It was found that the 54 remaining studies were not a homogenous group even with the elimination of the outliers. Next, homogeneity statistics were calculated for the home visiting studies with the elimination of the outlying home visiting study, and for the multi-component (proactive) studies with the elimination of the outlying multi-component (proactive) study. It was found that the elimination of these studies had no impact and that these subgroups continued to be heterogeneous. Therefore both outliers were included in the analysis of the total sample and also included in the analysis of their respective subgroups.

The outliers were removed for an examination of the effect sizes of outcomes (Figures XV and XVI). This was done because the outliers inflated both the parent attitude and parent behaviour outcomes. The removal of the outliers caused the effect sizes to approach the level of effect sizes of the other outcome constructs but it did not change the results as discussed on page 77.

Moderator variables within the two outlying studies were examined for clues as to the reason these interventions were highly effective. Light and Pillemer (1984, p. 168) urged meta-analytic reviewers to take this step.

After finding outliers that seem important, the reviewer must look

for explanations. Why might this have happened? Is it a consistent or a chance finding? ... It is easy enough to graph outcomes and spot outliers. It is much harder to identify what features distinguish the exceptional studies from the others.

Of the two high-effect-size-studies one was a home visiting intervention and the other was a multi-component intervention; both were proactive. The most notable similarity between the two studies was that they were both universal interventions (i.e., participants were drawn from the entire population rather than an “at-risk” subgroup). Only five studies (9%) of the total sample were universal interventions. Both interventions also began working with participants *before* the baby was born (i.e., prenatally). Outcomes measured included parent behaviour at post-intervention for both studies while one of them also measured parent attitude at post-intervention and parent behaviour at follow-up. There were no similarities among the key moderator variables (i.e., number of components, ecological framework, strengths-based focus, participant involvement in program planning and implementation, length of intervention, number of visits, social support, and concrete support).

Light and Pillemer (1984, p. 96) cautioned that it is important not to place too much emphasis on outliers.

...In any group of outcomes there is bound to be a largest and a smallest, even if there is nothing special about them. By singling out some studies just because they are at the top or bottom, we run the risk of *overcapitalizing on chance*: the programs may not be

really special. The clues they provide about what causes programs to succeed or fail may lead to dead ends. For this reason, we view the analysis of outliers as an *exploratory* aid. It provides ideas rather than definitive tests.

Practical significance of outcomes

Lipsey (1990, pp. 56-61) discussed methods to translate effect sizes into a format which would add to our understanding of the magnitude of the effect. One method is the conversion of the effect size into a percentile. Lipsey (1990, p. 58) provides a chart which supplies the percentiles associated with effect sizes. The overall effect size for this thesis (.41), when converted to a percentile, tells us that outcomes for the intervention group sample exceeds 66% of those in the comparison group.

CONCLUSIONS AND INTERPRETATIONS

In general the findings of this thesis demonstrate that most interventions which aim to promote family wellness and prevent child maltreatment are successful. The overall mean effect size of 56 studies was .41. Only four studies yielded negative effect sizes and none of those were of large magnitude. A mean effect size of .41 compares favourably with mean effect sizes reported in other meta-analytic reviews of prevention programs. Durlak and Wells (1997) reported a mean effect size of .34 for prevention programs for children and youth; Tobler and Stratton (1997) reported a mean effect size of .20 for school-based drug prevention programs; and van Ijzendoorn et al. (1995) reported mean effect sizes

of .58 for maternal sensitivity and .17 for infant-mother attachment.

Green & Hall (1984) as cited in Wolf (1986, p. 53) asserted that “data analysis is an aid to thought, not a substitute.” In this section the results will be discussed with the aim of furthering our understanding of the meaning of these findings particularly in relation to the research questions/ hypotheses. These hypotheses structure the organization of this section.

Research Hypotheses/Questions

Which Program Types Are Most Successful In The Prevention of Child

Maltreatment? What Do The Successful Program Types Have In Common?

Effect sizes of the distinct program types ranged from .13 to .61. In order of effect size magnitude, from largest to smallest, program types are: mutual aid (reactive), multi-component (proactive), home visitation (proactive), IFPS (reactive), mutual aid (proactive), multi-component (reactive), parent training (reactive), and media (proactive). It is important to note that the program types with the largest (mutual aid - reactive) and smallest (media - proactive) effect sizes are both limited to two interventions. The program types with the next highest effect sizes, (multi-component [proactive] and home visiting [proactive]) shared two common features. They are both proactive, and they both begin at birth. Due to the wide diversity of implementation styles and practices within these interventions, as well as large differences among populations served, it would not be particularly informative to draw conclusions based on the overall effect sizes of program types. Examination of the other research hypotheses will involve a more

in-depth discussion of the effectiveness of program types. Only three of the program types (home visiting, IFPS, and multi-component [proactive]) were examined further for reasons described in the Results section.

An examination of post-intervention and follow-up effect sizes revealed a consistent trend in which proactive interventions had larger effect sizes at follow-up than at post-intervention while, conversely, reactive interventions had larger effect sizes at post-intervention than at follow-up. This is a strong indication that while gains made through proactive interventions are sustained, and even increased, over time those made through reactive interventions tend to fade.

Durlak and Wells' (1997) review of proactive interventions reported that of six outcome domains, two had larger effect sizes at follow-up than at post-intervention, one had a larger effect size at post-intervention than at follow-up and one had a similar effect size at both periods of assessment. Durlak and Wells' (1998) review of reactive interventions reported that of three treatment types, one had a larger effect size at post-assessment than at follow-up and two had similar effect sizes at post-assessment and follow-up. The findings of these two reviews, although less clear-cut, also seem to point towards a trend in which gains made through proactive interventions are maintained, or increased, over time while gains made through reactive interventions tend to diminish.

It may be argued that this difference is due to the difference in populations served i.e., perhaps the "high-risk" participants of proactive interventions would not maltreat their child even without intervention, whereas the participants of

reactive interventions have already maltreated their child. However, a revealing distinction is the age of the children at the time of the commencement of the intervention. While proactive interventions tend to work with families with infants, reactive interventions tend to work with families with latency-aged children or teenagers. This is an indication that the timing of the intervention is key.

It is possible that proactive interventions initiate a positive chain of events and thus break the pattern of a downward spiral which may have resulted in child maltreatment. Rutter (1987, p. 329) suggested that “particular attention needs to be paid to the mechanisms operating at key turning points in people’s lives when a risk trajectory may be redirected onto a more adaptive path.”

Lambert and Bergin (1994) explored the maintenance of gains in psychotherapy. They used the term “relapse” to describe therapy gains which fade over time. They emphasized the importance of conducting assessments at follow-up intervals:

There is clear evidence that a portion of patients who are improved at termination do relapse and continue to seek help from a variety of mental health providers, including their former therapists. In fact, several problems such as drug addiction, alcohol abuse, smoking, obesity, and possibly depression are so likely to recur that they are not considered properly studied without data collection one year after treatment (p. 152).

Which Outcomes Are Most Affected By Prevention Programs?

Effect sizes for distinct outcomes measured ranged from .17 to .56. In order of effect size magnitude, from largest to smallest, outcomes were: parent attitude, parent behaviour, HOME, out-of-home placement rates, and child maltreatment. It is interesting to note that effect sizes were largest for more indirect measures of child maltreatment (those that measure family wellness) and smaller for more direct measures (those that measure child maltreatment). The indirect measures tend to be more general, in that a broad base of family wellness behaviours and attitudes are measured as compared to the measurement of the much more specific outcomes of child maltreatment and out-of-home placement.

In their meta-analysis, Durlak and Wells (1997) coded the orientation of outcome measurements as to whether they measured a reduction in problems or an increase in competencies. This distinction is comparable to the distinction between outcomes that measure family wellness (competencies) and those that measure child maltreatment (problems). Durlak and Wells (1997) found that for most program types effect sizes for problems and competencies were similar. However, for the few that were different, the effect sizes for an increase in competencies were larger than those for a decrease in problems.

One possible interpretation for the large effect sizes of indirect outcomes relative to the effect sizes of the direct outcomes is that the interventions examined are more successful in promoting family wellness in the form of a change in attitudes toward parenting, positive parent-child interaction, and a secure and

stimulating home environment, than they are in changing patterns of child maltreatment. It may also be that there is a natural sequence of change such that attitudes, interaction patterns, and the home environment need to change *before* there can be a reduction in patterns of child maltreatment. Thirdly, it should be noted that initial (pre-intervention) rates of child maltreatment and out-of-home placement are low and therefore it is more difficult to demonstrate a change through measuring these as outcomes.

A fourth possible interpretation is that the more indirect measures are more sensitive to subjective biases on the part of either the participants or researchers who want to believe that gains have been made. This conclusion is less likely than the others because most of the studies made use of reliable measures and other strategies to enhance reliability such as having the measures administered by researchers who were unaware of whether respondents were involved in the intervention or were part of the comparison group.

Interventions That Embrace An Ecological Framework Will Be More Successful Than Micro-level Programs

Programs with more than two levels of intervention were coded as being ecological, and all others were coded as being micro-level interventions. No patterns were discovered when mean effect sizes were compared between ecological and micro-level interventions. This was the case for all levels of analysis (i.e., overall [step 1], by program type [step 2], and by program type and outcome measured [step 3]).

The number of components involved in each intervention was also coded. The fewest number of components in an intervention was two, while the largest number was 11. It can be argued that interventions with a large number of components are more likely to be ecological than those with a small number of components. However, it may also be the case that it is not so much the quantity of components offered as the interaction between the types of components that are offered that have an impact on family wellness and child maltreatment. One pattern emerged in the examination of a number of program components. For home visiting interventions measuring child maltreatment as an outcome, the one intervention which used 11 components had a noticeably higher effect size than interventions which used fewer than 10 components. Because the high effect size was based on only one intervention, it is necessary to be cautious about drawing conclusions based on this finding.

Overall, the findings of this thesis did not strongly support the hypothesis that interventions which embraced an ecological framework were more successful than micro-level interventions. However, it is interesting to note that multi-component (proactive) interventions, all of which were coded as being ecological, had the second highest effect size of all program types.

The finding in relation to this hypothesis is particularly disappointing in relation to the findings of Yoshikawa (1994) as having “found that the programs that are most effective in preventing juvenile delinquency are those that have an ecological design” (p. 78). However, in their review of primary prevention mental

health programs, Durlak and Wells (1997), found that environment-centred programs did not have larger effect sizes than person-centred programs.

Interventions That Have An Empowerment/Strengths-based Focus Will Be More Successful Than Those That Are Expert-driven/Deficit-based

Two moderator variables were coded to examine the effectiveness of an empowerment focus. These variables were the level of participant involvement in program planning and implementation and a strengths-based philosophy.

Patterns emerged which demonstrated that both of these variables had an impact on the effect sizes of intensive family preservation (IFPS) interventions. IFPS interventions with no participant involvement had a low mean effect size compared with interventions with a high level of participant involvement. Also, IFPS interventions which were not strengths-based had a low mean effect size compared with interventions with a limited strengths-based focus. Interventions with a full strengths-based focus had the highest mean effect size.

This is a strong indication that an empowerment/strengths-based focus increases the effectiveness of IFPS interventions. Similar patterns were not found for home visiting interventions. This may be due to the distinction between proactive and reactive interventions. By their nature, proactive interventions may have more of an empowerment focus than reactive interventions because the participants have more demonstrated competencies and are in a stronger position to help direct the course of the intervention. If this is the case then the differences between reactive interventions which have a strengths-based focus and which

encourage participant involvement and those that do not may be much more pronounced than for the same differences between proactive interventions.

Dunst et al. (1990, p. 30) described the potency of an empowerment/strengths-based focus which may account for its positive impact on IFPS interventions:

Moreover, by building on strengths rather than rectifying deficits, people become more adaptive in not only dealing with difficult life events but in setting growth-oriented goals and achieving personal aspirations. Operationalization of these characteristics conveys the message that people, all people, have the capacity to better themselves.

Rappaport (1987, p. 142) stated that “Empowerment suggests a belief in the power of people to be both the masters of their own fate and involved in the life of their several communities.” These assertions were born out in the analysis of effects for IFPS interventions.

Interventions With A Longer *Duration* and/or A Higher Level of *Intensity* Will Be More Successful Than Those That Are Short In Duration and/or Have A Low Level Of Intensity

The length of each intervention was coded, in six month categories, in order to examine “duration” and the number of visits during the intervention served as the moderator variable for “intensity.” A pattern emerged in which, for home visiting interventions which measured child maltreatment as an outcome,

effect sizes increased as the length of the intervention increased. There was an exception to this pattern in which two interventions, which were 55-60 months in length, had a low mean effect size. Both of these interventions (Centre on Child Abuse Prevention Research, National Committee to Prevent Child Abuse, 1996; Galano & Huntington, 1997) measured multiple outcomes, including child maltreatment. Although maltreatment effect sizes for these interventions were small, effect sizes for some of the other outcome constructs were large (i.e., parent behaviour; HOME).

The interventions of the shortest duration (1-6 months) had a noticeably low mean effect size relative to the other categories. Other researchers have also found that prevention programs which are longer in duration are more effective (Blanchet et al., 1993; Yoshikawa, 1994). It is evident that home visiting programs with a longer duration are more effective in reducing child maltreatment than are those with a short duration.

Although some findings emerged for the number of visits for home visiting interventions which measured child maltreatment and parent behaviour, the patterns were inconsistent. For home visiting interventions which measured child maltreatment, the number of visits was divided into four categories. The group with the lowest number of visits had a low mean effect size; the group with the next lowest number of visits had a relatively high mean effect size; the group with the second highest number of visits had a low mean effect size (Centre on Child Abuse Prevention Research, National Committee to Prevent Child Abuse, 1996;

Kitzman et al., 1997; Olds et al., 1986); and the group with the highest number of visits had a high mean effect size. For home visiting interventions which measured parent behaviour, the number of visits was divided into three categories. The group with the lowest number of visits had a high mean effect size; the group with the next lowest number of visits had a relatively low mean effect size; and the group with the highest number of visits had a mean effect size that was in-between the mean of the effect sizes of the other two groups.

Clearly, the findings for the impact of intensity, measured by the number of visits, are equivocal. It cannot be concluded, as stated in the hypothesis, that interventions with a higher level of intensity will be more successful than those that have a low level of intensity. In their meta-analytic review of school-based drug prevention programs Tobler and Stratton (1997) found that program intensity did not have an impact on effect sizes.

Neither duration nor intensity were found to have an impact on effect sizes for IFPS interventions. This is because IFPS intervention are all of similar duration (1-6 months) and intensity.

Interventions That Involve A Component Of Social Or Mutual Support As A Helping Approach And Therefore Build On Informal Support Networks Will Be More Successful Than Those That Rely Solely On A Professional Helping Approach

Home visiting interventions which measured child maltreatment and intensive family preservation (IFPS) interventions which measured out-of-home

placement both demonstrated patterns in which the inclusion of social support as a program component impacted on effect sizes. Surprisingly, the patterns for the two different types of interventions were opposite.

For home visiting interventions which measured child maltreatment, interventions which included a component of social support had a lower mean effect size than those which did not. This is a surprising finding which is difficult to understand. One possible explanation is that perhaps because participants are involved in a support network, maltreatment is more likely to be observed and reported by other members.

For IFPS interventions which measured out-of-home placement, interventions which included a component of social support had a higher mean effect size than those which did not. This finding supports my hypothesis and is also in accordance with the findings of many other studies which examined the impact of social support on families. Peirson, Laurendeau, and Chamberland (1999, p. 79) cited numerous studies which found “effective parenting and healthy family functioning to be compromised by limited social ties to extended family, neighbours, and informal community resources” as well as a “a strong connection between parents’ social isolation and rates of child maltreatment.”

Interventions Which Offer *Concrete Support* Will Be More Successful Than Those Which Concentrate Solely On Parenting Support

Home visiting interventions which used the HOME as a measurement outcome demonstrated a pattern in which the inclusion of concrete support as a

program component had an impact on effect sizes. Those interventions which included a component of concrete support had a lower mean effect size than those which did not.

One possible explanation for this finding, which runs counter to my hypothesis, is that perhaps concrete support (i.e., financial aid, housing, food, etc.) was more likely to be offered to participants who demonstrated a need for this type of aid. Research has established that child maltreatment is associated with socioeconomic stress (Leventhal, 1996; Trocmé et al., 1995; Wolfe, 1996). Effecting change in the home environment of participants who are experiencing greater levels of stress around meeting basic needs is probably a longer process than effecting change in the home environment of participants who already have their basic needs met. Van Ijzendoorn et al. (1995) suggested that “...when urgent ‘survival’ needs dominate the intervention, it may well be at the cost of the effectiveness at the level of [the original focus of the intervention]” (p. 176). Also, the extent and type of concrete support offered by interventions usually consisted of emergency financial aid, parenting relief and support in finding housing. It is possible that the support provided by the interventions was limited to an extent that although it identified the families most in need, it did little to alleviate the socioeconomic stress. No further patterns emerged in which concrete support was a moderator of other relationships.

Additional Findings

Both home visiting and intensive family preservation interventions achieved

higher effect sizes with groups of participants having mixed socio-economic status than those working solely with groups of participants having low socio-economic status. This finding may again reflect a struggle in which participants are trying to cope with basic needs before they can begin to benefit from the intervention. It is apparent that interventions for the promotion of family wellness and the prevention of child maltreatment cannot alleviate conditions of poverty and that the issue of poverty must be addressed before patterns of child maltreatment can be changed.

As argued by Febbraro (1994, p. 56):

Moreover, feminist analysts of social policy urge that what is needed is a well-articulated system of policies that address the concerns of single-mother families and families in general, policies which include provisions for national child care, pay and employment equity, more flexible work/family arrangements, extended parental leave, changes in tax laws (e.g., regarding child support), universal health care, universal access to safe housing, higher rates for social assistance, higher minimum wages, and wages for stay-at-home mothers. ... In the context of child maltreatment, such strategies would strive to improve the position of women in society, to eliminate women's feelings of powerlessness, and thus, their "need" to wield power over those with even less power.

In Step 2 of the analysis it was reported that the method of calculating

effect sizes was a moderator variable. Effect sizes calculated using F statistics were highest, followed by those calculated using means and standard deviations. Effect sizes calculated using chisquares were lowest (see Figure IV). This finding is potentially problematic in that if different methods of calculating effect sizes impact on the magnitude of the effect sizes then the results may be confounded by the method of calculation used and therefore may not, in fact, be an accurate assessment of the effectiveness of the intervention. Ray and Shadish (1996) examined the accuracy of different methods of estimating effect sizes. They found that some methods resulted in significantly different results.

Clearly, it would be desirable to keep track of the effect size computation method used, to report differences that result from the use of different effect size estimation methods, to acknowledge the potential biasing of statistical tests that may result from combining these methods, and to explore the possibility that these computational differences might be confounded with other study features in a way that makes those features artifactually significant predictors of outcome (p. 1322).

However, Ray and Shadish (1996, p. 1316) list computations of effect size from t and F statistics as “methods which are algebraically equivalent to d.” These methods then are not considered estimations and should not result in computational differences. Ray and Shadish (1996) do not, unfortunately, discuss the calculation of effect sizes from chi squares either as algebraic equivalents or as

estimates. Other meta-analytic studies use a variety of methods for calculating effect sizes (DuPaul & Eckert, 1997; Durlak & Wells, 1997; Durlak & Wells, 1998; Lipsey, 1992).

A plausible interpretation of the different magnitudes of effect size for the different methods of calculation can be found in the discussion of the outcomes measured. It was found that effect sizes were largest for more indirect measures of child maltreatment (i.e., parent attitude; parent behaviour; HOME) and smaller for more direct measures (i.e., maltreatment; out-of-home placement). The results of the indirect measures were generally reported as means and standard deviations, F statistics, or t statistics while the results of the direct measures were generally reported as counts or proportions from which chi squares could be calculated. Therefore the method of calculation variable was probably confounded by the outcome variable and it is likely that if the method of calculation had been more evenly distributed across the different outcomes it would not have been found to be a significant moderator variable.

It is important to consider the potential moderator variables that did not fit into the model. Some of these were participant characteristics such as age of child, and whether or not participants were first time mothers; intervention characteristics such as type of helpers, the category of program (universal, selective, or indicated), the setting of the intervention, and the total sample size (low/high); and the methodology score (low/high).

Limitations

Wolf (1986, pp. 53-54) discussed four common limitations of meta-analyses:

1. **Oversimplification of the results.** Wolf (1986) suggested that a method of avoiding the oversimplification of results is to examine possible mediating factors. Based on the fairly extensive examination of moderator variables I believe that the oversimplification of results is not a limitation of this thesis.
2. **Mixing studies that measure “apples” and those that measure “oranges”.** Wolf (1986) suggested that this possible pitfall can be avoided by coding apples as apples and oranges as oranges. Outcomes measured were coded, and the differences examined in this thesis, and therefore I believe that this, also, is not a limitation.
3. **Errors in coding or calculating effect sizes.** A meta-analysis relies on information provided by the authors of studies and the accuracy or completeness of coding is often limited by the lack of detail provided. Two of the most celebrated home visiting interventions included in this thesis (Kitzman et al., 1997; Olds & Korfmacher, 1998) reported results that demonstrated significant success. However most of the results were not reported in a format from which effect sizes could be calculated. Therefore the effect sizes may not accurately reflect the extent of the success achieved by these interventions. Nelson, Laurendeau et al. (1999) suggested other elements of successful prevention programs, which I was

unable to code for due to the lack of detail provided in most studies. These elements were: quality of relationships between staff and participants, training and competency of intervention staff, and programs which are community-owned. Also, some interesting interventions were not included in this meta-analysis because they did not provide any results in a format from which effect sizes could be calculated. Lastly, the possibility of human error in coding and the calculation of effect sizes must be acknowledged.

4. Results based on a small number of studies or a heterogeneous group of studies. Although the initial number of 56 studies is a sufficient sample on which to conduct a meta-analysis, the analysis of sub-categories, particularly in Step 3, resulted in much smaller sample sizes. A notable limitation of this thesis is that some of the results in Step 3 are based on sample sizes as small as one or two studies. This limitation suggests that these findings should be interpreted with caution and should not, perhaps, be generalized to other interventions. The homogeneity testing approach used in this thesis provides an assurance that results are not based on a heterogeneous group of studies.

As discussed under Additional Findings (p. 96), the difference in effect size magnitude achieved by different methods of calculation may have actually been due to distinctions in the outcomes being measured. However, this interpretation is not a certainty and therefore the possibility that the method of calculation used

was a confounding variable must be considered as a limitation of this thesis.

Directions For Future Research

A beneficial further line of enquiry would be an examination of some of the elements which I was unable to code for due to the lack of detail provided, such as the impact of relationships between staff and community members, and the impact of programs which are community-owned.

Measures for some types of interventions, particularly multi-component interventions, are limited to outcomes of family wellness rather than more direct measures of child maltreatment. Other types of interventions such as IFPS interventions, measure out-of-home placement but do not tend to examine outcomes related to family wellness. Future evaluations should measure both direct and indirect measures of child maltreatment.

It would also be interesting to further explore the protective influences generated through proactive interventions. Which influences are most effective in breaking the pattern of a downward spiral? Does a change in attitudes toward parenting, positive parent-child interaction, and a secure and stimulating home environment, eventually lead to a change in patterns of child maltreatment?

Evaluations should conduct assessments at follow-up periods to determine whether gains are maintained, enhanced or fade over time. Informal types of interventions such as mutual aid and family resource centres should conduct controlled trial designs so that their effectiveness can be measured and reported.

Program Planning

The findings of this thesis strongly indicate that IFPS interventions with an empowerment/strengths-based focus are more effective than those which are expert-driven and deficit-based. Program planners should structure IFPS interventions such that they are flexible, responsive, consumer-driven, and strengths-based.

The impact of program components differs according to the type of program and the competencies and needs of participants. Durlak and Wells (1997) discuss the need to avoid the “uniformity myth:”

Primary prevention is not a single uniform strategy that achieves uniform results, but a collection of distinct approaches that are likely to vary in outcome depending on the level of intervention, target population, program objectives, and specific circumstances of the intervention. It is important to maintain such distinctions whenever possible and investigate the factors that contribute to program outcomes in each case (p. 138).

Policy Implications

Two key implications stand out for policy makers. One is that based on the maintenance and enhancement of gains over time emphasis should be placed on the implementation of proactive, rather than reactive interventions. A recent report by Dr. Fraser Mustard and Margaret McCain emphasized the importance of prevention and recommended directing resources into programs for preschool

children (Chamberlain, 1999). Four specific recommendations were: to promote early childhood development centres; to increase spending on preschool children; to focus on programs that are available to all income levels (i.e., universal programs); and to encourage community groups and businesses to become involved in program implementation.

Secondly, it is apparent that these types of interventions are not a cure for poverty. Stresses due to poverty have been linked to child maltreatment and this is only one of many reasons that policies which work toward the reduction of poverty should be given priority.

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APPENDICES

Appendix A

Coding Definitions

STUDY	Author(s) of the study.
PROGTYPE	<p>Type of program. Choices are:</p> <ol style="list-style-type: none"> 1. home visiting (proactive) -these interventions centre around the relationship between home visitors and mothers. Home visitors provide support and information to mothers in areas such as child health and development, mother-child attachment, and parenting strategies. There is also sometimes a focus on individual growth in social, occupational, and educational realms. 2. multi-component (proactive) -these interventions provide a variety of different program components, including family support, social network building, and community development. 3. mutual aid (proactive) -these interventions focus on building the social network of parents. Helpers introduce participants to informal sources of support, and promote involvement with community resources. 4. media (proactive) -these programs provide parenting information through media (such as newsletters). The focus is often on developmental stages of childhood and parenting strategies. 5. intensive family preservation services (reactive) (IFPS) -these are home visiting programs for families in which abuse has already occurred. The focus is on the prevention of further maltreatment (of the child or younger siblings), or out-of-home placement.

6. multi-component (reactive) -similar to the *proactive* multi-component interventions these interventions provide a variety of different program components, including family support, social network building, and community development. However reactive interventions provide support for families in which abuse has already occurred.
7. mutual aid (reactive) - similar to the *proactive* mutual aid interventions these interventions focus on building the social network of parents. Helpers introduce participants to informal sources of support, and promote involvement with community resources. However reactive interventions provide support for families in which abuse has already occurred.
8. parent training (reactive) -these interventions focus on teaching parenting strategies, and helping parents to improve their skills in managing their children's behaviour. The chosen format for parent training interventions is usually group sessions. These interventions provide support for families in which abuse has already occurred.

PROGCAT

Category of program. Universal interventions focus on everyone in the population, selective interventions focus on parents who are considered to be at-risk of abusing their children, and indicated interventions focus on families in which abuse has already taken place.

- 1 universal
- 2 selective
- 3 indicated

TIME

Time of first outcome measurement collection. The time is measured from the beginning of the intervention.

- 1 0-6mths
- 2 7-12mths
- 3 13-18mths
- 4 19-24mths
- 5 25-30mths
- 6 31-36mths
- 7 37-42mths

- 8 43-48mths
- 9 49-54mths
- 10 55-60mths
- 11 >60mths

TIME2

Time of second outcome measurement collection. The time is measured from the beginning of the intervention.

- 1 0-6mths
- 2 7-12mths
- 3 13-18mths
- 4 19-24mths
- 5 25-30mths
- 6 31-36mths
- 7 37-42mths
- 8 43-48mths
- 9 49-54mths
- 10 55-60mths
- 11 >60mths

TIME3

Time of third outcome measurement collection. The time is measured from the beginning of the intervention.

- 1 0-6mths
- 2 7-12mths
- 3 13-18mths
- 4 19-24mths
- 5 25-30mths
- 6 31-36mths
- 7 37-42mths
- 8 43-48mths
- 9 49-54mths
- 10 55-60mths
- 11 >60mths

TIME4

Time of fourth outcome measurement collection. The time is measured from the beginning of the intervention.

- 1 0-6mths
- 2 7-12mths
- 3 13-18mths
- 4 19-24mths
- 5 25-30mths
- 6 31-36mths
- 7 37-42mths
- 8 43-48mths

	9	49-54mths
	10	55-60mths
	11	>60mths
TIME5	Time of fifth outcome measurement collection. The time is measured from the beginning of the intervention.	
	1	0-6mths
	2	7-12mths
	3	13-18mths
	4	19-24mths
	5	25-30mths
	6	31-36mths
	7	37-42mths
	8	43-48mths
	9	49-54mths
	10	55-60mths
	11	>60mths
EFFPOSAB	Effect size at post-intervention measurement period. The outcome construct is any measurement of incidence of maltreatment including proxy measures such as accidents, or hospitalizations.	
EFFPOSPA	Effect size at post-intervention measurement period. The outcome construct is any measurement of parent attitude towards parenting/child-rearing such as questionnaire responses concerning parenting competencies, and perception of child behaviour.	
EFFPOSPB	Effect size at post-intervention measurement period. The outcome construct is any measurement of parenting behaviour as determined through observations.	
EFFPOSHO	Effect size at post-intervention measurement period. The outcome construct is scores on the HOME (Home Observation for Measurement of the Environment: Caldwell and Bradley, 1979).	
EFFPOSPL	Effect size at post-intervention measurement period. The outcome construct is rates of out-of-home placement.	

EFFFOLAB	Effect size at the first follow-up measurement period. The outcome construct is any measurement of incidence of maltreatment including proxy measures such as accidents, or hospitalizations.
EFFFOLPA	Effect size at the first follow-up measurement period. The outcome construct is any measurement of parent attitude towards parenting/child- rearing such as questionnaire responses concerning parenting competencies, and perception of child behaviour.
EFFFOLPB	Effect size at the first follow-up measurement period. The outcome construct is any measurement of parenting behaviour as determined through observations.
EFFFOLHO	Effect size at the first follow-up measurement period. The outcome construct is scores on the HOME (Home Observation for Measurement of the Environment: Caldwell and Bradley, 1979).
EFFFOLPL	Effect size at the first follow-up measurement period. The outcome construct is rates of out-of-home placement.
EFFFOL2AB	Effect size at the second follow-up measurement period. The outcome construct is any measurement of incidence of maltreatment including proxy measures such as accidents, or hospitalizations.
EFFFOL2PA	Effect size at the second follow-up measurement period. The outcome construct is any measurement of parent attitude towards parenting/child- rearing such as questionnaire responses concerning parenting competencies, and perception of child behaviour.
EFFFOL2PB	Effect size at the second follow-up measurement period. The outcome construct is any measurement of parenting behaviour as determined through observations.
EFFFOL2HO	Effect size at the second follow-up measurement period. The outcome construct is scores on the HOME (Home Observation for Measurement of the Environment: Caldwell and Bradley, 1979).

EFFOL2PL	Effect size at the first follow-up measurement period. The outcome construct is rates of out-of-home placement.
TOTEFF	Total effect size per study.
EFF#	# of effect sizes calculated for each study.
PWEFFAB	Weighted effect size for the maltreatment construct.
PWEFFPA	Weighted effect size for the parent attitude construct.
PWEFFPB	Weighted effect size for the parent behaviour construct.
PWEFFHO	Weighted effect size for the HOME scores construct.
PWEFFPL	Weighted effect size for the out-of-home placement rates construct.
FWEFFAB	Weighted effect size for the maltreatment construct.
FWEFFPA	Weighted effect size for the parent attitude construct.
FWEFFPB	Weighted effect size for the parent behaviour construct.
FWEFFHO	Weighted effect size for the HOME scores construct.
FWEFFPL	Weighted effect size for the out-of-home placement rates construct.
WEFFAB	Weighted effect size for the maltreatment construct.
WEFFPA	Weighted effect size for the parent attitude construct.
WEFFPB	Weighted effect size for the parent behaviour construct.
WEFFHO	Weighted effect size for the HOME scores construct.
WEFFPL	Weighted effect size for the out-of-home placement rates construct.
TOTWEFF	Total weighted effect size per study.
TOTPWEFF	Total post weighted effect size per study.

TOTFWEFF	Total follow-up weighted effect size per study.
HOMOG1	Inverse variance of weighted effect size (d) - for calculating homogeneity.
HOMOG2	Weighted effect size (d) over variance of d - for calculating homogeneity.
HOMOG3	Weighted effect size (d) squared over variance of d - for calculating homogeneity.
H1HVAB	Home visiting studies; maltreatment construct. Inverse variance of weighted effect size (d) - for calculating homogeneity.
H2HVAB	Home visiting studies; maltreatment construct. Weighted effect size (d) over variance of d - for calculating homogeneity.
H3HVAB	Home visiting studies; maltreatment construct. Weighted effect size (d) squared over variance of d - for calculating homogeneity.
H1HVPB	Home visiting studies; parent behaviour construct. Inverse variance of weighted effect size (d) - for calculating homogeneity.
H2HVPB	Home visiting studies; parent behaviour construct. Weighted effect size (d) over variance of d - for calculating homogeneity.
H3HVPB	Home visiting studies; parent behaviour construct. Weighted effect size (d) squared over variance of d - for calculating homogeneity.
H1HVHO	Home visiting studies; HOME construct. Inverse variance of weighted effect size (d) - for calculating homogeneity.
H2HVHO	Home visiting studies; HOME construct. Weighted effect size (d) over variance of d - for calculating homogeneity.

H3HVHO	Home visiting studies; HOME construct. Weighted effect size (d) squared over variance of d - for calculating homogeneity.
H1MCPB	Multi-component (proactive) studies; parent behaviour construct. Inverse variance of weighted effect size (d) - for calculating homogeneity.
H2MCPB	Multi-component (proactive) studies; parent behaviour construct. Weighted effect size (d) over variance of d - for calculating homogeneity.
H3MCPB	Multi-component (proactive) studies; parent behaviour construct. Weighted effect size (d) squared over variance of d - for calculating homogeneity.
H1FPPL	Family preservation studies; placement rate construct. Inverse variance of weighted effect size (d) - for calculating homogeneity.
H2FPPL	Family preservation studies; placement rate construct. Weighted effect size (d) over variance of d - for calculating homogeneity.
H3FPPL	Family preservation studies; placement rate construct. Weighted effect size (d) squared over variance of d - for calculating homogeneity.
AGE	The age range of child participants. Choices are: 1 prenatal 2 preschool 3 school age 4 prenatal & preschool 5 preschool & school age 6 prenatal & preschool & school age 99 not reported
GENDER	The gender of adult participants. Choices are: 1 women (mothers) 2 men (fathers) 3 both 99 not reported

ETHNI	<p>The ethnicity of the participants. “Predominantly” means that the representation of an ethnic group exceeds fifty percent.</p> <ul style="list-style-type: none"> 1 predominantly white 2 predominantly black 3 predominantly aboriginal 4 mixed ethnicity 5 predominantly mexican-american 99 not reported
SES	<p>The socio-economic status of the participants. If the socio-economic status of the participants predominantly (>50%) fits into one coding category then it is coded as such.</p> <ul style="list-style-type: none"> 1 low SES 2 middle SES 3 mixed SES 99 not reported
INTN	<p>The sample size of the intervention group. Sample size used is the one on which the results are based (after attrition).</p>
COMP	<p>The sample size of the comparison group. Sample size used is the one on which the results are based (after attrition).</p>
TOTN	<p>The total sample size. Sample size used is the one on which the results are based (after attrition).</p>
TOTNCAT	<p>The total sample size (categorical variable).</p> <ul style="list-style-type: none"> 1 low (1-100 participants) 2 high (>100 participants)
METHOD	<p>The methodology score. This is based on the validity criteria score devised by MacMillan, H., MacMillan, J., Offord, D., Griffith, L. & MacMillan, A. (1994).</p> <p>Method of sample allocation</p> <ul style="list-style-type: none"> 4 randomized 2 quasi-randomized 0 non-randomized/not stated

Baseline comparison of intervention and comparison groups

- 4 demonstration of similarity between groups or covariate adjustment; data provided
- 3 difference between groups without covariate adjustment; data provided
- 2 statement of similarity between groups; no data provided
- 1 limited comparison of groups (<3 variables)
- 0 no comparison of groups

Inclusion/exclusion criteria clearly defined

- 1 yes
- 0 no

Target population clearly defined

- 1 yes
- 0 no

Follow-up duration

- 4 ≥ 2 years
- 3 >1.5 years to <2 years
- 2 >1 year to ≤ 1.5 years
- 1 >6 months to ≤ 1 year
- 0 ≤ 6 months

Follow-up quality

- 5 $>80\%$ and drop-outs/withdrawals described
- 4 $>80\%$ and drop-outs/withdrawals not described
- 3 $>50\%$ to $\leq 80\%$ and drop-outs/withdrawals described
- 2 $>50\%$ to $\leq 80\%$ and drop-outs/withdrawals not described
- 1 $\leq 50\%$ and drop-outs/withdrawals described
- 0 $\leq 50\%$ and drop-outs/withdrawals not described

Outcome assessment (blinding)

- 2 all outcome measures blind
- 1 majority of outcome measures blind
- 0 few or no outcome measures blind

	Outcome assessment (extent of measurement)
	2 two or more measures of incidence of abuse or associated outcome
	1 one measure only of incidence of abuse or associated outcome
	0 no measure of incidence of abuse or associated outcome
	Reliability of measurement
	2 reliability evident with data provided
	1 reliability described without data provided
	0 no measures of reliability
METHCAT	Methodology score (categorical variable)
	1 low (1-15)
	2 high (16-25)
PERASS	The number of periods of assessment. Post-intervention and follow-up assessment periods only (i.e., exclude pre-intervention assessments).
	99 not reported
LENGTH	The length of the intervention. (Some evaluations were conducted while the intervention was ongoing. In these cases they were coded for the length on which the results are based.)
	1 0-6mths
	2 7-12mths
	3 13-18mths
	4 19-24mths
	5 25-30mths
	6 31-36mths
	7 37-42mths
	8 43-48mths
	9 49-54mths
	10 55-60mths
	11 >60mths
	99 not reported

VISITS	<p>The number of sessions/visits that took place during the intervention. If the number of hours of contact are reported count every two hours as one visit (i.e., 44 hours of contact = 22 visits).</p> <p>99 not reported</p>
VISITCAT	<p>The number of sessions/visits that took place during the intervention (categorical variable).</p> <p>1 1-12</p> <p>2 13-32</p> <p>3 33-50</p> <p>4 >50</p>
VISITCAT2	<p>The number of sessions/visits that took place during the intervention (categorical variable).</p> <p>1 1-12</p> <p>2 13-50</p> <p>3 51-100</p> <p>4 >100</p>
HELPERS	<p>Type of helpers involved in the intervention.</p> <p>1 professionals</p> <p>2 paraprofessionals</p> <p>3 volunteers</p> <p>4 both professionals and paraprofessionals</p> <p>5 both professionals and volunteers</p> <p>99 not reported</p>
STRENGTH	<p>A strengths-based/empowerment philosophy. Interventions that involve the participants in the planning and implementation of the intervention and programs that identify and build on the strengths of participants are considered to espouse a strengths-based/empowerment philosophy.</p> <p>c) any intervention which follows these tenets (as taken from Trivette, Dunst, and Hamby, 1996) is considered to be strengths-based:</p> <ul style="list-style-type: none"> - professionals act as instruments of families - interventions are individualized, flexible and responsive - participants are viewed as having existing capabilities as well as the capacity to become more competent

- intervention focusses on strengthening functioning
- b) A statement that the program operates according to a strengths-based, or competency-based philosophy.
- c) Implicit recognition of strengths (e.g., through giving participants serious responsibilities such as a job as a nursery care giver).
- d) In the description of the intervention use of words such as “strengthen”, “increase”, “enhance”.

Conversely, expert-driven/deficit-based interventions are those that are planned and implemented by the help-givers and that identify and focus intervention goals on deficits.

- 0 no
- 1 limited
- 2 yes
- 99 uncertain

ECOLOG

An ecological framework. Interventions that help the family at several levels including those that are not directly family related (e.g., help in pursuing education or paid work) or interventions that involve the family in community development/social change activities are typically those with an ecological framework. An ecological intervention is coded as one in which more than two levels or contexts are addressed (e.g., family, school, community, employment, etc.). Micro-level interventions are those that are person-centred or that extend only to a directly related context (e.g., immediate or extended family, or child’s school).

- 0 micro
- 1 ecological
- 99 uncertain

INVOLV

The level of participant involvement in programme planning and implementation.

- 0 none
- 1 low
- 2 high
- 99 uncertain

SETTIN	The setting in which the intervention takes place.
1	home
2	school
3	community
4	agency
5	home & agency
6	nursery
7	pediatrician's office & home
8	variety
9	hospital
99	not reported

Program components:

HOMEV	Home visiting component.
0	no
1	yes
2	if identified as a need by participant
TRAIN	Parent training component.
0	no
1	yes
2	if identified as a need by participant
SOCSUP	Social support component. This needs to involve some sort of action, not just discussion. Interventions that connect participants to community resources and those with a component of self-help/mutual aid are considered to include a social support component.
0	no
1	yes
2	if identified as a need by participant
CHILDCAR	Child care component.
0	no
1	yes
2	if identified as a need by participant
EDUWRK	Education/work counselling component.
0	no
1	yes
2	if identified as a need by participant

FMPLAN	Family planning component. 0 no 1 yes 2 if identified as a need by participant
NEEDS	Component of providing concrete support. 0 no 1 yes 2 if identified as a need by participant
CHLDEV	Component of teaching about child development. 0 no 1 yes 2 if identified as a need by participant
INTERACT	Parent-child interaction component. 0 no 1 yes 2 if identified as a need by participant
CHLDGRP	Children's groups. 0 no 1 yes 2 if identified as a need by participant
PARGRP	Parents' groups 0 no 1 yes 2 if identified as a need by participant
COMPS#	# of components included in the intervention.
COMPSCAT	# of components included in the intervention (categorical). 1 1-5 components 2 6-7 components 3 8-9 components 4 10-11 components
YEAR	Year in which the study was published.

COUNTRY	Country in which the study was conducted. 1 Canada 2 U.S. 3 other
SOURCE	Source of publication. 1 journal 2 book 3 other
CALC	How the effect size was calculated. 1 mean & sd 2 chisquare 3 regression 4 F statistic 5 t statistic 6 mean/sd & chisquare 7 chisquare & F statistic 8 chisquare & t statistic
PRIMIPAR	Participants are first-time mothers. 0 no 1 yes
PVALUE	P value reported in study.

Appendix B

Normal P-P Plot of total weighted effect size per study

IFPS studies

Appendix C

Effect Sizes of Studies Included in the Meta-analysis

Study	Weighted effect size	Constructs measured
Home visiting (proactive)		
Taylor & Beauchamp (1988)	1.067	attitude; behaviour
Madden, O'Hara, & Levenstein (1984)	.970	behaviour
Field, Widmayer, Stringer, & Ignatoff (1980)	.917	behaviour
Ross (1984)	.891	HOME
Gray & Ruttle (1980)	.862	HOME
Barrera (1986)	.618	HOME
Bromwich & Parmelee (1979)	.584	HOME
Affleck, Tennen, Rowe, Roscher, & Walker (1989)	.556	attitude, behaviour
Olds, Henderson, Chamberlin, & Tatelbaum (1986)	.518	maltreatment
Caruso (1989)	.469	maltreatment
Hardy & Streett (1989)	.409	maltreatment
Galano & Huntington (1997)	.280	maltreatment; HOME; behaviour
Black, Dubowitz, Hutcheson, Berenson-Howard, & Starr (1995)	.218	behaviour; HOME
Gray, Cutler, Dean, & Kempe (1979)	.216	maltreatment; behaviour
Field, Widmayer, Greenberg, & Stoller (1982)	.178	behaviour
Slaughter (1983)	.177	behaviour

Centre on Child Abuse Prevention Research, National Committee to Prevent Child Abuse (Hawaii's Healthy Start) (1996)	.170	maltreatment; attitude; behaviour; HOME
Olds & Korfmacher (1998)	.160	maltreatment
Larson (1980)	.139	maltreatment
Kitzman, Olds, Henderson, Hanks, Cole, Tatelbaum, McConnochie, Sidora, Luckey, Shaver, Engelhardt, James, & Barnard (1997)	.090	maltreatment
Siegel, Bauman, Schaefer, Saunders, & Ingram (1980)	.050	maltreatment
Barth (1991)	-.030	maltreatment; attitude
Marcenko, Spence, & Samost (1996)	-.040	HOME; placement
Multi-component (proactive)		
Affholter, Connel, & Nauta (1983)	1.397	behaviour
Field, Widmayer, Greenberg, & Stoller (1982)	.643	behaviour
Andrews, Blumenthal, Johnson, Kahn, Ferguson, Lasater, Malone, & Wallace (New Orleans) (1982)	.567	behaviour
Rodriguez & Cortez (1988)	.546	attitude
Andrews, Blumenthal, Johnson, Kahn, Ferguson, Lasater, Malone, & Wallace (Birmingham) (1982)	.455	behaviour
Andrews, Blumenthal, Johnson, Kahn, Ferguson, Lasater, Malone, & Wallace (Houston) (1982)	-.139	behaviour; HOME
Mutual aid (proactive)		
Minde, Shosenberg, Marton, Thompson, Ripley, & Burns (1980)	.730	attitude; behaviour
Slaughter (1983)	.276	behaviour

Boger, Richter, Weatherston (1983)	.119	attitude
Media (proactive)		
Riley, Salisbury, Walker, & Steinberg (1991)	.140	attitude
Laurendeau, Gagnon, Desjardins, Perreault, & Kischuk (1991)	.110	attitude
Intensive Family Preservation (reactive)		
Walton, Fraser, Lewis, Pecora, & Walton (1993)	.983	placement
Pecora, Fraser, & Haapala (1991)	.579	placement
Wood, Barton, & Schroeder (1988)	.576	placement
Walton (1997)	.550	placement
Lyle & Nelson (1983)	.445	placement
Feldman (1991)	.309	placement
Pearson & King (1987)	.259	placement
Yuan, McDonald, Wheeler, Struckman-Johnson, & Rivest (1990)	.120	placement
Mitchell, Tovar, & Knitzer (1989)	.049	placement
Schuerman, Rzepnicki, & Littell (1994)	-.050	behaviour
Multi-component (reactive)		
Lutzker & Rice (1984)	.466	maltreatment
Halper & Jones (1981)	.449	placement
Wesh & Lutzker (1991)	.389	maltreatment
Jones, Neuman, & Shyne (1976)	.320	placement
Jones (1985)	.219	placement
Mutual aid (reactive)		
Gaudin, Wodarski, Arkinson, & Avery (1990-1991)	.857	attitude