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UMI

**From childhood to parenthood: Continuity of risk over time
and contextual factors perpetuating the inter-generational transfer of risk**

Jessica M. Cooperman

A Thesis

in

The Department

of

Psychology

Presented in Partial Fulfillment of the Requirements

for the Degree of Doctor of Philosophy at

Concordia University

Montreal, Quebec, Canada

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Abstract

From childhood to parenthood: Continuity of risk over time and contextual factors perpetuating the inter-generational transfer of risk

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The present investigation, comprised of two studies, has as its goal the examination of the continuity of risk over time and across generations associated with aggression and social withdrawal in childhood. More specifically, contextual factors related to financial disadvantage namely, low educational attainment, inadequate social support, and poor quality home environment were considered markers of continued risk as well as pathways to risk transfer. Each of the studies involved a subset of the participants from the Concordia Longitudinal Risk Project. In 1977, children from an inner city area, then aged 7, 10, and 13, were classified along the dimensions of aggression and social withdrawal, based on peer nominations. More than 20 years later, original participants, now parents, were evaluated. The focus of Study 1 was on the pathways to parenting and outcomes for a second generation in a group of women with young children ($n = 112$). Study 2 involved an examination of the threats to adequate parenting including high school dropout, early parenthood, and poverty through replication and expansion of work by Serbin and colleagues (1998) with a sample of fathers ($n = 164$). Results of both studies indicate intra- and inter-generational continuity, particularly for aggression. Social withdrawal is also found to be a risk factor; however, its role is more indirect, operating primarily through low educational attainment. Finally, within the context of parenthood, poverty and its concomitants are found to be important manifestations of continued risk

as well as pathways towards the transfer of risk to a second generation. And while indirect pathways through contextual parenthood variables are found to be important, the direct link observed between parental childhood aggression and negative outcomes in both the cognitive and behavioural domains for offspring is striking. The present findings are discussed in terms of implications for intervention and social policy.

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All work and no play would have made Jess a dull girl (maybe a girl with a Ph.D. a few years earlier, but dull nonetheless). Thanks to the members of my wonderful social support network from Montreal to Toronto. You have provided me with encouragement, gourmet experiences, and hours of fun.

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and always knowing the right thing to say. To Bruria for your constant support and for being the model of a woman who can do it all. Finally, to my dad – thank you for always encouraging me so that my reach would exceed my grasp and for providing me with the most critical conditions to successful development: a home filled with unconditional love ...and plenty of books!

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The childhood shows the man,
As morning shows the day.

Paradise Regained lb. 1. 220
John Milton [1671]

Introduction

Human development can be conceptualized as a path. Adopting a most elementary approach, two possible variants of the life path exist: the “right” path and the “wrong” path (Smith, 1968 as cited in Elder, Caspi, & Downey, 1986). Those who follow the “right” path, or the “Fantasyland model” (Rubin & Mills, 1991), begin life with a healthy childhood that includes an accumulation of success and knowledge. Such beneficial early experience contributes to an increased effectiveness in coping resulting ultimately in the development of a competent adult. Thus, competence at one life stage is understood to foster adaptation to the environment resulting in continued competence in subsequent life phases (Sroufe & Rutter, 1984). By contrast, those who follow the “wrong” path commence their trek through life under disadvantaged conditions such that they encounter a number of circumstances, be they genetic and/or environmental, that impede constructive coping. Consequently, competence for negotiating later developmental transitions is threatened, resulting effectively in the increased likelihood of the perpetuation of disadvantage (Sroufe & Rutter, 1984). The deterministic model just described reflects the notion of continuity across the lifespan. Knowledge of the individual’s childhood characteristics allows for the prediction of the nature of adult experience.

The present studies address the life pathways of at-risk children. They involve a longitudinal examination of intragenerational as well as inter-generational continuity and discontinuity in psychosocial risk. Through the exploration of parenthood, a key developmental point of transition, it is hoped that we will be able to identify circumstances that contribute to continued disadvantage and those that promote

successful outcomes, not only within the parent generation, but within the offspring, a second generation as well.

Within the current studies, conceptions of risk adopt an ecological flavor, moving from unique consideration of the individual in isolation to the inclusion of a focus on the individual in context. The goal herein is to begin to understand the underlying processes involved in continuity and discontinuity (McLoyd, 1998; Rutter, 1987; 1994).

Specifically, attention is directed towards poverty and its concomitants, low educational attainment, inadequate social support, and poor quality home environments. The protective poles of these variables are also considered. Together, the aforementioned vulnerability and protective factors are predicted to link childhood aggression and social withdrawal to continued risk or successful outcomes in parenthood as well as into the next generation.

Intragenerational Continuity of Risk

Risk factors are biological or psychosocial hazards that threaten normative development in one or more areas, rendering the individual vulnerable to disorder (Horowitz, 1998; Werner & Smith, 1992). Aggression and social withdrawal in childhood have been identified as risk factors for later life problems (Caspi, Elder, & Bem, 1988; Ensminger & Slusarcick, 1992; Farrington, 1991; Olweus, 1984; Serbin et al., 1998; Zoccolillo, Pickles, Quinton, & Rutter, 1992). Aggression encompasses behavioural responses directed towards others intended to cause physical or emotional harm (Bjorkqvist & Niemela, 1992; Loeber & Hay, 1997; Moskowitz, Schwartzman, & Ledingham, 1989; White & Kowalski, 1994). Social withdrawal has been characterized by anxiety, fear, and sadness (Moskowitz, Schwartzman, & Ledingham, 1989) as well as

extreme shyness and self-consciousness (Quay & LaGreca, 1986). Taken together, these two behavioural extremes of “moving against the world” and “moving away from the world” (Horney, 1945) account for the foundation of many developmental disorders (Lyons, Serbin, & Marchessault, 1988).

Children do not appear to grow out of either withdrawn or aggressive response patterns (Caspi, 1996; Fergusson, 1998; Huesmann, Eron, Lefkowitz, & Walder, 1984; Moskowitz, Schwartzman, & Ledingham, 1985; Newman, Caspi, Moffitt, & Silva, 1997; Ollendick & King, 1994; Olweus, 1984; Pulkkinen & Pitkanen, 1993; Roff & Wirt, 1984; Serbin et al., 1998). Evidence has been uncovered in support of homotypic continuity, the persistence of comparable behaviours over time (Bardone, Moffitt, Caspi, Dickson, & Silva, 1996) for both aggression (e.g., Cairns, Cairns, Neckerman, Ferguson, & Gariépy, 1989; Caspi & Silva, 1995; Farrington, 1995; Guerra, Huesmann, Tolan, Van Acker, & Eron, 1995; Huesmann et al., 1984; Keenan, Loeber, & Green, 1998; Moskowitz et al., 1985; Olweus, 1984; Peters, 1999; Pulkkinen & Pitkanen, 1993; Tolan, Guerra, & Kendall, 1995; Zoccolillo et al., 1992) and social withdrawal (Cohen, Kasen, Brook, & Hartmark, 1988; Kagan, 1989; Kerr, Lamberg, Stattin, & Klackenberg-Larsson, 1994; Ledingham & Schwartzman, 1984; Moskowitz et al., 1985; Peters, 1999; Quay & LaGreca, 1986; Rubin, Hymel, & Mills, 1989; Rubin, Rowand, Cheah, Fox, & Calkins, 1998).

Two processes are theorized to underlie the perpetuation of maladaptive behaviour patterns across the life span: cumulative continuity and interactional continuity (Caspi & Elder, 1988a; 1988b). Cumulative continuity reflects a process whereby behaviours are maintained as a function of “the progressive accumulation of their own consequences”

(Caspi et al., 1988, p. 824). Differences escalate over time which may lead ultimately to ineffective mastery of adult roles (Caspi & Elder, 1988a). For instance, a woman who is socially withdrawn, as a child, had reduced social contacts. Her behavioural style restricted her opportunities to learn rules of negotiation and other socio-cognitive achievements critical to successful human interaction. Deficits in the area of developing and sustaining social relationships might lead to difficulties later in life such as problematic interactions with colleagues, friends, partners, and children resulting in further social isolation (Caspi & Elder, 1988b).

The second process contributing to the perpetuation of risk over time is interactional continuity. Interactional continuity reflects a mechanism whereby the individual elicits responses from those in the environment that support and/or maintain aversive behaviour patterns (Caspi, Elder, & Bem, 1987; Patterson, 1982). It includes reactive, proactive, and evocative processes (Caspi, 1996). As a function of reactive processes, individuals experience, interpret, and respond differently to objective environments based on subjective perceptions. Consider for example the attributional biases associated with aggression. Children who display aggressive behaviour tend to infer hostile intent in ambiguous situations (Crick & Dodge, 1994; Dodge & Frame, 1982). Consequently, they respond with aggression as a form of retaliation. The later-life implications of such biased attributions might be greater ill-temperedness and increased stress in the parenting role (Caspi et al., 1987).

Not only do individuals subjectively perceive the objective environment, they also help to select or create their surroundings (Caspi & Silva, 1995; Scarr & McCartney, 1983). Consider by way of example of proactive person-environment interactions that

assortative mating has been found in those with a propensity towards aggression (Peters, 1999; Zoccolillo et al., 1992). Aggressive individuals foster the creation of hostile environments by selecting mates with similar tendencies thus increasing the likelihood of disputes and an inharmonious family context.

In addition to reactive and proactive processes, the continuity in behavioural tendencies over time is also fueled by evocative interactions (Caspi, 1996). Individuals' personality stimulates particular responses from others that, in turn, perpetuate maladaptive behavioural tendencies. For example, hostility expressed by an aggressive child provokes animosity in others which, in turn, fosters continuity in that child's aggressive behaviour.

While it is important to consider homotypic continuity and the persistence of aggressive and socially withdrawn behaviour, more often, evidence for continuity is found not in identical behaviours over time, but rather, at the level of organization of behaviour (Sroufe, 1979). Children are in a constant state of active reorganization. Manifest characteristics are subject to transformation. Rather than looking for deficits in the form of static traits as signs of continuity, stability is reflected in the underlying processes by which these characteristics are perpetuated (Samcroff & Chandler, 1975). In a study exploring continuity in conduct disorder over time, Zoccolillo and colleagues (1992) found that measures of social maladjustment, including evaluations of work and relationship difficulties reflected greater continuity than did complete diagnoses of personality disorders in adulthood. Heterotypic continuity accounts for the changing manifestation of an inferred genotypic characteristic assumed to underlie various observable behaviours (Kagan, 1969). Limiting criteria for continuity to homotypy

inhibits our ability to capture other maladaptive behaviours and poor social outcomes in adulthood that are sequelae of externalizing and internalizing behavioural tendencies in childhood.

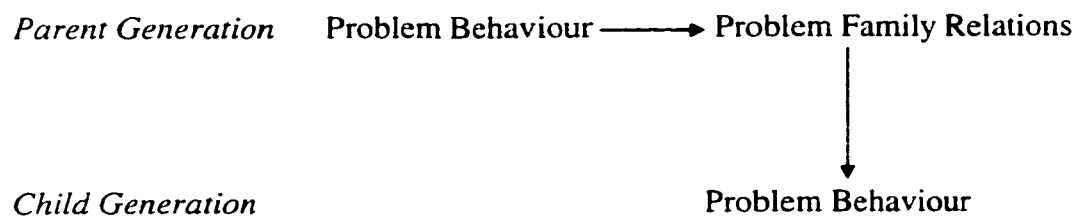
The widening of our gaze with respect to continuity enables the important consideration of gender differences in the expression of extreme behavioural tendencies, in particular, aggression (Rutter, 1998). Continuity in aggressive tendencies should be explored in the arenas most relevant to each sex (White & Kowalski, 1994). Particularly for women, social difficulties in the context of relationships and the family environment appear to be more relevant than exploring continuity via criminal behaviour (Lewis, Yeager, Cobham-Portorreal, Klein, Showalter, & Anthony, 1991; Ronka & Pulkkinen, 1995; Towson & Zanna, 1982; White & Kowalski, 1994). Parenthood provides women with a principal forum for the expression of various manifestations of aggressive and withdrawn tendencies (Cooperman, 1996; White & Kowalski, 1994).

Inter-generational Transfer of Risk

It is within the context of early relationships that children develop skills and strategies that will serve them for the rest of their lives (Bowlby, 1980). The parent-child relationship plays a central role in child development. When parents are able to cope with the stresses of competing demands on their resources and carry out their role in a growth-promoting manner, children develop under conditions where they are likely to emerge well-adjusted. When adaptive parenting is threatened, children are placed at risk for psychosocial disturbance (Duncan, Brooks-Gunn, & Klebanov, 1994; McLoyd, 1998).

Aggression and social withdrawal have been identified as contributing factors in the inter-generational transfer of psychosocial risk (Huesmann et al., 1984; Serbin et al., 1998; Serbin, Peters, McAffer, & Schwartzman, 1991). That is, children of parents who were aggressive and/or withdrawn as children are also at risk. Their vulnerability is reflected in their susceptibility to negative developmental outcomes (Serbin et al., 1998; Werner, 1993). Consider the inter-generational model of risk transmission (see Figure 1) (Caspi & Elder, 1988a; 1988b). Within this model, it is proposed that patterns established in the early life of the previous generation provide a context for the replication of such patterns by the succeeding generation (Caspi & Elder, 1988a; 1988b). The process is hypothesized to occur as follows: problem behaviour is first manifested during the childhood of the parent. Moving from the family of origin to the family of procreation, continuity in the risk status of the individual creates circumstances that threaten family functioning such as socio-economic disadvantage and parenting difficulties (McCord, 1994). In turn, these last conditions serve as the possible link mediating the relationship between problem behaviour in parents and subsequent problem behaviour in their offspring. Applying the model of inter-generational risk transfer to aggression, children who have acquired problem dispositions, as adults, bring these characteristics to their familial relations including their interactions with offspring. Families of these individuals tend to be problematic. In turn, children who grow up amid chaotic families likely exhibit oppositional and aggressive behaviour patterns effectively perpetuating externalizing tendencies across generations (Elder, Caspi, & Downey, 1986; McCord, 1994; Patterson, 1982; Serbin et al., 1998).

Figure 1. The Inter-generational Model of Risk Transmission
(Caspi & Elder, 1988a)



Pathways Towards Continuity and Discontinuity

In exploring aggression and social withdrawal as potential threats to later life development and the development of a second generation, these variables must be considered, not in isolation, but in relation to other risk factors along the life path which, together, perpetuate the cycle of disadvantage. Multiple risks overwhelm individual self-righting abilities, resulting in poor developmental outcomes (Sameroff, Seifer, Barocas, Zax, & Greenspan, 1987). Adversity in childhood tends to elevate risk for continued environmental stressors as well as increase inner vulnerability to them (Maughan & Champion, 1990). Risk factors first apparent early in life whose consequences endure over time are believed to persist as a function of protracted conditions operating across the life span (Sameroff & Chandler, 1975). Persistent maladaptation is believed to occur only in the presence of equally enduring distorting influences (Sameroff & Chandler, 1975). Behavioural continuities across development are supported in large measure by social conditions and are, as such, indirect (Fergusson, 1999; Rutter, 1985).

Equally as important as contextual risk factors promoting continuity are the protective dimensions of context promoting discontinuity. The course of development is influenced by the balance between risk and protective factors (Beckwith, 1999). Protective factors promote successful development by interrupting the risk trajectory (Mangham, McGrath, Reid, & Stewart, 1998). They operate by buffering an individual's response to a risk situation such that anticipated maladaptive consequences fail to occur, or are at least less intense (Conrad & Hammen, 1993; Rutter, 1985; 1987; Wang & Kretsch, 1997; Werner & Smith, 1992).

Results of longitudinal studies following individuals from childhood to adulthood support the notion that with each developmental transition, and depending on the context, there exists a dynamic balance between stressful life events and both vulnerability and protective factors (Masten & Coatsworth, 1998; Werner, 1990). According to the additive main effects model of cumulative stress, an individual's adjustment is determined by the ratio of accumulated risk factors to accumulated buffering factors (Garmezy, Masten, & Tellegen, 1984; Rutter, 1985). Within this compensatory model, the greater the number and severity of risk factors, the greater the number and intensity of protective factors in the individual and his or her caregiving environment needed to counteract risk factors and foster development (Guy, 1997; Werner & Smith, 1992). Individuals who display continuity in risk are those who face a number of risk factors without the presence of sufficient protective resources. By contrast, those who exhibit discontinuity either experience fewer or less severe stressors at the outset or, the risk factors to which they are exposed have been neutralized by compensatory positive experiences (Rutter, 1985).

In developing theoretical models of continuity and discontinuity over time and across generations, it is important to identify pathways of influence or major transitional linkages (see Eron & Huesmann, 1987; Rutter, 1998; Serbin et al., 1991). Within the present studies, parent contextual factors, including educational attainment, family financial circumstances, and social support are interpreted as mediating in part the relationship between aggression and withdrawal in childhood, parenting, and correspondingly, the development of a second generation. The risk and protective

dimensions of the three contextual factors of interest and their relations to childhood risk are considered in the sections to follow.

Educational attainment. Socially deviant behaviour very often occurs in conjunction with intellectual and academic difficulties (Ronka & Pulkkinen, 1995). Co-morbidity of problems within the cognitive domain has been particularly emphasized for aggression (e.g., Burgess & Ladd, 1998; Cairns, Cairns, Xie, Leung, & Hearne, 1998; Ensminger & Slusarcick, 1992; Huesmann et al., 1984; Huesmann, Eron, & Yarmel, 1987; Schwartzman, Ledingham, & Serbin, 1985; Serbin et al., 1998; Zukauskiene, 1998) with some evidence emerging for social withdrawal as well (e.g., Serbin et al., 1998). Lower educational attainment among children with behaviour problems is attributed not only to cognitive limitations, but to behaviour problems as well. Children exhibiting antisocial behaviour, by their very nature, display noncompliance, or rule violation (Bardone et al., 1996). Consequently, such children are less often on task in comparison with their nonaggressive peers. Therefore, they are more vulnerable to academic failure and school dropout (Ensminger & Slusarcick, 1992; Patterson, Capaldi, & Bank, 1991). It is also possible that aggressive and/or withdrawn children, experiencing both cognitive and social problems, find no comfort in either educational or social aspects of schooling leading them to terminate prematurely (Cairns et al., 1998; Ensminger & Slusarcick, 1992; Serbin et al., 1998). In turn, early school leaving is associated with a host of contextual factors that threaten successful parenting namely, poverty.

Moving from consideration of the risk associated with low educational attainment, academic achievement has been found to be a powerful buffer against continued

problems for high risk individuals (Furstenberg, Brooks-Gunn, & Morgan, 1987; Koeske & Koeske, 1990; Serbin et al., 1998; Werner & Smith, 1992). Further, parental intelligence and educational attainment have been identified as important protective factors in the development of children, particularly with respect to cognitive competence (Auerbach et al., 1992; Duncan et al., 1994; Ramey & Ramey, 1994; Sameroff & Chandler, 1975; Stewart & Ritchie, 1998), and also with respect to mental health (Auerbach, Lerner, Barasch, & Palti, 1992; Duncan et al., 1994; Furstenberg et al., 1987; Lehoux, 1995; Velez, Johnson, & Cohen, 1988).

Parental educational attainment influences children as a function its association with the genetic inheritance of intelligence and through access to material resources by virtue of occupational prestige. Further, education serves to increase the emphasis parents place on academic pursuits and the lengths to which they will go to help their children achieve their goals (Karnes & Zehrbach, 1975). Thus, parental education is believed to operate on child cognitive competence in part through exposure to a supportive and stimulating home environment (Kelley, Sanchez-Hucles, & Walker, 1993; Luster & Dubow, 1992; Willms, 1997). Consider the home environment as a key source of influence in school success (Bradley & Caldwell, 1984a; McLeod & Shanahan, 1993; Musick, 1994). Mothers who are better educated are not only more likely to have stimulating material in the home, but they are also more likely to use such material in a way that is beneficial to the child (Furstenberg et al., 1987).

The creation of a stimulating and supportive home environment is dependent not only on parental intelligence and education, but also on parents' ability to mobilize their resources and attend to their children's needs. This coping capacity is fostered by the

presence of adequate material and social resources which serve to buffer against parenting stress (Andresen & Telleen, 1992). Poverty, an additional potential mediator of childhood aggression and social withdrawal thus threatens parenting while financial security plays a supportive role.

Financial Status. As has been demonstrated thus far, the implications of aggressive and withdrawn behaviour as well as poor academic achievement extend beyond the realm of the school and into the individual's future adult career functioning. Poverty has been found to be a manifestation of continued problems for those with childhood histories of extreme behavioural tendencies (Brook & Newcomb, 1995; Capaldi & Stoolmiller, in press; Kokko, Pulkkinen, & Puustinen, 1998). In early adulthood, conduct disordered girls have been found to be almost four times more likely to have been dependent upon two or more sources of social assistance than their non-disordered peers (Bardone et al., 1996). Kokko and colleagues (1998) found that childhood aggression predicted directly long-term unemployment in adulthood. Behavioral inhibition was predictive of long-term underemployment indirectly via poor educational attainment. Poverty thus represents an ecological context that reflects the continuity of adversity within a single generation. As well, it is a strong force in the perpetuation of risk across generations (St-Jacques, 1997).

Poverty has been characterized as the context most problematic for child-rearing; its effects represent extreme and pervasive exacerbating factors underlying developmental difficulties (Hamburg, 1985; Harris & Marmer, 1996; Lockhead & Shillington, 1996; Schorr & Schorr, 1988; Zayas, 1995). Children developing under conditions of financial

disadvantage are at greater risk for a variety of health and psychosocial problems in the areas of physical, cognitive, academic, emotional, and behavioural functioning (Adams, Hillman, & Gaydos, 1994; Bingham, Fitzgerald, & Zucker, 1997; Bolger, Patterson, Thompson, & Kupersmidt, 1995; Brooks-Gunn, Klebanov, & McCarton, 1997; Capaldi & Patterson, 1991; Dodge, Pettit, & Bates, 1994; Duncan et al., 1994; Guerra et al., 1995; Hanson, McLanahan, & Thompson, 1997; Korenman, Miller, & Sjaastad, 1995; Lipman & Offord, 1997; McLoyd, 1998; Miech, Caspi, Moffitt, Entner Wright, & Silva, 1999; Pagani, Boulerice, & Tremblay, 1997; Ross & Roberts, 1997; Ross, Shillington, & Lockhead, 1994; Velez et al., 1988; Werner, 1989). In a large scale Canadian study, school-aged children who were poor were found to be three times as likely to have one or more attentional, conduct, or emotional disorder(s) than their non-poor counterparts (Lipman, Offord, Racine, & Boyle, 1994). Within the realm of cognitive functioning, children developing under conditions of poverty are more likely to have IQ scores that fall beneath population means (Brooks-Gunn, 1998; McLoyd, 1998; Palacio-Quintin & Jourdan-Ionescu, 1991). Further, they tend to go on to perform less well in school and subsequently, labor markets (Statistics Canada, 1997). Consequently, there exists an increased likelihood that, as adults, these individuals will reproduce the very life conditions in which they developed, perpetuating the cycle of poverty (St-Jacques, 1997).

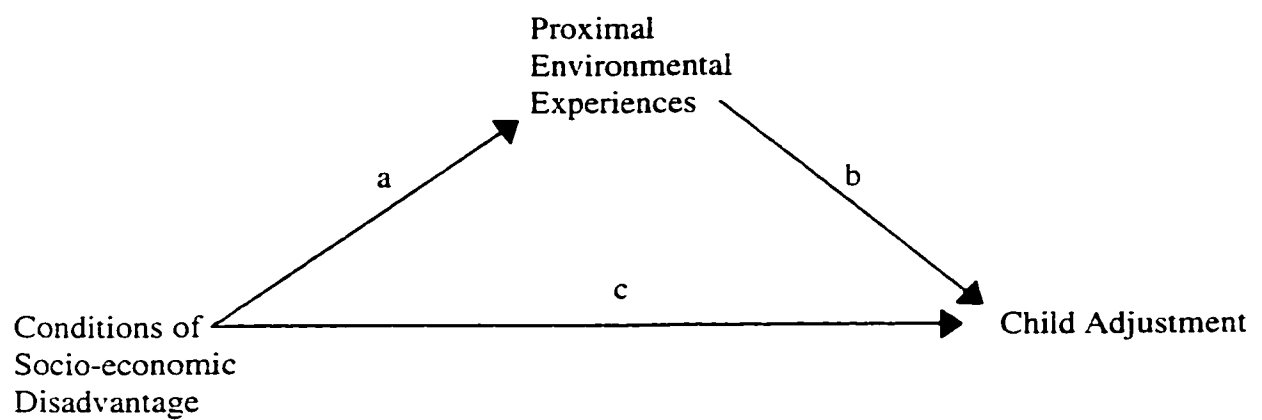
While economic forces have been identified among the most critical threats to children in our society, few studies have explored the intermediate connections or causal pathways explaining this association (Elder, Nguyen, & Caspi, 1985; Garbarino, 1992; Lipman & Offord, 1997; McLeod & Shanahan, 1993; Voydanoff & Donnelly, 1988). Greater

insight is required into the linkages that transform structural social conditions into psychological outcomes (Burns, Homel, & Goodnow, 1994; McLoyd, 1998).

Poverty is a compositional feature of the environment, but in itself is not inherently pathogenic. Low socio-economic status increases the probability that numerous risk factors will co-occur (Halpern, 1990; Palacio-Quintin, 1995; Sameroff & Fiese, 1990). Thus, chronic poverty is not an isolated variable, but rather, an aggregate of stressful circumstances (Brooks-Gunn, Duncan, & Maritato, 1997; McCormick & Brooks-Gunn, 1989; McLoyd, 1990). Risk factors including material and social disadvantage cluster together in at least an additive fashion threatening parental coping resources (Cook, Shagle, Phillips, & Degirmencioglu, 1997; Furstenberg, 1993; Klebanov, Brooks-Gunn, & Duncan, 1994), and in turn, child development.

The conceptual model of the impact of poverty adopted in the present studies is that of Felner and colleagues (1995). According to this model (see Figure 2), socio-economic disadvantage is understood to influence proximal environmental experiences (a). Poverty's impact includes deprivation with respect to social resources and relatedly, increased parenting stress which together threaten the quality of the family environment. These proximal experiences exert an effect on child adjustment in large measure by threatening successful parenting (McLoyd, 1990) (b). The possibility remains of direct societal effects of socio-economic disadvantage on child adjustment unaccounted for by the indirect pathway through family functioning (c) (Felner et al., 1995).

Figure 2. The Ecological-mediational model of the impact of socio-economic disadvantage on child development (Felner et al., 1995)



Parenting and the family environment are among of the most important mediators linking economic hardship to child outcome (Bolger et al., 1995; Caspi & Elder, 1988a; 1988b; Chase-Lansdale, Wakschlag, & Brooks-Gunn, 1995; Duncan et al., 1994; Garrett, Ng'andu, & Ferron, 1994; Kruttschnitt, McLeod, & Dornfeld, 1994; McLoyd, 1990; 1998; Moen, Kain, & Elder, 1983; Steinhauer, 1997; Wolkind & Rutter, 1985). Within the family, low income produces and is related to circumstances known to jeopardize parents' ability to optimize the development of their children (Duncan et al., 1994; Gelles, 1989; Halpern, 1990; Harris & Marmer, 1996; Humphry, 1994; Rutter, 1987). Low social support has been identified as being among the most significant risk factors associated with poverty that threaten parenting, and by extension, child development (Shaw & Bell, 1983; Statistics Canada, 1997). And while low social support is not unique to the poor, the middle class social environment may reduce its likelihood or buffer against its negative impact (Benin & Keith, 1995). In families that are financially secure, parenting capacities are not concurrently being taxed by additional stressors associated with insufficient resources. As such, child development may not be adversely influenced (Shaw, Keenan, & Vondra, 1994).

Social Support. Social support¹ reflects the availability of members of the individual's informal and formal social networks to provide assistance (Dunst & Trivette, 1990; Parke & Tinsley, 1987; Sarason, Levine, Basham, & Sarason, 1983). Social support can impact on daily stresses of parenting through two mechanisms: a) the main-effect model, and b) the stress-buffering model (Cohen & Wills, 1985). With respect to the former, social support is viewed as playing a prophylactic role. Parents are prevented

¹ For a description of the variants of social support, please refer to Appendix A.

from appraising their role as stressful because of available support (Adamakos et al., 1986; Andresen & Telleen, 1992; Taylor & Roberts, 1995). With a reliable network in place, parents are confident they are able to meet the demands of their role. According to the stress-buffering model, social support is seen as alleviating stress once parenthood has been perceived as stressful (Cohen & Wills, 1985; Koeske & Koeske, 1990). Social support can serve to reduce the number of overwhelming events to which parents are exposed. In this way, the stress that accumulates from daily burdens that threatens parental coping and increases the risk of neglectful and abusive patterns of behaviour is mitigated (Crockenberg, 1988; Weinraub & Wolf, 1983).

Social support is dependent in part upon the individual's ability to actively engage a supportive group of helpers and maintain relationships (Barnard, Magyary, Sumner, Booth, Mitchell, & Spieker, 1988; Belsky, 1984; Steinhauer, 1997). Relationship skills may be less well developed in withdrawn women. For instance, Newman and colleagues (1997) found that children with histories of internalizing tendencies reported a low sense of agency, and communality in early adulthood. As adults, these women have reported lower levels of social support and greater feelings of being burdened by intrusive social contacts in early adulthood (Goldstein, Diener, & Mangelsdorf, 1996; Newman et al., 1997). From these findings, we might extrapolate that as adults, children with internalizing tendencies continue to experience difficulties in social relationships thus failing to mobilize social support that potentially might buffer against some of the negative outcomes associated with childhood risk (Caspi et al., 1988; Petersen, Compas, Brooks-Gunn, Stemmler, Ey, & Grant, 1993).

The availability of social support is not only dependent upon characteristics of the individual, but on the environmental circumstances in which parents find themselves as well. As aforementioned, economic hardship is associated with impoverishment of social resources (Cochran, Gunnarsson, Grabe, & Lewis, 1990; DiLeonardi, 1993; Garbarino & Abramowitz, 1992; Weinraub & Wolf, 1983). Parents living in poverty are less able to purchase support in the marketplace (Halpern, 1990). Poor families are also less likely to have adequate extramarital support systems (Klebanov et al., 1994). Low levels of support characterize inner-city neighbourhoods due to the lack of safety and consequent pervasive sense of distrust among inhabitants (Shumow, 1997). Further, poor parents have fewer relations who are in a position to be able to reciprocate support both in terms of providing material aid as well as having the time to assist others (Benin & Keith, 1995). Finally, financial hardship threatens access to marital support, a key component in parenting social support, through the promotion of marital discord and breakdown (Halpern, 1990; Skinner, Elder, & Conger, 1990; Takeuchi, Williams, & Adair, 1991). Conflict and criticism between partners can be provoked or exacerbated by difficult decisions regarding the expenditure of insufficient funds (Elder, 1974). Marital problems, including lack of support, operate as independent sources of stress, or may mediate or moderate the negative effects of existing stressful conditions (Coyne & Downey, 1991).

Social isolation, be it in the inner-city or in rural outlying areas, compounds existing stress and mediates in part the negative effects of poverty on parenting (Garbarino & Abramowitz, 1992; Klebanov et al., 1994; Stern & Smith, 1995). With fewer social resources in place, nurturing and supportive parenting behaviour is threatened (Cochran

& Niego, 1995; Goldstein et al., 1996; Szykula, Mas, Turner, Crowley, & Sayger, 1991). Low levels of support have been found to be associated with maladaptive parenting strategies and increased risk for abuse and neglect (Belsky, 1984; Cochran & Niego, 1995; Gaudin, Polansky, Kilpatrick, & Shilton, 1993; Stern & Smith, 1995; Wilson, 1991). Mothers with low levels of support report greater hostility, indifference, and rejection of their children (Colletta, 1981). Further, elevated levels of interpersonal distress and lower levels of supportive interactions have been found to predispose financially disadvantaged mothers to behave more negatively and more inconsistently in response to their children's behavior (Dumas & Wahler, 1983). Low social support threatens adequate parenting by contaminating parental perceptions of offspring (Mills & Rubin, 1992), by reducing openness of parenting practices to public scrutiny (Belsky, 1984; Korbin, 1987; McLoyd, 1990), and by increasing parenting stress (Deater-Deckard & Scarr, 1996).

While low social support has been found to operate as a risk factor, adequate levels of support have been found to serve a protective function (Guy, 1997). The protective role of social support has been demonstrated repeatedly in the literature (e.g., Leadbeater & Bishop, 1994; Stewart & Ritchie, 1998; Werner & Smith, 1992). The presence of supportive others has been found to exert a protective role in promoting maternal well-being in groups of non-disordered and at-risk mothers (Cochran, 1990; Furstenberg et al., 1987; Garbarino, 1992). For girls with histories of conduct disordered behaviour, the presence of a supportive partner has been found to be an important means by which these girls move from the path of risk towards the path of resilience (Quinton, Pickles, Maughan, & Rutter, 1993). Werner and Smith (1992) found that having a supportive

spouse was the most critical protective factor for many high risk youth. Mothers who feel supported and less isolated report feeling less overwhelmed by and greater satisfaction with their role as parents (Crnic & Greenberg, 1987; Koeske & Koeske, 1990).

Parenting social support has been found to be protective, not only for parents, but for offspring as well (Bender & Losel, 1998; Garmezy, 1985; Losel & Bliesener, 1994; Rutter, 1987; Steinhauer, 1997; Stewart & Ritchie, 1998; Werner & Smith, 1989). For instance, in a study of bereaved preschoolers, surviving parents' degree of satisfaction with the child-care, household help, and emotional support received correlated with significantly lower symptom scores in the children (Kranzler, Shaffer, Wasserman, & Davies, 1990). Further, parenting social support during the first year postpartum is found to correlate negatively with child behavior problems (Bishop, Leadbeater, & Way, 1997; Holahan & Moos, 1987; Schafrik-Arsenault & Newcomb, 1996). More specifically, parenting social support has been found to buffer against child antisocial (Dunst & Trivette, 1988) and internalizing behaviour tendencies (Wang & Kretsch, 1997). As well, maternal social support has been found to be associated with child cognitive development (Pianta & Egeland, 1994; Sameroff et al., 1987; Tessier, Piché, Muckle, Gagnon, & Tarabulsky, 1992).

The effects of parenting social support on children are hypothesized to be indirect, mediated by the impact of social support on parenting (Belsky, 1984; Cochran & Brassard, 1979; Crnic & Greenberg, 1987; Crockenberg, 1988; McLoyd, 1990; Schafrik-Arsenault & Newcomb, 1996). Social support has been found to be an important predictor of more effective coping with the parenting role (Parks, Lenz, & Jenkins, 1992; Telleen, 1985), and more adaptive parenting practices (Andresen &

Telleen, 1992; Coletta, 1981; Crockenberg, 1988; Goldstein et al., 1996; Korbin, 1994; Taylor & Roberts, 1995). Within both high-risk and low-risk populations, parent-perceived social support has been found to be associated with greater maternal sensitivity and responsiveness (Crnic & Greenberg, 1987; Crnic, Greenberg, Ragozin, Robinson, & Basham, 1983; Crockenberg, 1987; 1988; Dunst & Trivette, 1990; Goldstein et al., 1996; Jennings, Stagg, & Connors, 1991; Pascoe, Loda, Jeffries, & Earp, 1981; Rubin & Mills, 1991; Stevens, 1988; Thomas, Rickel, Butler, & Montgomery, 1990; Weinraub & Wolf, 1983). Further, maternal teaching, cognitive stimulation, and the provision of a quality home environment have been found to be related to perceived availability of social support (Cotterell, 1986). In a prospective study on the association between prenatal maternal social support and postnatal home stimulation for 4-month-old infants, Pascoe and French (1993) found that social support explained 20% of the variance and was a stronger predictor of postnatal home stimulation than among other variables, socio-economic status, and depressive symptoms. Further, in a 3 year follow-up study of infants released from a neonatal intensive care unit, mothers reporting more social support provided a more stimulating home environment than did those reporting less social support (Pascoe & Earp, 1984).

Greater educational attainment has been found to be associated with adequate social support (Fischer, 1982). Those who are more educated tend to be more socially active. Consequently, these individuals have larger social networks from which they are able to solicit support. Schooling fosters the development of both network-building skills and access to people outside the kinship circle (Cochran, 1990).

Related to the beneficial role played by education in terms of access to social support is that of financial security. Bennin and Keith (1995) found that being further from poverty increases the likelihood of obtaining needed assistance with family for employed mothers of young children. These women are more likely to have relatives who have reliable sources of transportation and are in a better position to reciprocate support.

The protective function of social support appears to lie not in its actual availability, but rather in its perceived availability (Cohen & Hoberman, 1983; Lieberman, 1982). What is fundamental is not the size or absolute degree of involvement, but rather, whether the network is perceived as meeting the parent's individual needs. Regardless the source, perceived social support has been associated with greater resilience (Markstrom & Tryon, 1997; Werner & Smith, 1989). Parenting social support has been found to be associated with improved parent and family well-being (Dunst & Trivette, 1990; McLoyd, 1990; Taylor & Roberts, 1995).

Parenting

The association between poverty and diminished capacity for supportive, and consistent parenting (Gecas, 1979; Hausman & Hammen, 1993; Kaliopuska, 1984; Kohn, 1977; McLoyd, 1990; Zayas, 1995) is believed to result from increased vulnerability of parents as a function of exposure to chronic stress, unbuffered by educational attainment, and social support (Bank, Forgatch, Patterson, & Fetrow, 1993; Conger et al., 1992; Coontz & Martin, 1988; Halpern, 1990; Horowitz & Wolock, 1985; Humphry, 1994; McLeod & Shanahan, 1993; McLoyd, 1990; McLoyd & Wilson, 1991; Mills & Rubin, 1992; Rubin & Lollis, 1988; Zayas, 1995). Unremitting, cumulative stressors contribute to the likelihood that parents will adopt hostile, punitive

and/or unresponsive strategies with their children (Stern & Smith, 1995). In turn, negative, authoritarian parenting leads to increased behavioral adjustment problems such as externalizing tendencies in offspring (Deater-Deckard & Scarr, 1996; Downey & Coyne, 1990; McLoyd, 1990; Patterson, Reid, & Dishion, 1992; Yoshikawa, 1994). Inadequacies in parenting are manifested not only within the realm of harsh discipline and inconsistency, but also with respect to the absence of cognitive stimulation.

The home environment created by parents has been found to be a major contributor to children's cognitive and socio-emotional growth (Aksu-Koc, 1992; Bradley et al., 1989; 1994; Egeland, Carlson, & Sroufe, 1993; see Gottfried, 1984 for a review). Parental structuring of the home environment vis à vis the creation of a warm environment conducive to learning and literacy with clear rules and expectations for children has been found to be related to school success in young, disadvantaged children (Campbell & Ramey, 1994; Musick, 1994; Payne, Whitehurst, & Angell, 1994). Environments that are supportive of child development include the following characteristics: safety and organization in the home, opportunity for quality experiences outside the home, parental emotional responsiveness, and finally, cognitive richness including the presence of stimulating toys and learning materials, and opportunities for language stimulation (Bradley & Caldwell, 1984c; Halpern, 1990).

The existence of an optimal home environment as described above is dependent upon parental resources, both material and emotional. Lower family income and limited educational attainment have been found to be associated with less stimulating learning environments (Dodge et al., 1994; Gottfried, 1984; Klebanov et al., 1994; Palacio-Quintin & Jourdan-Ionescu, 1991). Further, home environments become less stimulating

as the number of stressful life events and conditions increase (e.g., high family density, parental unemployment) (Brooks-Gunn, Klebanov, & Liaw, 1995). As a function of exposure to chronic stress, poor parents are less likely to possess the resources necessary to provide high levels of stimulation or many opportunities for cognitive exploration taken for granted by their middle class counterparts (Galt & Cernestig, 1997; Parker, Greer, & Zuckerman, 1988). Consequently, children in poor families are at higher risk for cognitive delays and socio-emotional difficulties in comparison with their more affluent peers (Duncan et al., 1994). Lower quality home environments are believed to explain part of the disadvantage experienced by children in low socio-economic circumstances in both behavioural and cognitive domains (Auerbach et al., 1992; Brooks-Gunn et al., 1997; Brooks-Gunn, 1998; Cairns et al., 1998; Conger et al., 1992; Duncan et al., 1994; Garrett et al., 1994; Harris & Marmer, 1996; McLoyd, 1990).

In the context of home environments characterized by neglect, filth, and disadvantage, children's lives are shaped into mirror images of their parents - not by design, but by default. Chronic disorganization takes on a life of its own within a family; an enduring mode of transmitting cycles of inadequacy from generation to generation, unnoticed and unbroken. (Musick, 1994, p. 1).

While poverty has been identified as a major threat to the adequacy of the home environment, the quality of the home can vary greatly among families in poverty (Bloom, 1964; Ramey & Ramey, 1994). Differences appear to be related to parents' intellectual and language abilities, in addition to their educational attainment (Ramey & Ramey, 1994). For instance, mothers with higher IQ scores (Gottfried, 1984) and greater educational attainment (Garrett et al., 1994; Katz et al., 1997) have been found to

provide more enriched environments for their children (Gottfried, 1984). It is possible that parents who themselves experienced little educational success, as a function of ignorance, or a sense of inadequacy in the area of learning, are less likely to initiate educational activities (Felner et al., 1995).

Introduction to the Present Studies

The Concordia Risk Project, under whose rubric the current investigations are housed, is a prospective longitudinal study evaluating the stability of and risk factors associated with aggression and social withdrawal in childhood (see Appendix B for a description of the project and a summary of earlier results). The prospective, longitudinal design of the project has enabled the exploration of continuity and discontinuity of risk across the course of development (Ollendick & King, 1994; Rutter, 1994; Wiersen & Forehand, 1994). It has also enabled the study of the inter-generational transmission of psychosocial difficulties (Loeber & Farrington, 1994). Further, the mediational role of certain variables, or indirect chain effects can be clarified as a function of the use of chronologically sequenced variables (Cairns et al., 1998; Rutter, 1994). In this way, the emphasis shifts from focusing exclusively on the manifestation of continuity to charting pathways and understanding the mechanisms supporting the persistence of disadvantage and those promoting adaptive change (Loeber & Farrington, 1994; Rutter, 1994).

The latest phase of the project addresses not only the consequences of childhood psychosocial problems in the life of the individual, but also within the life of the subsequent generation. The purpose of the two studies presented is the exploration of manifestations of and mechanisms contributing to continuity and discontinuity in risk

from childhood to parenthood and into the toddler and preschool years of the next generation. More specifically, in Study 1, direct and indirect pathways from maternal childhood aggression and social withdrawal to the parenting environment and to cognitive and behavioural functioning of offspring are explored. Study 2 marks our first foray into the relatively uncharted world of fatherhood in high risk men. It involves the prediction of factors known to threaten adequate childrearing including high school dropout, early fatherhood, and poverty.

In considering a more complete picture of developmental context that includes not only originally identified risk factors of aggression and social withdrawal, but also more proximal contextual correlates of these risk factors, models of pathways towards continuity and discontinuity in risk are proposed.

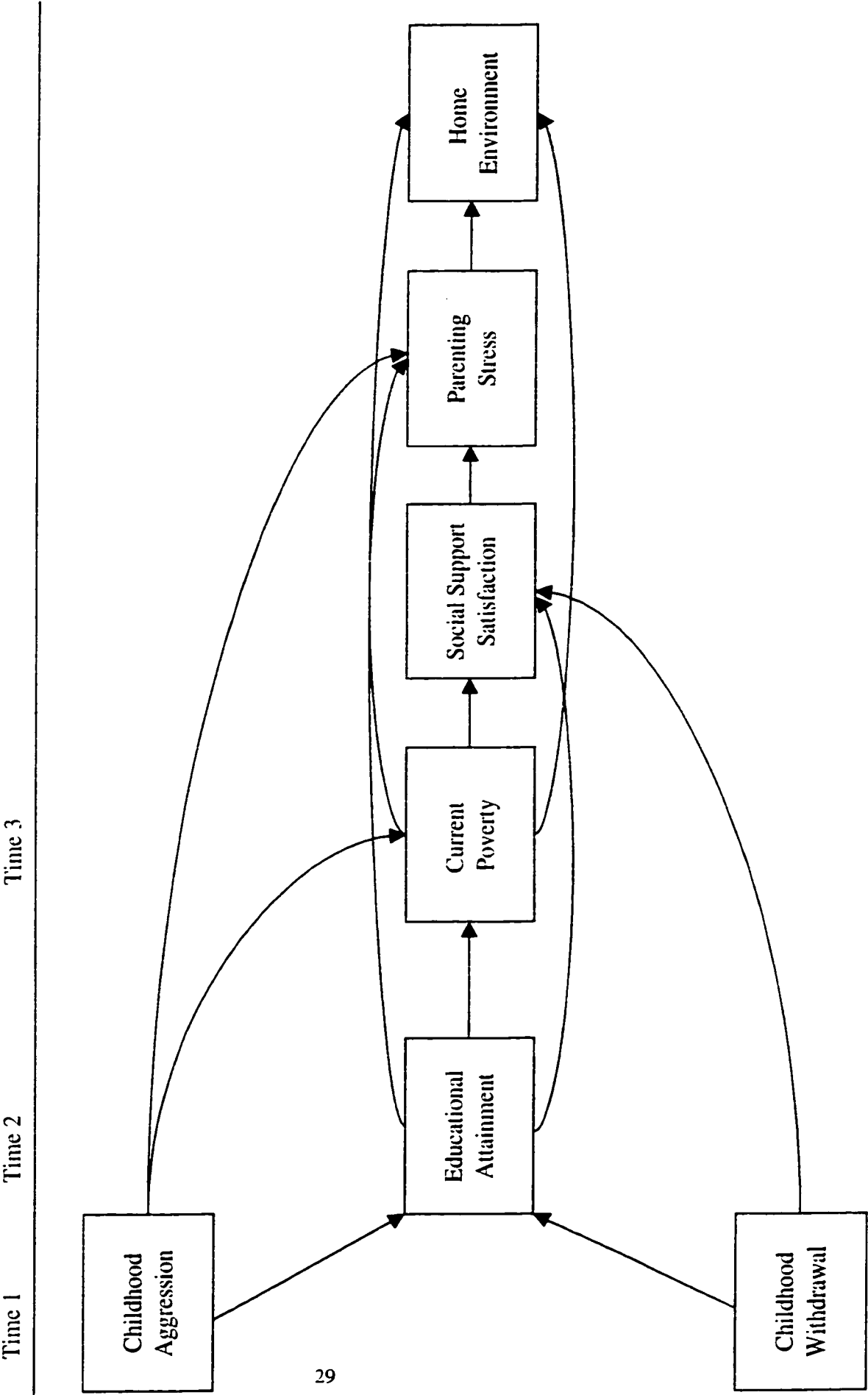
Study 1

Previous research with the Concordia project and other studies on aggression and social withdrawal in childhood have supported the notion that these two behavioural extremes serve as risk factors for continuing problems over time and across generations (see Cairns et al., 1989; Huesmann et al., 1984; Serbin et al., 1998; Zoccolillo et al., 1992). Because the relationship between childhood risk factors and developmental outcomes are rarely direct and linear (Ronka & Pulkkinen, 1995), indirect effects are also considered. In order to appreciate the mechanisms contributing to continuity and discontinuity in risk, a path model from childhood risk to parenthood is proposed (see Figure 3). In proposing this model, we attempt to explain the transitional points along the life path that support continued risk and those that promote adaptive functioning. The model proposed spans three points in time: time 1 (1976-1977), the point at which participants were identified along the continua of aggressive and withdrawn behaviours; time 2 (1980s-1990s), the point of school completion, and time 3 (1996-1998), the current parenthood phase of the project. To follow is a description of the anticipated set of relations between variables.

Hypotheses

Those who were identified as aggressive and/or withdrawn in childhood are more likely to evidence continuity in risk over time into parenthood. This continuity will likely be manifested via: lower educational attainment, increased risk of poverty, dissatisfaction with social support received, greater parenting stress, and lower quality home environments. Further, an inter-generational transfer of risk is hypothesized

Figure 3. Hypothesized Path Model Predicting Parenting Conditions for Mothers



to occur whereby the toddler and preschool-aged offspring of these parents will exhibit lower scores on cognitive assessment batteries, and increased risk for behaviour problems.

I. Intragenerational continuity of risk. In exploring the life pathways of aggressive and socially withdrawn girls from childhood to motherhood, it is first predicted that aggression and social withdrawal reduce the likelihood of academic success (Bardone et al., 1996; Caspi et al., 1987; Schwartzman et al., 1985; Serbin et al., 1998). In turn, aggression and withdrawal are thought to operate indirectly through lower educational attainment to increase the chances of financial disadvantage (Kokko et al., 1998; Serbin et al., 1998). A direct pathway from aggression to poverty is also proposed based on literature linking childhood externalizing tendencies with erratic work lives, unemployment, and dependence on social assistance in adulthood (Bardone et al., 1996; Caspi et al., 1987; Kokko et al., 1998). Next, lower educational attainment and poverty limit parents' access to social resources, and as such, are believed to threaten satisfaction with parenting social support (Bennin & Keith, 1995; Cochran, 1990; Fischer, 1982). Social withdrawal, as a function of a developmental history of non-reliance on others, is thought to predict low social support satisfaction directly as well (Caspi et al., 1988a; Newman et al., 1997; Petersen et al., 1993; Rubin & Mills, 1991; Rubin et al., 1998). Poverty, in addition to reduced social support satisfaction, is believed to place mothers at greater risk for experiencing parenting stress (Adamakos et al., 1986). Aggression is predicted to be related directly to parenting stress as a function of attributional biases associated with externalizing tendencies (Caspi et al., 1987; Crick & Dodge, 1994). Finally, aggression and social withdrawal are anticipated to be related

indirectly to lower quality home environment through lower educational attainment, poverty, and parenting stress (Brooks-Gunn et al., 1995; Felner et al., 1995; Klebanov et al., 1994).

II. Inter-generational continuity of risk. Within the context of parenthood, it is important to consider, not only the direct relationships between childhood behavioural tendencies of parents and the characteristics of the parenting environment they create, but also the direct relationship between parents' behaviour in childhood and the behaviour and adaptation of their offspring (Cairns et al., 1998). Based on previous research, direct associations of small effect sizes from maternal aggression and social withdrawal in childhood to lower IQ and aversive child behavioural tendencies are predicted (Serbin et al., 1998). Further, the relationship between aggression and social withdrawal in mothers' childhood and child functioning is thought to be in part indirect as a function of more current variables in the order outlined in the path model: first, aggression and social withdrawal operate through lower maternal educational attainment, a known risk factor in child outcomes (Auerbach et al., 1992; Duncan et al., 1994; Ramey & Ramey, 1994; Serbin et al., 1998) whose effect, in turn, is explained partially by increased likelihood of poverty (Karnes & Zehrbach, 1975). Next, poverty's effects are thought to be explained partially by maternal dissatisfaction with social support (Dodge et al., 1994; Leadbeater & Bishop, 1994). Finally, lower quality home environment is predicted to explain the variance attributed previously to the other earlier entered variables (Felner et al., 1995; Wilson, Gardner, & Burton, 1998). Rather than simply considering the home environment and omitting the intervening steps, we wanted to allow for the possibility of direct effects of the intermediate steps as well (Gottfried, 1984).

Method

Participants

Participants in the present investigation were drawn from the larger Concordia Risk Project sample. In 1977-1978, the Concordia Risk Project commenced with the recruitment of 4,109 francophone school children in grades one, four, and seven. These children, from lower socio-economic backgrounds, were living in inner city neighbourhoods of Montreal, Canada. Participation in this first phase of the project consisted of the completion of a French translation of the Pupil Evaluation Inventory (PEI; Pekarik, Prinz, Liebert, Weintraub, & Neale, 1976). The PEI (see Appendix C), a peer-nomination measure, was used to classify participants along the dimensions of aggression and withdrawal, enabling the creation of four groups: aggressive, withdrawn, aggressive-withdrawn, and contrast. In total, 1,770 children met criteria for participation including 909 girls and 861 boys. For a more thorough description of the screening procedure used in the first stage of the Concordia Risk Project, please refer to Appendix D.

Within the current investigation, women from the original sample and their young children were recruited to participate. Eligibility for selection was based on motherhood, specifically, having a child who was of toddler or preschool age (one through six years old). Based on demographic information collected in the months preceding the present investigation, a group of 251 women were identified as meeting eligibility criteria. Of these 251 women, 46 (18%) were rendered ineligible as a result of their history of refusal to participate in two or more previous phases of the project. These women were not contacted as a function of having indicated their unwillingness to continue in the study. With respect to the remaining 205 women, 7 (3%) could not be located, 22 (11%) lived too far away, and 32 (16%) children became too old to be eligible before we were able to test them. In total, of the 176 traceable, eligible women, 30 refused to participate leading to a refusal rate of approximately 17%.

Altogether, the current sample included a total of 112² mother-child dyads. At the time of initial assessment, 31 women (27.7%) were in first grade, 30 (26.8%) were in fourth grade, and 51 (45.5%) were in seventh grade. With respect to family socioeconomic status at time of recruitment, family prestige scores based on paternal occupational prestige were available for 100 (89.3%) of the women. Scores ranged from 175 to 663 ($M = 381.07$, $SD = 104.51$) (Nock & Rossi, 1979). The mean corresponds with the prestige associated with a skilled tradesperson. Minimum and maximum scores represent prestige levels associated with the following jobs: garbage collector and scientist, respectively.

Based on the original classification of mothers by their childhood peers, the present sample consists of the following groups: aggressive ($n = 18$), withdrawn ($n = 19$), aggressive-withdrawn ($n = 19$), and contrast ($n = 56$). Due to the limitations associated with small sample size, the four group classification approach was not employed. Instead, the entire sample is considered as a single unit with each mother having childhood peer nominations scores along the dimensions of aggression and social withdrawal. Hence, the two behavioural extremes are treated as continuous variables. Presented in Table 1 are the means and standard deviations for women in this sample along the two dimensions of interest. A test for skewness of the z-scores for aggression and social withdrawal revealed these scores to be normally distributed.

With respect to demographic characteristics, participating mothers ranged in age from 26 to 34 ($M = 30.38$, $SD = 2.59$). These women became mothers between the ages of 16 and 32 years ($M = 24.50$, $SD = 3.25$). At testing, their children, 48 (43%) boys and 64 (57%) girls, ranged in age from 12 to 73 months ($M = 42.30$, $SD = 18.89$). To address the wide age range covered in this study, children are divided into two cohorts. The

² Two women completed questionnaires used elsewhere, but failed to participate in aspects of data collection specifically relevant to the present study.

Table 1

Means and Standard Deviations of Aggression and Withdrawal Z-scores for Mothers

	Mean	Standard Deviation
Aggression Z-score	.40	1.07
Withdrawal Z-score	.46	.98

Note. N = 112.

younger cohort includes 21 (35.6%) boys and 38 (64.4%) girls ranging in age from 12 to 42 months. The older cohort includes 27 (50.9%) boys and 26 (49.1%) girls ranging in age from 43 to 72 months. In terms of marital status, 14 (12%) mothers were single, 1 (1%) was widowed, 39 (35%) were cohabiting, 47 (42%) were married, and the remaining 11 (10%) were either separated or divorced. Of the 86 children living in families headed by two adults, 82 (95.4%) were living with both biological parents.

As a window into the socio-economic status of women in this sample, educational attainment and occupational prestige scores were obtained. In terms of education, completed years of schooling range from 5 to 17 years ($M = 11.63$, $SD = 2.33$) with the mode representing high school completion³. Thirty mothers (26.8%) left high school prior to completion. This compares with a provincial rate of 18% according to the most recent Statistics Canada survey (Gilbert & Orok, 1993). Mothers' occupational prestige ratings range from 154 to 656 ($M = 323.13$, $SD = 107.21$). The mean prestige rating corresponds with the following jobs: cashier and hairdresser. Minimum and maximum ratings represent movie usher and mathematician, respectively (Nock & Rossi, 1979).

In addition to considering educational attainment and occupational prestige, socio-economic status was evaluated using Canada's low-income cut-off (LICO) as a point of reference (see section on measures for a full description). In total, 23 (20%) women were on social assistance, 28 (25%) women were classified as working poor, and 61 (55%) women had family incomes falling above the low-income cutoff. Thus, within this sample, 45% of women and their families were living in poverty.

In order to assess the degree to which the present sample is representative of the total Concordia Risk Project sample of women, a series of t-tests were carried out. Comparing those women who consented to participate with the remaining women with children in the original sample for whom we have recent demographic information, no significant differences emerged as a function of maternal peer classification along the dimensions of

³ In the province of Quebec, high school completion occurs at the end of the 11th grade.

aggression and social withdrawal. Further comparisons of participating and non-participating samples uncovered a significant difference between the two groups in terms of the number of years of education completed. Participating mothers finished an average of 11.60 ($SD = 2.36$) years of school while non-participating mothers completed an average of 12.33 ($SD = 2.59$), $t(467) = 2.57$, $p < .01$. No significant differences emerged with respect to comparisons on age at first child's birth. Thus, save for years of education completed, it would appear that the present sample is representative of the sample for whom we have recent demographic information.

Measures

All measures used in this study consist of French translations produced by staff members of the research laboratory who have years of experience in translation and psychology. In order to insure that translations were faithful representations of original measures, a second translator retranslated them into English and then compared back translations with originals. No significant changes were required.

Demographics. The Demographic Information Questionnaire (DIQ; Concordia Longitudinal Risk Project, 1993) (see Appendix E) was used to gather background information on participating mothers. Areas accessed by this questionnaire include parent's current age, marital status, educational attainment, and family income. Information was also gleaned regarding the age, sex and number of children the mother had. Finally, the mother's current address was verified. The DIQ requires approximately seven minutes to complete.

Poverty. In order to best represent the socio-economic circumstances in which participating families were living at the time of testing, Statistics Canada's low-income cutoff scores were calculated. While no official measure of poverty exists in Canada, the best known is Statistics Canada's LICO (Ross et al., 1994). This measure of poverty was selected so that results would be presented in a standardized fashion, comparable with

other data sets from across the country (e.g., the Ontario Child Health Study, Lipman & Offord, 1997).

The low-income cutoff was developed out of a 1959 Statistics Canada survey of family expenditure. The results of this survey indicated that the average Canadian family spent approximately 50% of its income on essential survival needs including food, clothing, and shelter. Statisticians concluded that families spending significantly more than half their incomes on basic needs were existing in impoverished conditions. Consequently, the convention of defining low income as families that spent greater than 70% of their earnings on basic needs with little or no disposable income remaining for things such as transportation, health, education, and recreation was instituted (Ross et al., 1994). Thus, the low-income cutoff represents the income required to meet a family's basic needs plus 20% (Lipman & Offord, 1997). Following the convention of most social policy analysts, the low-income cutoff is treated as the poverty line (Ross et al., 1994).

In the calculation of the low-income cutoff, poverty status is determined by family income, number of individuals living in the household, and urbanization of the community in which the family resides. The larger the community, the higher the low-income cutoff for any family size. The consideration of family size and community size results in 35 separate low-income cutoffs (Ross et al., 1994). Statistics Canada updates frequently poverty thresholds as a function of the increased standard of living in Canada. The dynamic nature of LICO speaks to the view that poverty is a relative rather than an absolute phenomenon (Ross et al., 1994).

The necessary demographic information for calculating the family's position relative to the low-income cutoff was obtained from the DIQ. Following the example of other

researchers who have found the discrimination within the category of “poor” to be important (e.g., Bradley et al., 1994; Palacio-Quintin & Jourdan-Ionescu, 1991), the generation of LICO scores enabled the creation of a variable that distinguished between those on welfare, the “working poor”, and those living above the poverty line.

Parenting social support. In order to assess parenting social support, a modified version of the Parenting Social Support Index (PSSI; Telleen, 1985) was administered (see Appendix F). The PSSI is based on the Arizona Social Support Interview Schedule (ASSIS; Barrera, Sandler, & Ramsay, 1981). It is a 22-item self-report measure tapping into 7 forms of support received by parents: relationship with a confidant, material aid, advice about childrearing, positive feedback, assistance with household tasks, child care, and social participation. For each of these categories, respondents consider the past 30 days and rate their need for the particular type of support on a 5-point Likert scale ranging from “no need at all” to “very great need.” Next, participants indicating a need for support identify providers of such support in their social network. Finally, participants rate their satisfaction with the support they received on a 5 point Likert scale ranging from “very dissatisfied” to “very satisfied.” Three total scores are generated (total perceived need for support, total network size, and total support satisfaction) by summing across stem items.

The original PSSI (Telleen, 1985) was geared to new teenage mothers with infants. At the suggestion of Telleen (personal communication, Nov. 15, 1995), the format for parents of infants was adjusted to be applicable to parents of toddlers and preschoolers. The wording was modified by the removal of the term “new” in front of mothers and by substituting “child” for “baby.” Further, the item relevant only to teen mothers was

omitted. Once again, at the suggestion of Telleen (personal communication, Nov. 15, 1995), a question derived from Barrera and colleagues (1981) was added. In this question, participants were asked to list the individuals within their network with whom they had disagreements in the last month.

With respect to psychometric properties, the PSSI evidences good reliability and validity. The initial version of the measure was tested on 69 parents of preschool and school aged children who were participating in a family support program (Telleen, 1985). Each of the total scores has been found to have a high degree of internal consistency with alphas as follows: need for social support, .79; network size, .92; and social support satisfaction, .86 (Telleen, 1985; Telleen, personal communication, November 15, 1995). Test-retest reliability scores fall within acceptable limits, within the .70 range. In terms of content validity, mean item-total correlations were .52 for need for social support (range = .38 to .64), .75 for size of social support network (range = .70 to .83), and .64 for satisfaction with social support (range = .53 to .75). Mean inter-item correlations within content areas were found to be: .35 (range = .11 to .60) for need for social support, .62 (range = .46 to .73) for network size, and .49 (range = .24 to .71) for social support satisfaction. With respect to construct validity, the PSSI was found to correlate with the Wilcox Social Support Scale, $r = .52$, $p < .001$ for the network size subscale, and $r = .38$, $p < .005$ for the satisfaction with social support subscale ($n = 66$). The PSSI is simple to read and requires approximately 8 minutes to complete.

Parenting stress. In order to measure parenting stress, the Parenting Stress Inventory (PSI; Abidin, 1986) (see Appendix G) was administered. The PSI is a self-report inventory used to identify sources and levels of stress perceived by the caregiver in

relation to the child. Parents are asked to rate the degree to which each statement is true for them along a 5-point Likert scale. Overall, the PSI taps into 3 domains: parent, child, and life stress. Each of these domains corresponds with a subscale containing 12 items. The parent domain addresses parent distress, or parents' dissatisfaction in their parenting role. This scale includes items on depression, social isolation, and the restrictiveness of the parenting role. The child domain addresses the degree of difficultness of the child. Parents report on both the child's objective behaviour as well as parents' own appraisal of the effects of the child's temperamental disposition on parents themselves. Subscales within the child domain include: adaptability, acceptability, demandingness, mood, distractability/hyperactivity, and reinforcement. Finally, the life stress scale addresses parent-child dysfunctional interaction. It captures parents' perceptions of the emotional tone of their relationship with their children given their expectations about parent-child relationships.

Previous researchers have found the PSI to be a suitable measure for use with high risk families (e.g., Ostfeld & Gibbs, 1990). With respect to psychometric features of the PSI, internal consistency, test-retest reliability, and validity are considered. In terms of internal consistency, a reliability coefficient obtained for the total score across domains was .95 (Hauenstein, Scarr, & Abidin, 1987). Within the current study, internal consistency was analysed and results indicated an alpha of .82. Test-retest reliability over a three month interval was assessed for the total score and was found to be stable with a stability index of .96 (Abidin, 1990). In addition to favorable reliability, a number of studies have highlighted the validity of the PSI (Abidin, 1990). For instance, the PSI has been found to correlate with the Family Adaptability and Cohesion Evaluation Scales –III

(FACES-III; Olson, Portner, & Lavee, 1985). The PSI requires approximately seven minutes to complete.

Home environment. In order to evaluate the quality of stimulation and experiences provided by parents to their young children, measures of the proximal home environment were undertaken (Gottfried, 1984). In a review of the literature addressing the use of the Home Observation for Measurement of the Environment (HOME; Caldwell & Bradley, 1984) (see Appendix H) across cultures, Bradley, Corwyn, and Whiteside-Mansell (1996) found that the HOME total score showed theoretically meaningful and similar correlations within family structure, family status, and child outcome measures across many cultures. Thus, we felt justified in applying the HOME to a sample of French Canadian participants.

The HOME was first constructed in the mid-1960s. It was created in response to the idea that socio-economic status was too crude a measure of the living conditions in which children develop. Researchers felt that relying on financial conditions alone might lead, in certain instances, to incorrect inferences regarding the child's home environment (Bradley & Caldwell, 1984a). While scores on the HOME have been found to be related to socio-economic status, a great deal of evidence has been uncovered in support of the HOME as a measure providing distinct and substantial information on the quality of the home environment (Elardo & Bradley, 1981).

The HOME was designed to assess the quality of the home and maternal environment with respect to stimulation of cognitive, social, and physical development in young children (Bradley & Caldwell, 1984a). Items included in the HOME range from objects

in the family home to interactions, events, and teaching activities carried out within the family environment (Bradley & Caldwell, 1984a; Bradley et al., 1996). More specifically, the HOME assesses the presence of adequate play materials, diversity of experience both inside and outside the home, modeling, reinforcement of social development, and language and academic stimulation (Garrett et al., 1994).

The HOME is administered in the child's home with the mother. It includes a series of yes/no statements. The semi-structured format incorporates both observational and interview components with the goal being to limit intrusion and enable uninhibited, normal family behaviour (Bradley et al., 1996). In the present study, two versions of the HOME were used: the infant HOME designed for children between the ages of zero and three, and the preschool HOME for children ranging in age from three to six. The infant version of the HOME, the Home Inventory for Families of Infants and Toddlers, consists of 45 items combined to form six scales while the preschool version, the Home Inventory for Families of Preschoolers (Three to Six) has 55 items and eight scales. Total scores are computed by summing across scales the total number of endorsed, or "yes" items. In spite of the difference in total number of items across the two formats, the total scores for each version are believed to represent a similar construct of the home environment (R. H. Bradley, personal communication, November 24, 1998). The subscales of the infant HOME include: a) emotional and verbal responsivity of parent; b) acceptance of child's behavior; c) organization of physical and temporal environment; d) provision of appropriate play materials; e) parent involvement with child; and f) opportunities for variety in daily stimulation. The preschool HOME includes the following subscales: a) learning stimulation; b) language stimulation; c) physical environment; d) warmth and

affection; e) academic stimulation; f) modeling; g) variety in experience; and h) acceptance.

Reliability and validity of the HOME are well-established (see manual, Caldwell & Bradley, 1984). With respect to reliability, inter-observer agreement, as measured by percent agreement typically ranges within the high eighties and nineties (Gottfried, 1984). With respect to test-retest reliability, a moderate level of stability has been found in time lags of months and years during infancy and preschool period for the quality of the home environment (Bradley & Caldwell, 1984a). In a 20 month interval, the average coefficient was found to be .58 (Gottfried, 1984). Bradley and Caldwell (1984b) reported internal consistency coefficients averaging .72, indicating a moderately high degree of homogeneity among scale items. Note that the small number of items per subscale may attenuate the correlations. In the current study, internal consistency was analysed for each version of the HOME. Results indicated alphas of .77 and .70 for the infant and preschool versions respectively. Finally, several reviews (e.g., Bradley & Caldwell, 1988; Elardo & Bradley, 1981) have indicated that the HOME is a valid measure of the home environment in that it is related in predictable ways to an array of health and development measures as well as to many ecological factors (Bradley et al., 1994).

Training on the home is essential. In the case of the present study, training proceeded as follows: first, interviewers studied the manual; next, practice coding took place whereby novice interviewers double coded the interviews of trained coders. When novice coders were found to be reliable with veteran coders, novices began to carry out interviews independently. All interviewers met periodically to discuss issues of concern such as unexpected responses that were difficult to code.

Child Cognitive Development

In order to assess cognitive development, two measures were used, one for each cohort. For the toddler group, the Bayley Scales of Infant Development II (BSID-II; Bayley, 1993) were administered. The preschoolers (specifically, children aged 42 months and older) were given the Stanford-Binet Intelligence Scale, fourth edition (SB-FE; Thorndike, Hagen, & Sattler, 1986/1989).

Infant development. The Bayley Scales of Infant Development II (BSID-II; Bayley, 1993) were administered to assess the developmental functioning of the youngest children in this sample. Unlike measures of intelligence, measures of development have as their goal the evaluation of whether target children have matured and developed stage-specific abilities (Bayley, 1993). The BSID-II are geared towards children between the ages of one and 42 months. Areas evaluated include: cognitive processes, verbal and motor expressive functions, auditory and visual receptive functions, and basic neurological functions. Individual items are combined to form three basic scales: Mental, Motor, and Behavior Rating. The psychometric properties of the BSID-II are well documented (see Bayley, 1993). Administration time ranges from between 35 and 60 minutes depending on the age of the child.

For the purposes of the present study, only the mental scale is considered. The mental scale assesses cognitive, language, and personal/social development (Bayley, 1993). Cognitive items include auditory and visual habituation, problem solving, memory, object permanence, and perceptual organization items. Language items incorporate both expressive and receptive components. Finally, personal/social development items reflect social problem solving (Bayley, 1993). The decision to focus solely on this scale is

consistent with the work of other researchers who study high risk children (e.g., Ramey, 1992).

Preschool cognitive abilities. The Stanford-Binet Intelligence Scale (4th ed.; SB-FE; Thorndike et al., 1986/1989) was administered to the preschool-aged children in this sample. Eight of the possible 15 subscales were administered: vocabulary, bead memory, quantitative, memory for sentences⁴, pattern analysis, comprehension, absurdities, and copying. In order to capture general intelligence, the Composite Score was used. The psychometric properties of the Composite Score are excellent (Sattler, 1988). Administration time for this age group ranged from approximately one to two hours depending on the child's ability and cooperation.

Child Socio-emotional Adjustment

Observed behaviour during testing. To evaluate both adaptive and maladaptive behaviour, examiners rated children's behaviour during testing by completing the Ratings of Children's Behaviour During Testing Scale (RCBT; Rodgers, 1995). The RCBT (see Appendix I) is a 24-item scale assessing a number of child behaviours that contribute to or detract from ideal test performance. The scale items address the child's motivation, concentration, perseverance, and expression of frustration during testing. Further, level of anxiety, and response to examiner praise, instruction, and limit-setting is also evaluated. Each item is scored on a 5-point Likert scale from "Never" to "Always." Items that reflect maladaptive strategies are reverse coded so that a high score indicates

⁴ Upon discussing results on memory for sentences with the group of examiners administering the SB-FE, it became apparent that many of the children were being penalized for responding to a French from France test with Quebecois phrases. A number of the children, when repeating back sentences, added words so that the original sentence would sound more true to their own dialect. So as not to depress scores as a function of cultural difference, memory for sentences was dropped from the calculation of the composite IQ score.

adaptive functioning. Examiners complete the RCBT following the administration of the SB-FE on the second day of testing so that the examiner has two opportunities to observe the child's behaviour during testing. Training on the RCBT involved a number of meetings with examiners who reviewed taped administrations of the SB-FE and discussed each RCBT item. Further, examiners met throughout data collection to review situations that were ambiguous. Internal consistency of the RCBT was assessed and the alpha was found to be .93. The RCBT requires approximately six minutes to complete.

Parental appraisal of child behavior. In order to assess parental appraisal of children's social adjustment, the Child Behavior Checklist - Parent Report Form (CBCL-PRF; Achenbach, 1991) was administered (see Appendix J). The CBCL is a standardized, multi-axial, empirically based assessment tool providing information on child adjustment. In order to evaluate both emotional and behavioural problems, parents are presented with a series of items on which they rate their child. Scores range from (0) "not true", through (1) "sometimes true" to (2) "often true." Parents are asked to consider their children's behaviour over the previous six months. The CBCL contains eight subscales: withdrawn, somatic complaints, anxious-depressed, social problems, thought problems, attention problems, delinquent behaviour, and aggressive behaviour. Based on summed scores, T-scores are generated reflecting a given child's severity of problem behaviour relative to other children of the same age and sex. In addition to the aforementioned subscale scores, three overarching scales are also computed: Internalizing, Externalizing and Total Problems. These global scales scores are also converted to standardized T scores based on gender and age-dependent norms. For both subscales and global scales, T-scores of 70 or greater are considered to fall within the

clinical range. Within the present study, the Internalizing and Externalizing scales were used. The Internalizing scale brings together the withdrawn, somatic complaints, and anxious-depressed subscales. The Externalizing scale consists of the delinquent and aggressive behavior scales and reflects conduct problems.

The psychometric properties of the CBCL are well documented (see Achenbach, 1991). Internal consistency of the subscales of the CBCL ranges from .46 to .96 (Achenbach, 1991). Further, test-retest reliability at a one week interval has been found to range from .63 to .97 for scale scores (Achenbach, 1991). The mean test-retest reliability score for the problem scale scores was found to be .87.

Moving from reliability to validity, the CBCL has been found to have excellent properties in terms of distinguishing between referred and non-referred children. In terms of construct validity, CBCL scales have been found to be correlated with numerous other measures of child problem behaviour such as the Conners Parent Questionnaire (1973). On average, the CBCL requires between 15 and 17 minutes to complete.

Observed negative behaviour during free play. In order to validate maternal reports and examiner ratings of behaviour during testing, behavioural observations of the children were made during a free play interaction with their mothers in the home. The family environment as context for interaction may serve to improve validity. Interactions occurring in the natural environment more closely approximate normally occurring interactions (Andresen & Telleen, 1992).

The coding system was developed for specific use with this high risk population (de Geneva, 1999). For the purposes of the present study, only negative child behaviour is considered. The frequency of negative child behaviours is coded during 10 second

intervals. Proportions are calculated by dividing the total frequency of occurrence of negative behaviours by the number of 10 second intervals observed. A total of three negative behaviours were considered during each 10 second period. These behaviours included: aggressivity, resistance, and off-task behaviour. *Aggressivity* was coded as present if children exhibited aggressive behaviours directed towards either their mother or objects. Aggressive behaviour included physical behaviour such as hitting, kicking, and throwing toys. *Resistance* was coded when children were observed pulling, pushing, struggling, or turning away from their mother. Finally, *off-task behaviour* was coded when children left the testing area, or attempted to leave and had to be restrained by their mothers. Inter-rater reliability was calculated on 20% of the mother-child pairs. Results indicated a percent agreement of .92 for negative child behaviour.

Referral status. In considering the inter-generational transfer of risk from mothers to offspring, referral status was assessed. A classification system (see Procedure section) was developed whereby, based on examiner ratings, in collaboration with the research team, colour codes were assigned to each participating child. The colour codes of green, yellow, and red correspond respectively with no immediate developmental risk, moderate risk, and finally high risk requiring an immediate referral.

Procedure

The participants for this study were recruited and tested during the period spanning from September, 1996 through April, 1998. Initial contact was made by telephone. At that time, the nature of the study and the testing protocol was explained to potential participants. Mothers were reminded of the overall focus of the project that is, human development with a special emphasis on children. No information was provided as to

specific hypotheses. Women were informed that they would be paid \$60.00 upon the completion of the study requirements. With those consenting to participate, appointments were scheduled for two home visits lasting up to three hours and separated by a one week interval. Testing⁵ was carried out in teams of two by a research assistant (the interviewer) and either a Master's level psychologist or a doctoral student (the examiner). All researchers were blind to the original classification of mothers on the aggression and social withdrawal scales of the PEI.

The home visit began with the examiner explaining the procedure for the day to both mother and child while the interviewer set up the toys for the interaction tasks. This introductory period enabled the examiner to develop rapport with the child in the mother's presence. During the review of the day, mothers were informed of their rights to withdraw at any time as well as the researchers' obligation to report situations of neglect and/or abuse. With this knowledge, mothers completed the consent form (see Appendix L). At this point, if the child was ready to part from his or her mother, members of the dyad were separated. The mother retired to another room with the interviewer to participate in an interview while the child participated in cognitive testing with the examiner. One hour into the home visit, activities were suspended so that a series of interaction tasks might be carried out and videotaped. For the purpose of the present study, only the free play task is relevant. During the free play task, mothers were asked to play with their child as they "normally would" for a period of 15 minutes. The free play took place on a vinyl mat that contained a series of age-appropriate toys. These toys included: Lego blocks, a plastic tea set, a plastic baby doll, three books, and a plastic

⁵ For a complete description of the full protocol used in the larger study of which the current study is but a

telephone. The interactions were videotaped using a Sony video-8 camera for subsequent behavioural coding.

Following the interaction period, the examiner continued the cognitive assessment and the interviewer continued the interview with the mother. At the three hour mark, an appointment was made for the following week. As well, the interviewer gave the mother a package of questionnaires to be completed by the following session.

During the second home visit, the examiner reconnected with the child and completed the cognitive assessment while the interviewer finished interviewing the mother. The HOME was completed by the examiner through direct observation of the home environment and through a follow-up interview with the mother. Finally, the mother was asked if there were any areas of family functioning for which she felt she required help. If the mother indicated problem areas, referral sources were found and contact numbers were provided. At the close of the second home visit, mothers returned their questionnaire packages and were reimbursed for their efforts with a payment of \$60.00. Children were thanked for their participation and were given a small educational, age-appropriate gift such as a book or a puzzle.

Following the home visits, examiners scored the cognitive or developmental measures and, together with interviewers, considered the entire family profile. A summary of each family's situation was presented to the larger laboratory team during bi-monthly case conferences. At such meetings, intensive discussions were held. Based on the evaluation of the examiner and interviewer, in conjunction with the consensus of the group, each

portion, please see Appendix K.

child was coded as being at “high risk” (red), “moderate risk” (yellow), or “low risk” (green).

Following each case conference, feedback was given by phone for families in the “low risk” and “moderate risk” groups. A third home visit was scheduled with “high risk” families so that the examiner might review in detail testing results as well as referral sources. Each family, regardless of risk code, received a descriptive, non-quantitative report of the child’s cognitive functioning. With respect to the “high risk” families for whom referrals were made, phone follow-up was carried out approximately one month after feedback to see how the mother was coping and whether or not she acted on referral recommendations.

Results

Variable reduction

To address the limitations associated with small sample size including low power and chance findings, the number of variables was reduced. First, rather than considering high risk status in terms of four groups: aggressive, withdrawn, aggressive-withdrawn, and comparison, a dimensional approach was employed. Each participant's z-scores along the dimensions of aggression and social withdrawal were considered. In this way, each individual was included in the measurement of aggression and social withdrawal. Fergusson (1999) argues that the dimensional approach is superior to the designation of an arbitrary ceiling above which children are deemed to be at risk.

In keeping with concerns related to power, while data were collected on parents' expressed degree of need for social support, in addition to the number of network members available to provide such support, parenting social support scores were limited to mean reported satisfaction with social support received. The decision to restrict social support data to satisfaction was based on literature indicating this aspect of support as most important (e.g., Cohen & Hoberman, 1983; Kranzler et al., 1990; Lieberman, 1982; Markstrom & Tryon, 1997; Werner & Smith, 1989). To compute total perceived social support satisfaction, means were calculated across the content areas in which mothers expressed a need for social support.

In addition to the aforementioned modifications, HOME scores were manipulated. As a function of the wide age range of young children participating in this study, two versions of the HOME were employed: the Home Inventory for Families of Infants and Toddlers, and the Home Inventory for Families of Preschoolers. And while the two versions of the HOME differ with respect to the targeting of developmentally relevant features of the environment, there does exist a considerable degree of overlap (R. H. Bradley, personal communication, November 24, 1998). The HOME scales are considered to reflect the same basic construct, that is, the quality of the young child's

home environment. In order to preserve the unity of the sample and to avoid reducing sample size, HOME scores were converted to z-scores with each participant's score compared to the mean score on the version of the HOME appropriate for participant's offspring's age. In this way, participants' children, regardless of age, were considered simultaneously. In a personal communication (November 24, 1998), Bradley supported the use of such an approach indicating that others, including he and his colleagues, have treated the issue of different aged children in a single sample in the way described above.

Data screening

Prior to analysis, all data files were reviewed for input errors and missing data. Upon screening, it became apparent that there existed missing data among the 112 participating families. The majority of the gaps in the data came from mothers skipping pages in the questionnaire package thus providing incomplete information. Seven participants were missing Social Support Scale scores, and four were missing HOME scores. In order to correct for these missing data points so as to avoid the loss of data, mean replacement was employed as a conservative estimate of actual scores (Tabachnick & Fidell, 1989).

To further prepare data for analysis, both univariate and multivariate assumptions were evaluated through consideration of distribution characteristics. The majority of variables were found to be normally distributed; however, HOME scores and satisfaction with social support scores were negatively skewed. Further, one univariate outlier was identified on the HOME (preschool version) and two were found on the social support satisfaction variable. With respect to the HOME, the negative skew suggests a ceiling problem such that many families obtained high scores on the HOME while a smaller number received lower scores. The negative skew for social support satisfaction was indicative of a situation in which most mothers who reported a need for social support felt relatively satisfied with the support they received and a smaller number of mothers perceived the social support they received to be inadequate.

In order to correct for the negative skewness observed, HOME and mean social support satisfaction scores were transformed. With corrected variables in place, data were screened for violations of multivariate assumptions. Based on calculations of Mahalanobis' distance, no significant outliers were identified. Plots of the standardized residuals versus the predicted values supported the assumptions of linearity and homogeneity of variance (Stevens, 1992).

Design

Analyses were carried out using EQS (Bentler, 1995), and the Statistical Package for Social Sciences (SPSS; Norussis, 1990). In order to test hypotheses, two sets of analyses were undertaken: (1) a path analysis, based on a covariance matrix, exploring continuity of risk from childhood to motherhood and (2) a series of hierarchical multiple regressions exploring the transfer of risk from mothers to their offspring. Path analysis was selected for use with the mother data as a function of hypothesized sequential pathways to continuity of risk and predictions about discontinuity of risk as well. Due to the constraints of sample size, in part a function of separate measures for the toddler and preschool-aged participants, outcomes for offspring, while conceptualized as terminal points along the pathways from maternal childhood risk could not be explored using structural equation modeling. Instead, hierarchical regressions were used with the order of entry of predictors based on chronology and the movement from macroenvironmental influences to more proximal microenvironmental variables.

In the continued interest of minimizing the number of predictors in the analysis, child sex and its interaction with maternal variables was explored during data screening. Significant effects were observed only in the direct prediction from child sex to referral status and infant Bayley mental scores. Consequently, child sex is considered only in the prediction of the aforementioned dependent measures.

Hypothesis I: Intragenerational Continuity of Risk

Prior to presenting the path model design employed, poverty is considered descriptively. Within the present sample, 45% of women and their families were living in poverty at the time of testing. Nationally, approximately 21% of children under 18 live in poverty (Statistics Canada, 1998). According to the 1996 Census, the latest year for which such data are available, the rate of people living below the low income cut-off on the island of Montreal was 27.3% (Statistics Canada, 1998). Comparing the financial circumstances of the present sample with national and municipal figures, it becomes apparent that the current sample is high risk, not only by virtue of mothers' aggression and/or social withdrawal in childhood, but as a function of current poverty as well. To best understand the conditions of cumulative risk associated with financial disadvantage, it is important to note that of the 23 women on welfare in the sample, 17 (73.9%) were single mothers.

In the exploration of intragenerational continuity of risk, it was hypothesized that aggression and withdrawal in childhood would both directly and indirectly predict conditions fostering continued disadvantage in a second generation. More specifically, a path model was proposed linking childhood aggression and social withdrawal⁶ to conditions that threaten adequate parenting (see Figure 3).

Path analysis is a multivariate, statistical approach based on apriori ideas about the direct and indirect ways in which variables are related to one another (Byrne, 1994; Kline, 1998; Martin, 1987). It is thus theory-driven. Kline (1998) notes however that often, the data appear inconsistent with the model. In the face of this mismatch, researchers frequently go back and revise their original hypotheses and test the revised

⁶ Note that the model does not presume that aggression and social withdrawal covary. As a function of sampling in the recruitment of the 1,770 participants, aggression and withdrawal did not covary ($r=.03$) in the sample of girls ($N=909$).

models with the data. In this way, path analysis can be both confirmatory as well as exploratory.

Structural equation modeling is dependent on the availability of relatively large samples (Kline, 1998). At the same time however, no absolute standards exist with respect to sample size and model complexity. In the present study, given the relatively small sample size ($N = 112$), the model proposed is fairly simple, containing only seven variables and a corresponding 20 parameters. Because there exists greater possibility for sampling error in smaller samples, results obtained using such samples tend to be less stable (Kline, 1998). Consequently, the current results will be interpreted cautiously with conclusions being tentative until replicated.

Moving from sample size to effect size, across disciplines, there are no absolute standards in interpreting effect sizes of path coefficients (Kline, 1998). In the social sciences smaller effects than in the natural sciences are anticipated as a function of our inability to control and/or identify all relevant predictors. A generally accepted rule for interpreting the size of path coefficients is as follows: coefficients less than .10 are considered small, those between .11 and .50 are considered medium, and those greater than .50 are considered large (Cohen & Cohen, 1983; Kline, 1998). The majority of the path coefficients in the present study fall within the medium range.

Within the model proposed, all pathways were predicted to operate in a unidirectional fashion. The assumption of unidirectionality is not problematic for variables that occur in chronological sequence. Questions arise however with respect to the variables collected simultaneously: current poverty, social support satisfaction, parenting stress, and home environment. In order to rationalize a single direction of causal flow, one must turn to theory and past research. As was outlined previously, a great deal of support has been reported in the literature for the notion that poverty fosters low social support (Bennin & Keith, 1995; Klebanov et al., 1994), parenting stress (Deater-Deckard & Scarr, 1996; Webster-Stratton, 1990), and lower quality home environment (Felner et al., 1995;

Klebanov et al., 1994). Poverty threatens parents' access to social resources (Cochran et al., 1990; DiLeonardi, 1993). As a function of these findings, poverty is predicted to lead to the aforementioned parenting conditions.

In addition to the directional relations between current poverty and contemporaneous parenting variables, directional relations within parenting variables were also proposed. Once again, directions proposed are grounded in previous research. Social support has been found to be predictive of lower levels of parenting stress (Deater-Deckard & Scarr, 1996; Furstenberg et al., 1987; Gelfand, Teti, & Fox, 1992; Smith, Brooks-Gunn, & Klebanov, 1997). In turn, parenting stress has been found to predict lower quality home environments (Brooks-Gunn et al., 1995).

The correlation matrix as well as the means and standard deviations of variables are found in Table 2. Presented in Figure 4 is the hypothesized path model. To begin to evaluate the adequacy of the model proposed, a number of omnibus fit indexes are reported including: (a) overall χ^2 ; (b) comparative fit index (CFI); (c) nonnormed fit index (NNFI), and (d) the standardized root mean square residual (SRMR) (Kline, 1998). Results are indicative of an adequately fitting model: $\chi^2(8, N = 112) = 4.78, p > .10$, CFI = 1.00, NNFI = 1.08⁷, SRMR = .04. Therefore, the prediction of intragenerational continuity of risk and the mediational roles of educational attainment, poverty, and social support is supported, assuming directionality specified is correct.

Hierarchical modeling was employed in the present study. The original proposed model was trimmed through the elimination of non-significant pathways (Byrne, 1994). Please see Figure 5 for a diagram of the trimmed path model. So as not to depend too greatly on chance findings, the only paths dropped were those which I felt theoretically, made sense to drop. The direct pathway from childhood aggression to current parenting stress was dropped, as was the pathway from educational attainment to social support

⁷The NNFI is beyond the expected range, 0-1. In small samples such as the present one, this situation can arise as a function of the model fit being close to perfect (Kline, 1998).

Table 2

Correlations Between Variables Along the Pathways to Parenting Context, Means, and Standard Deviations

Variables	1	2	3	4	5	6	7
1. Childhood aggression	--	-.08	-.25**	.23**	-.14	.19*	-.17 ^t
2. Childhood withdrawal		--	-.15 ^t	.09	-.16 ^t	.14	-.21*
3. Educational attainment			--	-.30**	.14	-.13	.44**
4. Current poverty				--	-.38**	.24**	-.40**
5. Social support satisfaction					--	-.41**	.31**
6. Parenting stress						--	-.40**
7. Home environment							--
<i>M</i>	.40	.46	11.63	1.34	.84	71.36	-.02
<i>SD</i>	1.07	.98	2.36	.80	.60	16.76	.94

Note. N = 112.

^tp < .10. *p < .05. **p < .01.

Figure 4. Path Model Predicting Parenting Conditions for Mothers

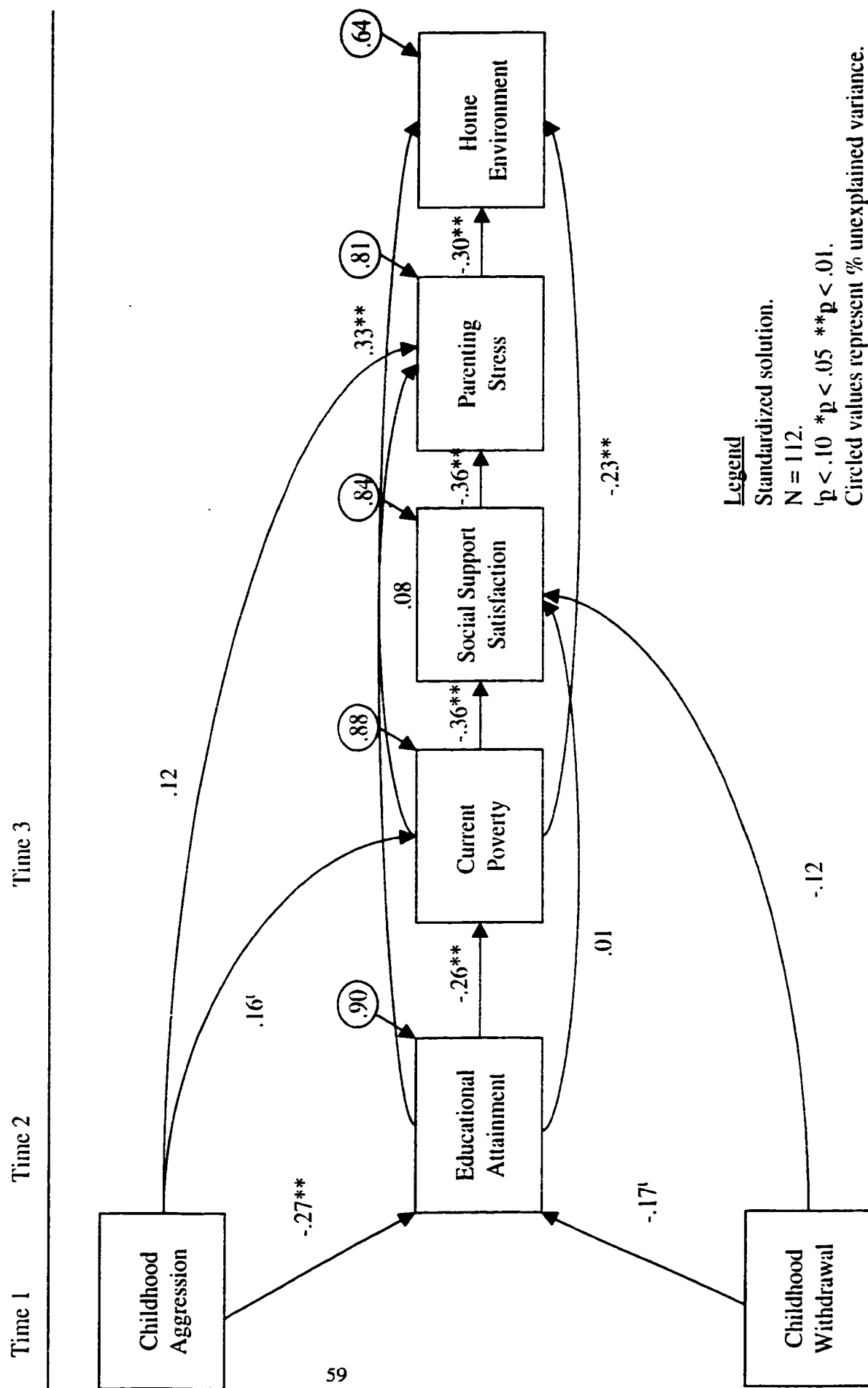
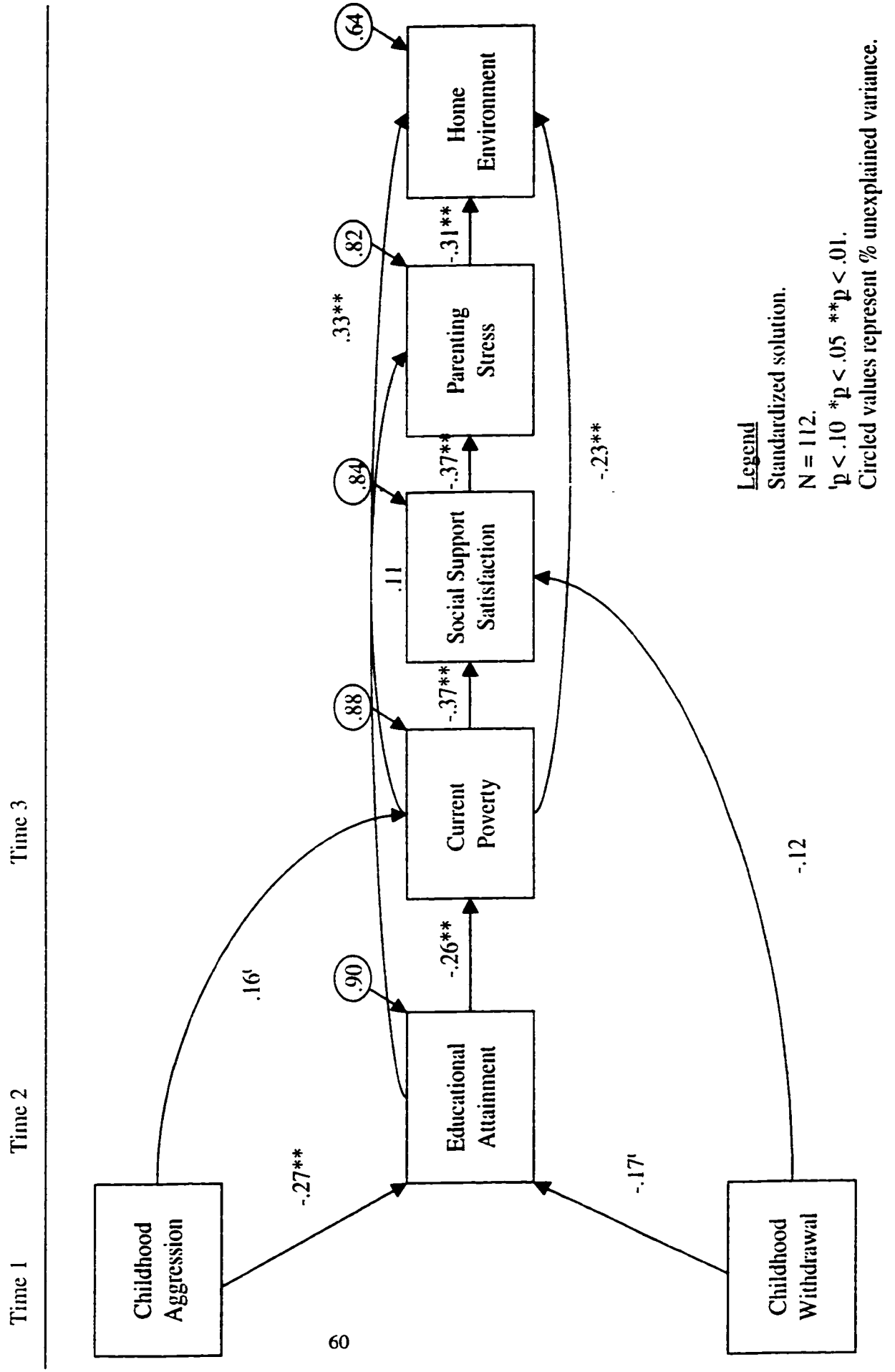


Figure 5. Trimmed Model Predicting Parenting Conditions for Mothers



satisfaction. In each instance, I felt that the remaining indirect pathways connecting the variables thought previously to be directly related would suffice in explaining the predicted associations. The hypothesis linking aggression and parenting stress directly was originally proposed based on the attributional biases of aggressive individuals. In ambiguous situations, these individuals infer hostile intent (Crick & Dodge, 1994; Dodge & Frame, 1982). Extrapolating from this finding, it was thought that mothers with childhood histories of aggression might be more likely to assume hostile intent in their children's aversive behaviour. Correspondingly, they might perceive their children's behaviour and the parenting role as more stressful. The attributional bias of aggressive individuals however may be accounted for earlier in the model. For instance, lower educational attainment, increased financial problems, and low social support may all in part be attributed to problems in social functioning experienced by those with a history of aggression in childhood (Kokko et al., 1998; Newman et al., 1997; Serbin et al., 1998). As such, the direct pathway is unnecessary. With respect to educational attainment and social support, previous research has indicated an association between these variables (e.g., Cochran, 1990; Fischer, 1982). At the same time, the reasons provided for explaining this association, including increased size of social network and greater involvement in social activity can be explained by education's link to financial status (Shaw & Bell, 1983; Statistics Canada, 1997). As such, the direct path from educational attainment is no longer necessary.

Assessing the goodness of fit of the trimmed model, results were indicative of an adequately fitting model: $\chi^2(10, N = 112) = 6.72, p > .10, CFI = 1.00, NNFI = 1.07^8$, SRMR = .04. Therefore, assuming directionality specifications are correct, the trimmed model also provided evidence in support of the intragenerational continuity of risk and the linking roles of educational attainment, poverty, and social support in the association

⁸The NNFI is beyond the expected range, 0-1. In small samples such as the present one, this situation can arise as a function of the model fit being close to perfect (Kline, 1998).

between maternal childhood psychosocial risk and conditions of parenting. In order to evaluate whether the trimmed model represented the data as well as did the hypothesized model, a χ^2 difference statistic was calculated, $\chi^2(2) = 1.94, p > .10$. As a function of non-significance, the trimmed model represented the data as well as did the hypothesized model. In the interest of parsimony, paths will be described for only the trimmed model.

In keeping with previous research, pathways from both aggression and social withdrawal in childhood to educational attainment were found to be significant or approached significance ($\beta = -.27, p < .01$, and, $\beta = -.17, p < .10$ respectively). That is, those with elevated scores on aggression and/or social withdrawal in childhood were at increased likelihood of completing fewer years of schooling. The association between childhood behavioural tendencies and educational attainment was over one and one half times stronger for aggression than for social withdrawal. Moving into the parenting context, a trend was observed wherein aggression predicted directly poverty ($\beta = .16, p < .10$). Aggression and social withdrawal in childhood were related indirectly to current poverty as a function of the mediational role of lower educational attainment ($\beta = -.26, p < .01$). Current poverty, in turn, mediated the relationship between childhood variables and dissatisfaction with social support ($\beta = -.37, p < .01$). The stressful effects of raising a family in the context of poverty were manifested by the direct relationship between low satisfaction with social support and parenting stress ($\beta = -.37, p < .01$). Finally, parenting stress, in addition to poverty, and low educational attainment were found to be predictive of a lower quality home environment ($\beta = -.31, p < .01, \beta = -.23, p < .01$, and $\beta = .33, p < .01$, respectively).

While the overall fit of the models proposed provides a certain degree of confidence in our ability to explain the relations among variables, it is critical to note that proving causality is not viable due to the lack of consideration of alternate models and the omission of important variables from the researcher's model (Kline, 1998). The final

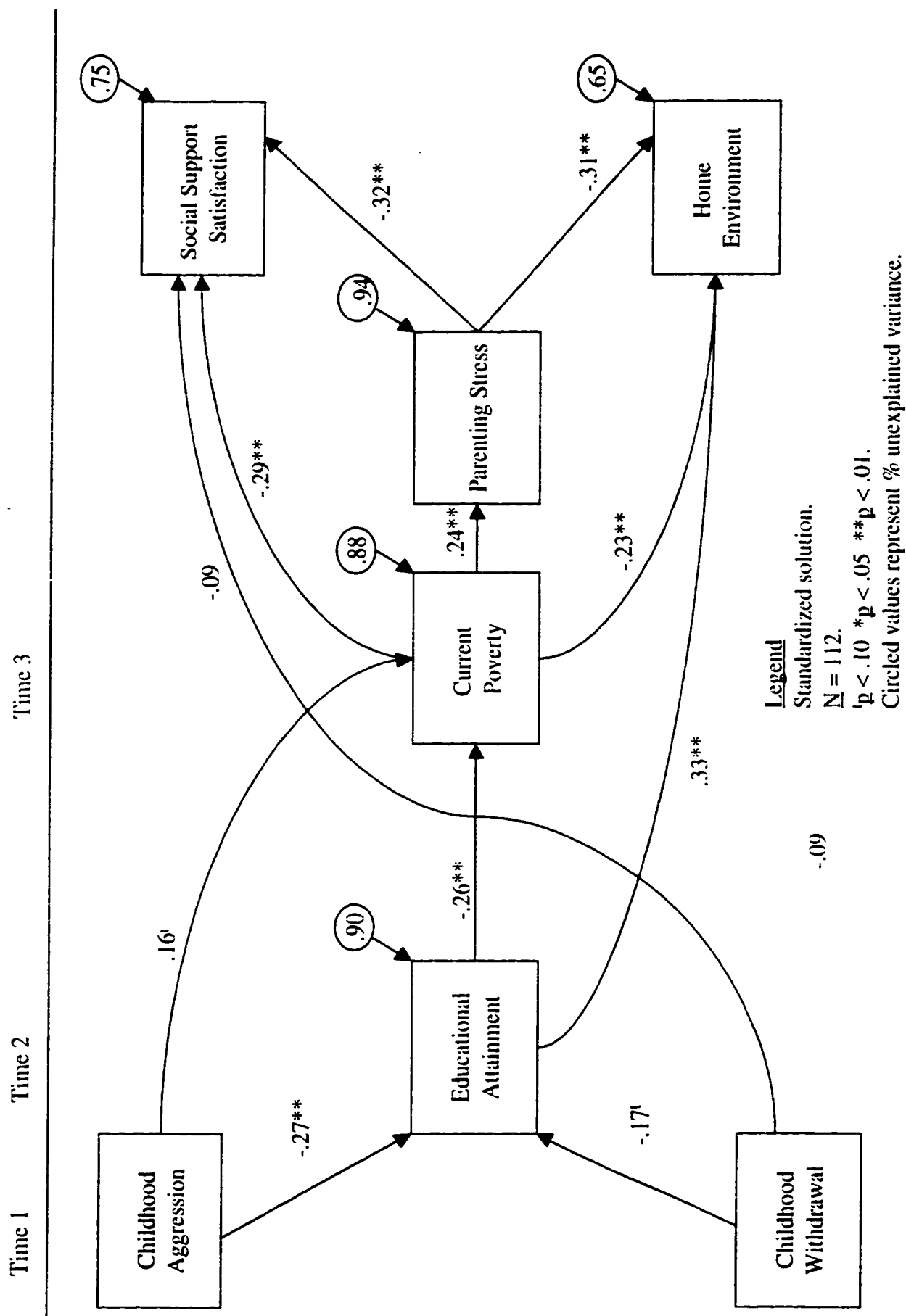
conclusion one might make is that the data can be fit by the model and not that the model is the best or only correct possibility in terms of best fit (Kline, 1998).

In order to increase confidence with the proposed model, one final model was tested as a competing explanation for the observed relations (see Figure 6). In both the hypothesized and trimmed versions of the proposed model, satisfaction with social support was predictive of increased levels of parenting stress. Because satisfaction with social support and parenting stress, both parent reports, were collected simultaneously, it is possible that the direction of the relationship is from parenting stress to social support satisfaction. To evaluate this possibility, an alternative model was proposed. If the alternative model fits the data as well as does the original, hypothesized model, then the choice among them must rest on theoretical grounds (Hoyle & Panter, 1995; Kline, 1998).

The alternative model reflects a modification in the directional arrows presented in the trimmed model. The number of paths has not been altered. The only difference between the two models lies in the direction of the arrow between satisfaction with social support, and parenting stress. In the alternative model, parenting stress predicted dissatisfaction with social support. As a function of perceiving greater stress in their lives, parents might be less inclined to report satisfaction with the social support they received. It is possible that parents who are already stressed by their role are unable to effectively mobilize their social resources.

Results of omnibus fit indexes suggest an adequately fitting model: $\chi^2(10, N = 112) = 7.65, p > .10, CFI = 1.00, NNFI = 1.05, SRMR = .05$. Comparing the indexes of the trimmed and alternative models, small differences occurred in favor of the better fit in the former. However, as a function of magnitude, differences appear to be rather trivial. Moving from the overall fit indexes to the individual pathways, a few small differences emerge. First, the effects of poverty on parenting stress become direct where previously, they were mediated by satisfaction with social support. The effects of poverty, previously

Figure 6. Alternative Model of Trimmed Path Model Proposed for Mothers



found to operate directly on social support, continue to operate directly; however, the size of the path coefficient is reduced from $-.37$ to $-.29$. This change in magnitude can be explained by the addition of the indirect pathway through parenting stress. The path from poverty to parenting stress ($\beta = .24, p < .01$), multiplied by the path from parenting stress to satisfaction with social support ($\beta = -.32, p < .01$) equals $-.08$. This indirect effect, summed with the direct effect of poverty on dissatisfaction with social support ($\beta = -.29, p < .01$) results in a total effect of $-.37$, the total effect observed in the trimmed model.

The observation that the alternative model fits the data as well as the hypothesized model reflects the fact that structural equation modeling, a statistical procedure, cannot confirm directionality (Hoyle & Panter, 1995). Faced with the limitations of the statistics employed, we depend on theory and previous research to support the directionality specifications proposed, that social support operates to buffer against parenting stress (see Andresen & Telleen, 1992; Cohen & Wills, 1985; Crockenberg, 1988). Nowhere in the literature reviewed was parenting stress proposed to be a predictor of social support. Instead, social support was always conceptualized as a protective factor in the prediction of parenting stress. Revisiting the operational definition, social support prevents parents from perceiving their role as stressful (Andresen & Telleen, 1992) or alleviates stress once parenthood has been perceived as stressful (Cohen & Wills, 1985).

Hypothesis II: Inter-Generational Continuity of Risk

The second set of hypotheses centered on the continuity of risk across generations, and more specifically, the direct and indirect mechanisms of risk transfer from mother to child. Aggression and social withdrawal in childhood were anticipated to predict negative child outcomes directly as well as indirectly through a sequence of intermediate parent variables including educational attainment, current poverty, low social support satisfaction, and finally, lower quality home environment.

Child outcomes assessed spanned both cognitive and behavioural dimensions of development. Cognitive development, and behaviour were considered separately by age cohort due to the large age range covered in the sample, and the corresponding use of separate measures. The impact of particular environmental characteristics has been found to vary as a function of age (Wachs, 1992). Due to the limited data available on the behaviour of the toddler sample, only mental development will be considered while both cognitive and behavioural development will be considered in the preschool group.

In order to evaluate predictions of child outcomes, a series of hierarchical multiple regressions were undertaken. Hierarchical regressions enable the observation of both direct and indirect pathways from childhood aggression and social withdrawal. When carrying out multiple regression analyses, the minimum requirement for the ratio of participants to predictors is five to one (Tabachnick & Fidell, 1989). In cases such as the present study where some of the dependent variables are not normally distributed and where small effect sizes are anticipated, a higher ratio is in order. The ratio in the present investigation is approximately six to one.

Within the regression analyses undertaken, a standard series of predictors were entered in a hierarchical fashion based on chronological sequence and according to the movement from more distal environmental characteristics to those that are more proximal. At the first step, mothers' aggression and social withdrawal in childhood were entered as a block followed by educational attainment at the second step. Subsequently, contemporaneous variables were entered in separate steps according to their proximity of influence on child outcomes. At the third step, current poverty status was entered, followed by satisfaction with social support at the fourth step, and finally, quality of the home environment at the fifth step. In the prediction of overall referral status as well as toddler Bayley mental scale scores, child sex was added in a sixth step. Preliminary analyses failed to reveal significant interactions and thus, these terms were not included.

For each of the regression analyses undertaken, a table can be found reporting the standardized regression coefficient (β), the semipartial correlation (sr^2), and the t value associated with each predictor. At each step, the change in explained variance (R^2_{ch}), and the corresponding F value is recorded. Finally, following the last step, the multiple correlation coefficient (R), the adjusted multiple correlation coefficient (R^2_{adj}), and the F value are presented. The alpha level of significance observed in this study is $p < .05$. Given that the present endeavor is exploratory in nature, trends associated with $p < .10$ are also reported.

Within Table 3, the intercorrelations between predictors and dependent variables, means, and standard deviations are presented for the entire child sample. Tables 4 and 5 include the intercorrelations between predictors and dependent variables, means, and standard deviations for the toddler and preschool samples, respectively. Significant intercorrelations, when they occur, are not sufficiently sizable to elicit concern over multicollinearity or singularity.

Child Outcomes

Presented in Table 6 is the breakdown of referral status by sex of child. What becomes most apparent is the association between male sex and risk. Of the 48 participating boys, 33 (69%) were identified as being at moderate to high risk in comparison with 27 (42%) of the 64 participating girls.

Displayed in Table 7 are the results of the regression analysis for referral status. Overall, the multiple R was significantly different from zero, $F(7, 105) = 5.61, p < .01$, with the seven predictors, together accounting for 22% of the total variance. Moving from the global evaluation of the significance of the regression analysis to the exploration of individual steps, the first step including mothers' aggression and social withdrawal in childhood was not found to be significant. The addition of maternal educational

Table 3

Correlation Matrix for Prediction of Child Development. Means. and Standard Deviations

Variables	1	2	3	4	5	6	7	8
1. Childhood aggression	--	-.08	-.25**	.23**	-.14	-.17 ^t	.08	.04
2. Childhood withdrawal		--	-.15 ^t	.09	-.16 ^t	-.21*	.12	.00
3. Educational attainment			--	-.30**	.14	.44**	-.20*	.12
4. Current poverty				--	-.38**	-.40**	.24**	-.05
5. Social support satisfaction					--	.31**	-.18 ^t	-.01
6. Home environment						--	-.46**	.04
7. Referral status							--	-.26**
8. Child sex ^a								--
<i>M</i>	.39	.44	11.63	1.34	.84	-.02	1.34	1.57
<i>SD</i>	1.07	.98	2.36	.80	.60	.94	1.17	.50

Note. N = 112.

^aMales = 0, Females = 1

^tp < .10. *p < .05. **p < .01.

Table 4

Correlation Matrix for Prediction of Toddler Development, Means, and Standard Deviations

Variables	1	2	3	4	5	6	7	8
1. Childhood aggression	--	-.20	-.12	.30*	-.06	-.00	.10	.05
2. Childhood withdrawal		--	-.12	.01	-.21 ^t	-.15	-.35**	-.02
3. Educational attainment			--	-.36**	-.03	.36**	.27*	.18
4. Current poverty				--	-.32**	-.44**	-.25 ^t	-.06
5. Social support satisfaction					--	.23 ^t	.10	.05
6. Home environment						--	.49**	.05
7. Bayley mental score							--	.26*
8. Child sex ^a								--
<i>M</i>	.34	.53	11.76	1.44	.78	.03	89.04	1.64
<i>SD</i>	1.09	1.03	2.59	.77	.51	1.01	13.91	.48

Note. N = 59.

^aMales = 0, Females = 1

^tp < .10. *p < .05. **p < .01.

Table 5

Correlation Matrix for Prediction of Preschool Child Development, Means, and Standard Deviations

Variables	1	2	3	4	5	6	7	8	9	10	11
1. Childhood aggression	--	.10	-.44**	.14	-.20	-.42**	-.62**	-.33*	.52**	.28*	.24 ^t
2. Childhood withdrawal		--	-.22 ^t	.20	-.13	-.28*	-.09	-.10	-.04	-.02	.04
3. Educational attainment			--	-.22 ^t	.31*	.57**	.43**	.20	-.32*	-.10	.04
4. Current poverty				--	-.41**	-.39**	-.32*	-.16	.03	.15	-.11
5. Social support satisfaction					--	.42**	.46**	.09	.07	-.29*	-.04
6. Home environment						--	.49**	.25 ^t	-.11	-.06	-.09
7. Stanford-Binet IQ							--	.48**	-.39**	-.35**	-.15
8. Testing behaviour								--	-.16	-.18	-.04
9. Aversive interaction behaviour									--	.18	.26 ^t
10. CBCL internalizing										--	.36**
11. CBCL externalizing											--
<i>M</i>	.48	.33	11.49	1.23	.90	-.07	98.34	80.24	.17	53.51	54.28
<i>SD</i>	1.05	.92	2.09	.82	.68	.86	12.84	14.89	.38	7.20	8.42

Note. N = 53.

^tp < .10. *p < .05. **p < .01.

Table 6

Breakdown of Referral Status by Child Sex

Referral Status	Male Children	Female Children
No referral needed	12 (25%)	31 (48%)
Referral needed for family environment problem	3 (6%)	6 (10%)
Moderate need for referral for child problem	21 (44%)	18 (28%)
Serious need for referral for child problem	12 (25%)	9 (14%)

Note. N = 112.

Table 7

Prediction of Child Referral Status

Variable	Beta	sr ²	t	R ² _{ch}	F
Step 1				.02	1.16
Childhood aggression	.09	.00	.92		
Childhood withdrawal	.12	.01	1.28		
Step 2				.03	2.98 ^t
Childhood aggression	.04	.00	.42		
Childhood withdrawal	.09	.01	.97		
Educational attainment	-.17	.03	-1.73 ^t		
Step 3				.03	3.78*
Childhood aggression	.01	.00	.09		
Childhood withdrawal	.08	.01	.85		
Educational attainment	-.12	.01	-1.21		
Current poverty	.19	.03	1.95*		
Step 4				.01	.76
Childhood aggression	.00	.00	.02		
Childhood withdrawal	.07	.00	.72		
Educational attainment	-.12	.01	-1.22		
Current poverty	.16	.02	1.54		
Social support satisfaction	-.09	.01	-.87		
Step 5				.13	17.38**
Childhood aggression	-.00	.00	-.10		
Childhood withdrawal	.02	.00	.22		
Educational attainment	.02	.00	.16		
Current poverty	.06	.00	.61		
Social support satisfaction	.02	.00	.21		
Home environment	-.43	.13	-4.17**		
Step 6				.06	8.31**
Childhood aggression	.01	.00	.14		
Childhood withdrawal	.03	.00	.30		
Educational attainment	.05	.00	.51		
Current poverty	.05	.00	.52		
Social support satisfaction	-.02	.00	-.28		
Home environment	-.44	.13	-4.33**		
Child sex ^a	-.24	.06	-2.88**		
R = .52			R ² _{adj.} = .22	F = 5.61**	

Note. N = 112.

^aMales = 0, Females = 1

^tp < .10. *p < .05. **p < .01.

attainment at step two resulted in a trend for the incremental change in total explained variance, $R^2_{ch} = .03$, $p < .10$. Step three was found to be significant with the addition of poverty contributing uniquely to the explanation of the variance in child referral status, $R^2_{ch} = .03$, $p < .05$. The addition of social support satisfaction at step four was not found to be significant. Step five, the home environment, resulted in a significant increment in explained variance, $R^2_{ch} = .13$, $p < .01$ such that children being raised in lower quality home environments were more likely require a psychological referral. Finally, the addition of gender at step seven resulted in a significant increment in explained variance, $R^2_{ch} = .06$, $p < .01$. Boys were more likely than girls to manifest psychological problems warranting a clinical referral.

To summarize, aggression and social withdrawal in childhood were not directly predictive of child problems requiring clinical referral. Instead, the risk appeared to operate indirectly through variables related to aggression and social withdrawal in childhood including lower educational attainment, poverty, and relatedly, unstimulating home environment. In the next sections, global referral status findings are broken down into cognitive and behavioural outcomes.

Cognitive Development. In order to evaluate the inter-generational transfer of risk from mothers to their offspring as manifested in cognitive development, two separate outcome measures were evaluated by hierarchical multiple regression. Cognitive development was measured in the younger cohort by the Bayley Mental Scale. In the older cohort, cognitive development was measured by the Stanford-Binet Total IQ. With respect to the Bayley Mental Scale, the average score was found to be significantly below expected norms⁹ ($M = 89.04$, $SD = 13.91$). The range was wide, spanning from a low of 58 to a high of 124. Moving to the older cohort, the average Stanford-Binet Total IQ score was found to be 98.60 ($SD = 12.68$). Scores ranged from 73 to 132.

⁹ It is possible that use of this test with a sample on which it was not normed (i.e., French Canadian children) led to the observed depressed scores.

Presented in Table 8 is the hierarchical regression for Bayley Mental Scale scores. Overall, the multiple R was significantly different from zero, $F(7, 50) = 4.42, p < .01$, with 30% of the total variance accounted for by the union of the predictors. With respect to the entry of individual steps, step one including maternal aggression and withdrawal in childhood was found to be significant, $R^2_{ch} = .13, p < .05$. Upon closer inspection, it became apparent that only the main effect for withdrawal was significant, $\beta = -.35, p < .01$. This finding implies that children of mothers who were withdrawn in childhood exhibited greater cognitive delays than did children of mothers who did not exhibit such behavioural tendencies. The addition of maternal educational attainment at step two resulted in a trend for the incremental change in total explained variance, $R^2_{ch} = .05, p < .10$. Withdrawal remained a significant predictor. A trend was identified at step three with the addition of poverty contributing uniquely to the explanation of the variance in cognitive functioning, $R^2_{ch} = .04, p < .10$. Once again, social withdrawal continued to be significant. The addition of social support satisfaction at step four was not found to be significant. Inclusion of the home environment at step five resulted in a significant increment in explained variance, $R^2_{ch} = .12, p < .01$ such that children being raised in lower quality home environments were more likely to exhibit cognitive delays. With respect to the other predictors, only withdrawal remained significant. It is interesting to note that the effects of poverty no longer approach significance. Instead, it appears that the adverse effects of poverty operate via poor quality home environment. In the final step, a trend was observed for the addition of child sex, $R^2_{ch} = .04, p < .10$. Withdrawal and home environment remain significant predictors.

The hierarchical regression predicting preschool Stanford-Binet Total IQ scores is depicted in Table 9. Overall, the multiple R was significantly different from zero, $F(7, 46) = 8.63, p < .01$, with 47% of the total variance being accounted for by the union of the predictors. With respect to the entry of individual steps, step one including maternal aggression and withdrawal in childhood was found to be significant, $R^2_{ch} = .38, p < .01$.

Table 8

Prediction of Infant Bayley Mental Scale Scores

Variable	Beta	sr ²	t	R ² _{ch}	F
Step 1				.13	3.90*
Childhood aggression	.02	.00	.19		
Childhood withdrawal	-.35	.12	-2.69**		
Step 2				.05	3.46 ^t
Childhood aggression	.06	.00	.47		
Childhood withdrawal	-.31	.09	-2.40*		
Educational attainment	.24	.05	1.86 ^t		
Step 3				.04	2.82 ^t
Childhood aggression	.12	.01	.91		
Childhood withdrawal	-.31	.09	-2.45*		
Educational attainment	.16	.02	1.16		
Current poverty	-.23	.04	-1.68 ^t		
Step 4				.00	.03
Childhood aggression	.12	.01	.90		
Childhood withdrawal	-.32	.09	-2.40*		
Educational attainment	.15	.02	1.09		
Current poverty	-.24	.04	-1.62 ^t		
Social support satisfaction	.02	.00	.85		
Step 5				.12	9.11**
Childhood aggression	.07	.00	.57		
Childhood withdrawal	-.29	.07	-2.34*		
Educational attainment	.05	.00	.40		
Current poverty	-.10	.00	.67		
Social support satisfaction	-.09	.01	-.69		
Home environment	.41	.12	3.02**		
Step 6				.04	3.57 ^t
Childhood aggression	.05	.00	.43		
Childhood withdrawal	-.29	.07	-2.45*		
Educational attainment	.01	.00	.08		
Current poverty	-.10	.01	-.68		
Social support satisfaction	-.10	.01	-.77		
Home environment	.41	.12	3.10**		
Child sex ^a	.22	.04	1.89 ^t		
R = .62			R ² _{adj.} = .30		F = 4.42**

Note. N = 57.

^aMales = 0, Females = 1

^tp < .10. *p < .05. **p < .01.

Table 9

Prediction of Preschoolers' Stanford-Binet Total IQ Scores

Variable	Beta	sr ²	t	R ² _{ch}	F
Step 1				.38	15.64**
Childhood aggression	-.62	.38	-5.53**		
Childhood withdrawal	-.03	.00	-.26		
Step 2				.03	2.30
Childhood aggression	-.54	.23	-4.37**		
Childhood withdrawal	.00	.00	.05		
Educational attainment	.19	.03	1.52		
Step 3				.04	3.97*
Childhood aggression	-.52	.22	-4.40**		
Childhood withdrawal	.04	.00	.37		
Educational attainment	.15	.02	1.25		
Current poverty	-.22	.04	-1.99*		
Step 4				.06	6.15*
Childhood aggression	-.51	.20	-4.47**		
Childhood withdrawal	.04	.00	.41		
Educational attainment	.10	.01	.80		
Current poverty	-.12	.01	-1.06		
Social support satisfaction	.28	.06	2.48*		
Step 5				.01	.93
Childhood aggression	-.48	.18	-4.16**		
Childhood withdrawal	.06	.00	.56		
Educational attainment	.05	.00	.36		
Current poverty	-.10	.01	-.83		
Social support satisfaction	.26	.05	2.22*		
Home environment	.13	.01	.96		
R = .73		R²_{adj.} = .47		F = 8.63**	

Note. N = 53.

[†]p < .10. *p < .05. **p < .01.

Upon closer inspection, it became apparent that only the main effect for aggression was significant, $\beta = -.62$, $p < .01$. Children of mothers who were aggressive in childhood experienced lower cognitive scores than did children of mothers who did not exhibit such behavioural tendencies. Surprisingly, the insertion of maternal educational attainment at step two failed to achieve significance. At step three however, the addition of poverty resulted in a significant incremental change in total explained variance, $R^2_{ch} = .04$, $p < .05$. Preschool children developing in poor families were more likely to exhibit lower cognitive scores than were their more affluent peers. Maternal aggression in childhood remained significant at this step. The addition of social support satisfaction at step four was found to contribute significantly in the prediction of child IQ, $R^2_{ch} = .06$, $p < .05$ such that children of mothers who reported dissatisfaction with the social support obtained lower IQ scores than did children of mothers who were more satisfied. Once again, aggression persisted in predicting significantly lower IQ scores in offspring. Finally, no significant incremental change in explained variance was observed with the addition of the home environment at step five.

To summarize cognitive development findings, for toddlers, there existed a direct relationship between maternal withdrawal in childhood and inhibited mental development. The risk associated with mother's aggression and social withdrawal in childhood was also indirect, operating in part through an unstimulating home environment. In contrast with these findings, results of analyses of preschool children revealed an impressive, direct association between mother's childhood aggression and lower IQ. Indirect relations were also observed, linking both maternal aggression and social withdrawal in childhood to lower IQ scores in offspring as a function of poverty, and subsequently, dissatisfaction with social support.

Child Behaviour. In order to evaluate the inter-generational transfer of risk from mothers to their offspring as manifested by behaviour, four hierarchical regressions were undertaken with the preschool cohort. Aversive child behaviour along the externalizing

dimension was captured from a number of measurement sources (parent report, examiner rating, and observer rating) so as to enable interpretation of findings by ruling out alternate explanations such as parent bias (Cairns et al., 1998). Addressed in the first analysis were examiner ratings of child behaviour during testing. In the second and third analyses, parent perceptions of child internalizing and externalizing tendencies were assessed respectively. Finally, in the fourth analysis, observer ratings of aversive child behaviour during free-play interaction with mothers were evaluated. Interestingly, for each behavioural outcome measure, a similar pattern of predictors was observed such that overall regression equations were seldomly significant with mother's childhood aggression as the sole significant predictor of child behaviour.

The hierarchical regression predicting child behaviour during testing is shown in Table 10. Overall, the multiple R was not significantly different from zero, $F(7, 46) = 1.20$, $p > .10$, with 2% of the total variance being accounted for by the union of the predictors. In the face of a non-significant omnibus F , the significance of individual steps are not interpreted.

Prior to presenting the results of multivariate analyses of the CBCL, descriptive statistics are presented. For the internalizing scale, the mean was found to approach the expected mean T score (50) found in a normative sample in the general population ($M = 53.51$, $SD = 7.20$, $n = 53$). Four children (8%) obtained scores falling within the clinical range ($T \geq 67$). This compares with an expected rate of 4%. Results for the externalizing scale parallel those just reported for the internalizing scale, ($M = 54.28$, $SD = 8.42$, $n = 53$). Three children (6%) obtained scores falling within the clinical range.

The hierarchical regression predicting child internalizing behaviour is displayed in Table 11. Overall, the multiple R was not significantly different from zero, $F(7, 46) = 1.51$, $p > .10$, with 6% of the total variance being accounted for by the union of the predictors. Presented in Table 12 is the hierarchical regression predicting child

Table 10

Prediction of Child Behaviour During Testing

Variable	Beta	sr ²	t	R ² _{ch}	F
Step 1				.12	3.26*
Childhood aggression	-.33	.10	-2.44*		
Childhood withdrawal	-.07	.00	-.51		
Step 2				.00	.12
Childhood aggression	-.30	.07	-2.02*		
Childhood withdrawal	-.06	.00	-.42		
Educational attainment	.05	.00	.35		
Step 3				.01	.57
Childhood aggression	-.30	.07	-1.97*		
Childhood withdrawal	-.04	.00	-.29		
Educational attainment	.03	.00	.23		
Current poverty	-.10	.01	-.75		
Step 4				.00	.06
Childhood aggression	-.30	.07	-1.96*		
Childhood withdrawal	-.04	.00	-.29		
Educational attainment	.04	.00	.27		
Current poverty	-.12	.01	-.78		
Social support satisfaction	-.04	.00	-.24		
Step 5				.01	.36
Childhood aggression	-.28	.06	-1.78 ^t		
Childhood withdrawal	-.03	.00	-.19		
Educational attainment	.00	.00	.02		
Current poverty	-.10	.01	-.62		
Social support satisfaction	-.06	.00	-.36		
Home environment	.11	.01	.60		
R = .37			R ² _{adj.} = .02	F = 1.20	

Note. N = 53.

^tp < .10. *p < .05. **p < .01.

Table 11

Prediction of CBCL Internalizing Scores

Variable	Beta	sr ²	t	R ² _{ch}	F
Step 1				.08	2.22
Childhood aggression	.29	.08	2.10*		
Childhood withdrawal	-.05	.00	-.39		
Step 2				.00	.02
Childhood aggression	.30	.07	1.93 ^t		
Childhood withdrawal	-.05	.00	-.35		
Educational attainment	.02	.00	.13		
Step 3				.02	.81
Childhood aggression	.29	.07	1.88 ^t		
Childhood withdrawal	-.07	.00	-.49		
Educational attainment	.04	.00	.27		
Current poverty	.13	.02	.90		
Step 4				.04	2.73 ^t
Childhood aggression	.27	.06	1.81 ^t		
Childhood withdrawal	-.07	.00	-.51		
Educational attainment	.09	.01	.59		
Current poverty	.04	.00	.26		
Social support satisfaction	-.25	.05	-1.65 ^t		
Step 5				.02	.96
Childhood aggression	.31	.07	1.98*		
Childhood withdrawal	-.05	.00	-.36		
Educational attainment	.03	.00	.17		
Current poverty	.07	.00	.47		
Social support satisfaction	-.28	.06	-1.82 ^t		
Home environment	.18	.02	.98		
R = .40			R ² _{adj.} = .06	F = 1.51	

Note. N = 53.

^tp < .10. *p < .05. **p < .01.

Table 12

Prediction of CBCL Externalizing Scores

Variable	Beta	sr ²	t	R ² _{ch}	F
Step 1				.06	1.54
Childhood aggression	.24	.06	1.74 ^t		
Childhood withdrawal	.01	.00	.09		
Step 2				.03	1.57
Childhood aggression	.32	.08	2.12*		
Childhood withdrawal	.05	.00	.34		
Educational attainment	.20	.03	1.25		
Step 3				.02	.82
Childhood aggression	.33	.09	2.16*		
Childhood withdrawal	.07	.00	.48		
Educational attainment	.17	.02	1.10		
Current poverty	-.13	.02	-.91		
Step 4				.01	.39
Childhood aggression	.32	.08	2.10*		
Childhood withdrawal	.07	.00	.48		
Educational attainment	.19	.03	1.20		
Current poverty	-.16	.02	-1.07		
Social support satisfaction	-.10	.01	-.63		
Step 5				.01	.39
Childhood aggression	.30	.07	1.90 ^t		
Childhood withdrawal	.05	.00	.37		
Educational attainment	.24	.03	1.34		
Current poverty	-.18	.02	-1.71		
Social support satisfaction	-.08	.00	-.48		
Home environment	-.12	.01	-.62		
R = .34			R ² _{adj.} = .00	F = 1.02	

Note. N = 53.

^tp < .10. *p < .05. **p < .01.

externalizing behaviour. Overall, the multiple R was not significantly different from zero, $F(7, 46) = 1.02$, $p > .10$, with 0% of the total variance being accounted for by the union of the predictors. The final multiple regression analysis involving the prediction of aversive child behaviour during free play is depicted in Table 13. Overall, the multiple R was significantly different from zero, $F(7, 46) = 3.36$, $p < .01$, with 23% of the total variance being accounted for by the union of the predictors. With respect to the entry of individual blocks, step one including maternal aggression and withdrawal in childhood was found to be significant, $R^2_{ch} = .28$, $p < .01$. Upon closer inspection, it became apparent that only the main effect for aggression was significant, $\beta = .52$, $p < .01$. Children of mothers who were aggressive in childhood were more likely to behave in an aversive fashion than are children of mothers who did not exhibit such behavioural tendencies. None of the remaining steps in the hierarchical regression achieved significance. At the same time, it is interesting to note that the predictive power of aggression remained across all steps, controlling for current predictors.

In summary, maternal aggression in childhood was found to be the only significant predictor of current behaviour in preschool aged children. Mothers rated by their peers in childhood as being more aggressive were more likely to have offspring exhibiting similar aversive behaviour. The confidence with which the previous statement is made is, in large measure, due to the multiple perspectives taken on the construct of aversive behaviour. Results reported included mother reports, examiner ratings, and blind observer evaluations.

Table 13

Prediction of Aversive Child Behaviour During Interaction

Variable	Beta	sr ²	t	R ² _{ch}	F
Step 1				.28	8.57**
Childhood aggression	.52	.27	4.12**		
Childhood withdrawal	-.09	.01	-.73		
Step 2				.02	.96
Childhood aggression	.47	.18	3.33**		
Childhood withdrawal	-.11	.01	-.86		
Educational attainment	-.14	.02	-.98		
Step 3				.00	.12
Childhood aggression	.47	.18	3.32**		
Childhood withdrawal	-.10	.01	-.80		
Educational attainment	-.14	.02	-1.00		
Current poverty	-.04	.00	-.35		
Step 4				.02	1.48
Childhood aggression	.47	.18	3.29**		
Childhood withdrawal	-.10	.01	-.77		
Educational attainment	-.18	.02	-1.24		
Current poverty	.03	.00	.20		
Social support satisfaction	.18	.02	1.21		
Step 5				.01	.75
Childhood aggression	.49	.19	3.38**		
Childhood withdrawal	-.08	.01	-.60		
Educational attainment	-.24	.04	-1.48		
Current poverty	.06	.00	.40		
Social support satisfaction	.15	.02	1.03		
Home environment	.15	.01	.86		
R = .57			R ² _{adj.} = .23	F = 3.36**	

Note. N = 48.

^aMales = 0, Females = 1

^tp < .10. *p < .05. **p < .01.

Discussion

The purpose of the present investigation was consideration of pathways from childhood risk to manifestations of intragenerational and inter-generational continuity. Revealed in findings was evidence for both direct effects of childhood risk factors and indirect effects through contextual factors including low educational attainment, poverty, and low social support. Results will be discussed in the sections to follow first, for the stability of risk from childhood to parenthood and next, for the inter-generational transfer of risk from parents to offspring.

Hypothesis I: Intragenerational Continuity of Risk

Aggression and social withdrawal in childhood are predictive of life pathways reflecting continued problems over time. Low educational attainment, poverty, dissatisfaction with social support, parenting stress, and poor quality home environment, threats to successful parenting, are manifestations of the continuity of risk. In order to demonstrate and explain the continued impact of childhood aggression and social withdrawal across the lifespan, the trimmed version of the theoretical model is dissected and discussed.

Educational attainment. In the first portion of the model, aggression and social withdrawal in childhood predict lower educational attainment with the effects being stronger for aggression. This finding is not surprising given previous research carried out under the rubric of the Concordia Risk Project (e.g., Ledingham & Schwartzman, 1984; Serbin et al., 1998). Serbin and colleagues (1998), employing a larger sample of Concordia project women ($N = 428$), found that childhood social withdrawal was predictive of high school dropout indirectly as a function of its relation to lower school

achievement. Academic difficulties reflect the primary means through which withdrawn children are at risk (Serbin et al., 1998; Wentzel, 1991). By contrast, childhood aggression was predictive of high school dropout both directly and indirectly as a function of lower school achievement. Thus, for aggressive children, the risk for lower educational attainment is attributed to both cognitive and behavioural difficulties (Caspi et al., 1987; Chen, Rubin, & Li, 1997; Hinshaw, 1992).

The association between externalizing behaviour and intellectual functioning or academic achievement has been found repeatedly in the literature (e.g., Brook & Newcomb, 1995; Chen et al., 1997; Caspi et al., 1987; Ensminger & Slusarcick, 1992; Eron, 1982; Fergusson, 1999; Hindelang, Hirschi, & Weis, 1981; Huesmann et al., 1987; Masten et al., 1995; Miech et al., 1999). In a review of 47 published studies, Moffitt (1993) identified an IQ deficit of half a standard deviation in antisocial individuals. In addition to lower intelligence, one recent explanation for the association between problems in academic functioning and aggression has emerged from the field of neuropsychology (Egeland, Sroufe, and Aguilar, 1999; Moffitt, 1993; Séguin, Pihl, Harden, Tremblay, & Boulerice, 1995). Stable antisocial tendencies have been found to be associated with executive functions deficits (Egeland et al., 1999; Séguin et al., 1995). This relationship reflects difficulties in the ability of the individual to consider simultaneously a number of parameters, to envision the results of decisions and behaviours, and to think abstractly in order to resolve interpersonal problems (LeMarquand et al., 1998; Séguin et al., 1995). More generally, executive functions deficits reflect an incapacity to initiate and maintain goal attainment (Lezak, 1985). Such

deficiencies likely threaten educational attainment by operating to place at risk both academic and social functioning.

In addition to cognitive explanations for the link between childhood aggression and educational attainment, behavioural explanations also exist. For instance, Egeland and colleagues (1999) argue that the lower scores observed among aggressive children vis à vis receptive language, reading comprehension, and math are likely a consequence of aggressive behaviour rather than a cause. It is possible that impulsivity, defiance, and non-compliance interfere with aggressive children's learning and school adaptation as a function of interactional continuity with the consequences being more academic problems and fewer successes (Bardone et al., 1996; Caspi & Silva, 1995; Hinshaw, 1992; Huesmann et al., 1987). This pattern of frustration might result ultimately in early school leaving. Taken together, deficits in intellectual, executive, and social functions have ramifications for task performance and success in the academic realm. In turn, these same limitations threaten functioning in the labor market, increasing the risk for financial disadvantage.

Poverty. Moving from childhood through adolescence and into early adulthood, direct and indirect effects exist in the prediction of current family poverty from childhood behavioural extremes. Aggression and social withdrawal in childhood are critical risk factors in the continuity of psychosocial problems for not only do they exert an impact on the individual herself over time, but as well, they have implications for the context in which further development occurs. In turn, such contextual features perpetuate risk as a function of their association with factors known to threaten parenting and child development. Particularly for aggression, those with childhood histories of extreme

behavioural tendencies continuing to display maladaptive behaviour into adulthood. The continuity of these behaviours over time increases the likelihood of poverty, a context itself associated with a host of risk factors. More specifically, individuals with childhood histories of aggression and/or social withdrawal are at increased risk for financial disadvantage in parenthood as a function of lower educational attainment. Controlling for completed years of schooling, a trend for a direct association is also observed with childhood aggression predicting current poverty.

In an attempt to explicate the direct association between childhood aggression and poverty, a number of explanations are proposed. First, the relation between aggression and financial disadvantage may be explained by employment difficulties. Individuals who, as children, exhibit aggressive tendencies often go on to display low achievement, not only within the realm of academics, but in occupational spheres as well (Brook & Newcomb, 1995; Ensminger & Slusarcick, 1992). Childhood aggression has been found to predict problematic career functioning, and dependence on welfare (Brook & Newcomb, 1995; Capaldi & Stoolmiller, in press; Fergusson, 1999; Kokko et al., 1998). In addition to the limitations placed on occupational attainment as a function of low educational achievement, employment difficulties can be attributed to interpersonal difficulties, and antisocial tendencies (Fergusson, 1999).

Aggressive children are deemed to be at risk, largely as a function of their maladaptive social behaviour (Pepler, Craig, & Roberts, 1998). It is possible therefore that, individuals with histories of aggression in childhood, through the processes of cumulative and interactional continuity (Caspi & Elder, 1988a; 1988b), continue to manifest difficulties interacting with others, particularly those in positions of authority.

Consequently, they are likely at increased risk for repeated job loss and reduced opportunities for advancement.

Interpersonal conflict may not only lead to difficulties within the realm of employment, but in the context of romantic relationships as well (Newman et al., 1997). As a function of continuity, women with histories of childhood aggression may tend to manifest similar maladaptive interactional styles within their intimate relationships. Consequently, they are at increased risk for separation, divorce, and ultimately, single parenthood (Caspi, et al., 1987). In turn, single motherhood is related to financial disadvantage (Argyle, 1994; Gunnarson & Cochran, 1990; Halpern, 1990). In the present sample, 26 (23%) women are single mothers. Of these, 20 (78%) live below the poverty line. Thus, single motherhood may explain in part the association between aggression and poverty.

Conclusions drawn about the role of childhood aggression in predicting poverty during parenthood are limited by the omission of measures of socio-economic status at Time 1 in the family of origin. It is possible that those who were aggressive in childhood were more likely raised in poor families and it is this relationship that accounts for the observed prediction of poverty from childhood aggression. For the 100 women for whom we do have information on family prestige at recruitment, an ANOVA was carried out to explore family prestige scores by peer classification at Time 1. No significant differences emerged, $F(3, 96) = 1.06, p > .10$. However, observing the means by peer classification group, women in both the aggressive ($M = 347.88, SD = 116.93$) and aggressive-withdrawn groups ($M = 365.06, SD = 111.25$) lived in families with lower prestige ratings than did the withdrawn ($M = 403.13, SD = 98.46$) and control groups ($M =$

390.48, $SD = 99.65$). Further, there appears to exist greater within-group variability within the aggressive and aggressive-withdrawn groups perhaps inhibiting the difference between means from reaching significance. At the same time however, in a regression predicting poverty, controlling for childhood academic achievement, educational attainment, and family of origin prestige, childhood aggression was the only significant predictor of poverty (see Appendix M).

Childhood aggression and social withdrawal are risk factors for continued life problems in part as a function of their direct and indirect associations with poverty. In turn, poverty serves as a context in which there exists numerous threats to successful parenting. In this way, poverty operates not only directly in the prediction of continued risk, but indirectly as well through its concomitants. One of the key correlates of poverty jeopardizing adequate parenting is inadequate social support.

Social support satisfaction. In longitudinal studies of at-risk individuals, both intrafamilial and extrafamilial social support have been identified as important protective factors differentiating between those who emerge resilient and those who continue to display vulnerability to risk factors (Furstenberg et al., 1987; Werner & Smith, 1992). Poor families are less likely to have adequate extramarital support systems (Klebanov et al., 1994). Women living in poverty have less access to resources (Halpern, 1990). Further, they have fewer relations who are in a position to reciprocate support both in terms of providing material resources as well as having the time to assist others (Benin & Keith, 1995). As well, low levels of support characterize inner-city neighbourhoods due to the lack of safety and consequent pervasive sense of distrust among inhabitants

(Shumow, 1997). The relationship between poverty and social support is explained not only by the extrafamilial network resources of women, but by the marital context as well.

One of the primary mechanisms through which poverty threatens social support is via the marital relationship. Of all the sources of social support impacting on maternal well-being and adaptation to motherhood, spousal support has been found to be the most significant (Belsky, 1984; Cox, Owen, Lewis, & Henderson, 1989; Goldstein et al., 1996; Isabella & Gable, 1989). Women living in poverty experience greater marital conflict than their more financially secure counterparts (Halpern, 1990). Within the present study, there exists an important relationship between poverty and single motherhood. Mothers living in poverty, experiencing a number of needs with insufficient means to satisfy these needs are more vulnerable to stress and psychopathology (Lipman & Offord, 1997). Low social support has been found to be associated with elevated rates of stress and emotional distress (Hope, Power, & Rodgers, 1998).

Parenting stress. Mothers who feel they lack supportive others to aid them with their emotional, instrumental, and informational needs, are more likely to perceive the parenting role as stressful (Adamakos et al., 1986; Feldman & Minnes, 1998). Thus, dissatisfaction with social support is predictive of parenting stress. One of the possible explanations for this observed relationship is that women reporting greater dissatisfaction with social support are single mothers. With less help in the home, single mothers are likely to perceive themselves as more isolated and more stressed by their role. It is interesting to note that poverty itself, is not directly predictive of parenting stress. Instead, the relationship is indirect and mediated by mothers' perceptions of help from others in coping with the challenges of parenting. Poverty, a proximal marker of maternal

childhood risk operates by fostering a context in which fewer beneficial social resources are available. In turn, such conditions of disadvantage increase strain in the parenting role.

A second explanation for the association between low social support satisfaction and parenting stress is maternal coping. It is possible that social support satisfaction is a measure of successful coping, in addition to being reflective of access to resources. Adopting an organizational-developmental framework, resilience is conceptualized as the ability to use internal and external resources successfully to resolve age-salient developmental issues (Waters & Sroufe, 1983). In a number of longitudinal studies, resilient individuals are identified by competence and perseverance in the face of life stress (e.g., Furstenberg et al., 1987; Werner & Smith, 1992). In the case of parenthood, mothers who are able to use whatever resources they have in an effective manner experience less parenting stress. Consequently, they are better able to carry out their role in providing a warm and stimulating environment for their offspring.

Home environment. The continued indirect role of childhood aggression and social withdrawal to the prediction of risk in parenthood is apparent in the prediction of the home environment. The creation of growth-promoting environments for children is threatened by poverty and its correlates: low educational attainment, and parenting stress. Problems in family functioning are rarely due to a single risk factor (Zayas, 1995). Instead, it is the convergence of risk factors, or their accumulation that elicits upheaval in family functioning (Felner et al., 1995; Klebanov et al., 1994; Sameroff, 1996). For instance, researchers employing the HOME note that the instrument is sensitive to several aspects of the family ecology, but that no one demographic factor by itself accounts for

more than a fraction of the environment a child experiences or the pattern of care a child receives (Bradley & Caldwell, 1984b; Gottfried, 1984). Low socio-economic status increases the probability that numerous risk factors will cluster together (Halpern, 1990; Palacio-Quintin, 1995; Sameroff & Fiese, 1990). In the present study, low educational attainment, poverty, and parenting stress were found to be inter-connected and co-occurring variables predictive of lower quality home environments.

Limited educational attainment has been found to be associated with less stimulating learning environments (Bradley et al., 1994; Garrett et al., 1994; Gottfried, 1984; Katz et al., 1997; Klebanov et al., 1994; Palacio-Quintin & Jourdan-Ionescu, 1991). Better educated mothers are more aware of and more sensitive to their children's developmental needs. Consequently, they are able to create a secure, and consistent home environment fostering learning and emotional competence (Katz et al., 1997). The protective effects of maternal schooling is also likely attributable to the role of education in fostering the development of organizational skills which contribute to the adequacy of the structure of the home environment. Finally, educational attainment likely increases parents' feelings of competence in engaging in educational activities and providing learning stimulation to their children where less educated parents may avoid such pursuits (Felner et al., 1995).

In addition to the direct effects of educational attainment on the home environment, indirect effects are also observed through poverty and parenting stress. Parents living in poverty are at greater risk for failing to provide adequate home environments for their children (Belsky, 1984; Bradley et al., 1994; Garrett et al., 1994; Lotas, Penticuff, Medoff-Cooper, Broton, & Brown, 1992; Simons, Lorenz, Wu, & Conger, 1993). Poor parents are less likely to be responsive and supportive of their children (Gecas, 1979;

Hausman & Hammen, 1993; Kaliopuska, 1984; Kohn, 1977; McLoyd, 1990; Zayas, 1995). The risk associated with poverty is attributable in part to practical economic constraints (Felner et al., 1995). With fewer financial resources available, parents are less likely to provide sufficient living space per person increasing the challenge of providing an organized environment (Bradley & Caldwell, 1984b). Further, poor parents are less able to purchase stimulating toys and the like for their children¹⁰.

Poverty not only threatens parenting through material deprivation, but also by jeopardizing parents' psychological competence in their roles (Felner et al., 1995; Simons et al., 1993). According to Belsky (1984), parenting is multiply determined. Contextual sources of stress and support operate directly and indirectly through impact on parental psychological well-being. The personal psychological resources of the parent play an important role in the translation of environmental stressors to risk factors for offspring. Conditions associated with poverty reduce parental capacity for consistent, sensitive, and involved parenting in part by increasing parenting stress (Felner et al., 1995).

Major components of parenting young children include sensitivity and the provision of emotional warmth (Waters, Kondo-Ikemura, Posada, & Richters, 1990). Supportive caregiving is critical to the protective process (Cicchetti & Schneider-Rosen, 1986; Egeland et al., 1993). Parenting stress has been identified as an important predictor of poor parenting (Caldwell & Antonucci, 1996). Mothers who are stressed are more likely to be disengaged and unsupportive of their children (Hammen, Burge, & Stansbury, 1990). Consequently, the development of their offspring is placed at risk.

¹⁰ The effects of poverty, while interpreted as detrimental, should not be viewed as applicable to all families. In order to elaborate this point, see Appendix N for brief descriptions of two very different poor families encountered during data collection.

Hypothesis II: Inter-generational Risk Transfer

In their model of transmission across generations, Cairns and colleagues (1998) propose that there exists both a direct relationship from parents' childhoods to that of their offspring as well as an indirect pathway from the childhood of parents that is mediated by parenting. Findings from the current study support the transfer of risk from mother to child. More specifically, cognitive outcomes in children are predicted directly by parents' childhood characteristics as well as indirectly through characteristics of the parenting context. Behavioural outcomes, by contrast, reflect only a direct connection with the childhood aggression of parents. In order to explore the findings more closely, child outcomes are considered moving from global risk status through cognitive functioning to behavioural outcomes.

Global risk: Referral status. In the prediction of referral status, that is, the degree to which a given child was evaluated as suffering from cognitive and/or behaviour problems warranting clinical services, maternal aggression and social withdrawal in childhood were found to be risk factors as a function of their indirect association with lower quality home environments. In addition, the sex of the child was found to be predictive of referral status.

Poverty operates as an environmental context that threatens child development. As aforementioned, due to a series of concomitants, in addition to the detrimental effects of financial disadvantage itself, poverty places children at increased risk for developmental problems. In evaluating referral status, the harmful effects of poverty are observed to operate through the effects of the home environment. Lower quality home environments characterized by little stimulation, supervision and consistency, place children at risk for

both cognitive (Gottfried, 1984; Palacio-Quintin, 1995) and behavioural problems (Bradley et al., 1994; Loeber & Stouthamer-Loeber, 1986).

Moving from the effects of context to individual child characteristics, boys are almost twice as likely as girls to be at moderate to serious need for clinical referral (see Table 6). The greater vulnerability of male children to language and behavioural problems has been cited frequently in the literature (e.g., Bolger et al., 1995; Duncan et al., 1994; Earls & Jung, 1987; Kranzler et al., 1990; Lipman & Offord, 1997; Patterson, Kupersmidt, & Vaden, 1990; Rutter & Garnezy, 1983; Vaden-Kierman, Ialongo, Pearson, & Kellam, 1995). Rutter (1987) suggests that the protective factor of gender for girls may in part arise as a function of a reduced exposure to risk. For instance, in a previous study with the Concordia sample, while children's behaviour was not found to differ by gender, mothers were found to engage in more aggressive behaviour in interactions with their sons than with their daughters (Serbin et al., 1998).

Cognitive outcomes: toddlerhood. In evaluating inter-generational risk transfer in the toddler cohort as measured by mental development, both direct and indirect effects of maternal childhood risk factors are observed. Childhood aggression and social withdrawal are found to increase risk for lower cognitive scores as a function of their indirect threats to the quality of the home environment. A direct effect is also observed whereby maternal social withdrawal in childhood is predictive of lower cognitive scores in offspring. Finally, the effect of child sex is also apparent with boys once again at greater risk than their female counterparts.

Of all the predictors considered, social withdrawal is the most powerful. This is particularly interesting given that it is the only finding in the entire study in which maternal social withdrawal in childhood is directly significantly predictive of problems in offspring. In an attempt to explain the role of withdrawal in the prediction of lower cognitive scores, both indirect effects on mothers not accounted for in the model and direct effects on offspring are considered.

Previous research has identified stability in socially withdrawn behaviour patterns over time (Kagan, 1989; Kerr et al., 1994; Ledingham & Schwartzman, 1984; Moskowitz et al., 1985; Peters, 1999; Quay & LaGreca, 1986; Rubin et al., 1989; 1998). As a function of continuity in a shy and retiring personality style, and a corresponding lack of social competence, it is possible that mothers with childhood histories of withdrawal engage in fewer interactions with their offspring (Goldstein et al., 1996). In turn, their children may be deprived of sufficient stimulation. Consequently, cognitive development may be inhibited.

In addition to the effects of maternal behaviour, consider the role of variables related to health and birth circumstances, specifically prematurity. Preliminary data are available on birth variables for 108 of the participating children. With respect to gestation, the majority of children (79.6%) were born after 38 weeks ($n = 86$). The remaining 22 (20.4%) children were born after less than 38 weeks and as such, are considered premature. Social withdrawal is associated with prematurity such that premature babies had mothers who had a mean withdrawal score in childhood of 1.14 while the non-premature babies had mothers with a mean withdrawal score of .32, $t(57) = 2.48$, $p < .05$. When comparing the premature children with their non-premature counterparts, a trend

emerged indicating that the premature babies had lower Bayley mental scores ($\underline{M} = 83.92$; $\underline{SD} = 12.95$) than did the non-premature group ($\underline{M} = 91.16$; $\underline{SD} = 13.61$), $t(57) = -1.69$, $p < .10$ in spite of the fact that scores are corrected for prematurity. Thus, it is possible that the effects of maternal childhood withdrawal are explained in part by prematurity and associated health risks.

Moving from consideration of perinatal risk to inter-generational continuity in social behaviour, it is possible that children of women with histories of childhood social withdrawal have inherited their mothers' tendency to experience discomfort in social situations. Consequently, these toddlers are too inhibited to participate fully in testing with behavioural tendencies impairing their cognitive performance.

In addition to the direct effect of social withdrawal in the prediction of toddler cognitive development, maternal childhood risk is also found to operate indirectly through poverty via the home environment. The socio-emotional functioning of children living in poor families is mediated by the effects of poverty on proximal contextual conditions in children's lives (McLoyd, 1990). For instance, in a study of premature children born into poverty, those children defined as resilient at three years of age were found to have significantly more protective agents in their home environments (e.g., lower density and safer play environments, higher levels of acceptance by their caregivers, and increased availability of learning materials) than their nonresilient counterparts (Bradley et al., 1994).

Cognitive outcomes: preschool. In the prediction of cognitive outcomes in the preschool sample, once again, both direct and indirect effects of maternal childhood risk are observed. A strong direct relationship exists between maternal childhood

aggression and lower IQ scores for preschool offspring. Maternal childhood risk was found to be indirectly predictive of lower IQ scores as a function of its relationship with contextual factors associated with poverty – namely, dissatisfaction with social support.

The role of maternal childhood aggression in the prediction of preschool cognitive functioning is dramatic. More variance is explained by this historical maternal variable than by any of the current parenting environment characteristics assessed. It is curious that maternal aggression in childhood plays virtually no role in the prediction of cognitive functioning among toddlers, but that within the preschool group, its impact is substantial. In part, this differential finding might be attributed to the accumulation of stress over time associated with maternal childhood aggression. It is possible that evaluating children during toddlerhood, it is too early for the detrimental effects to manifest themselves. It is also possible that the difference in predictors is a function of the different measures employed in the assessment of cognitive functioning. Bayley (1993) suggests that assessment batteries of infant development prior to age two evaluate various simple cognitive functions. Only in later years does child ability reflect higher order cognitive skills.

In order to understand the mechanisms through which maternal childhood aggression increases risk for lower cognitive scores in the next generation, a number of possible explanations are proposed. The relationship between maternal aggression in childhood and child cognitive functioning may not be direct, but rather, mediated by variables omitted from the present analysis such as child behaviour during testing. Inter-generational continuity of aggressive behaviour has been found repeatedly in the literature (e.g., Huesmann et al., 1987; Serbin et al., 1998). Offspring of mothers with histories of

childhood aggression are at increased risk of inheriting the very same behavioural tendencies exhibited by their mothers. Aggression is related to a more impulsive response style and reduced attentional capacities (Caspi & Silva, 1995). Thus, it is possible that, as a function of an inability to sit still and concentrate, children of aggressive mothers are at risk for impaired performance on cognitive assessment batteries. The relationship between maternal aggression and child cognitive functioning may thus be spurious, explained by the mediating role of child behaviour. In order to evaluate this hypothesis, a regression was run (see Appendix O) in which child behaviour during testing served as a covariate, followed by the entry of maternal aggression and social withdrawal in childhood. Results of this analysis reveal that even when child behaviour during testing is controlled, a strong relationship persists between maternal aggression in childhood and child cognitive functioning. This relationship is even stronger than is the contemporaneous relationship between child behaviour during testing and cognitive functioning.

A second possible relationship accounting for the observed association between maternal childhood aggression and child IQ involves the relationship between maternal intelligence and aggression. As aforementioned, the association between externalizing behaviour and intellectual functioning has been found repeatedly in the literature (e.g., Brook & Newcomb, 1995; Chen et al., 1997; Caspi et al., 1987; Ensminger & Slusarcick, 1992; Fergusson, 1999; Hindelang et al., 1981; Huesmann et al., 1987; Masten et al., 1995). During the initial phase of data collection in 1976, we were unable to carry out intelligence testing. Consequently, we have an omitted variable in our model. It is possible therefore that the variance explained by maternal childhood aggression is

really attributable to maternal intelligence, a correlate of aggression. As such, we may be observing the stability of IQ across generations.

In order to reinforce the notion that aggression in its own right is a critical predictor of cognitive disadvantage in offspring, a regression was undertaken with the predictors including maternal childhood aggression, social withdrawal, and academic achievement. Academic achievement scores collected at recruitment are the closest approximation available to intelligence test scores. Achievement scores are based on an average of standardized test results in French language and mathematics. Unfortunately, a substantial amount of achievement data are missing. If a child was absent from school the day of standardized testing, that child has no recorded score. In the original sample of 1,770, approximately 20% of the data is missing. This percentage of missing data is paralleled in the present sample of mothers wherein 21% of the mothers are missing achievement scores. In addition to the degree of missing data, it is also important to note that the data are missing in a non-random fashion such that approximately 44% of the women in the withdrawn group are missing achievement data, none of the women originally classified as aggressive are missing data and the remaining two groups are missing approximately 20% of the data¹¹. Given this non-random pattern, it is difficult to estimate exactly what the achievement data mean. With this caution in mind, please refer to Appendix P for the regression that includes childhood achievement scores. In perusing this analysis, it becomes apparent that maternal childhood achievement is not a significant predictor of child cognitive functioning. Instead, controlling for achievement in

¹¹ Mean replacement by original peer classification was carried out as a conservative way of preserving sample size.

childhood, a stand in variable for intelligence, the power of aggression as a predictor of the transfer of risk remains impressive.

An additional third variable that may be contributing to the observed relationship between maternal childhood aggression and child cognitive functioning is prenatal smoking. The correlation between maternal aggression during childhood and smoking during pregnancy¹² is $.27, p < .01$ ($n = 107$). Further, in the preschool sample, the correlation between smoking during pregnancy and child total IQ score is $r(52) = -.30, p < .01$. In order to evaluate whether smoking during pregnancy explained the observed effects, a regression was carried out in which smoking during pregnancy was entered after maternal childhood variables (see Appendix Q). The inclusion of prenatal smoking at step 2 did not lead to a significant change in explained variance. The direct effect of aggression is reduced slightly, but not significantly indicating that prenatal smoking does not explain fully the relationship between maternal childhood aggression and cognitive delays in offspring.

In addition to the possible role of maternal prenatal behaviour, maternal post-natal behaviour may also mediate the relationship between maternal childhood aggression and child cognitive functioning. Consider for example, maternal stimulation and attention. Scarmella, Conger, Simons, and Whitbeck (1998) found that parental warmth and involvement was predictive of academic competence. Based on previous findings from the Concordia project (e.g., Bentley, 1997; Serbin et al., 1998), aggressive mothers tend to be less supportive, more hostile, and more unresponsive resulting in less stimulation.

¹² Prenatal smoking was coded somewhat crudely as a dichotomous variable where mothers received a score of "0" if they did not smoke during pregnancy and a score of "1" if they did. A total of 36 mothers (33.6%)

It is also possible that aggression, related to verbal deficits (Moffitt, 1990) renders mothers less comfortable or less capable of stimulating their offspring. A recent examination of the stimulation behaviour of mothers in this study revealed that while stimulation significantly predicted child performance on the Stanford-Binet and explained some of the variance previously attributed to maternal childhood aggression, the latter remained a significant predictor of child IQ (see Saltaris, 1998).

In a final attempt to explain the strong relationship between maternal aggression in childhood and cognitive functioning in the second generation, the original items of the PEI aggression factor were revisited to examine the pattern of correlations. The items most highly correlated with child IQ (ranging from $-.48$ to $-.65$) include those related to restlessness, classroom behaviour, and mean behaviour with others. The following items were not found to be related to cognitive development in offspring: 21, 23, 26, 27, 29, 30, 31, 33, and 34 (see Appendix C for original PEI items). It would thus appear that aggression items related to hyperactivity and perhaps attention deficit are among the best, but not the only predictors of cognitive functioning in the subsequent generation.

Moving from the direct effects of maternal childhood risk factors to the indirect links, the context of poverty appears to threaten preschool cognitive functioning by increasing maternal dissatisfaction with social support. Social support has been found to be predictive of child development, independent of parenting behaviour (Parks et al., 1992). Further, it has been found to exert an effect in the prediction of instability in child IQ

admitted to smoking during pregnancy while the remaining 71 (66.4%) denied smoking. Data on this question are missing for five women.

scores across preschool to early school years, but not throughout toddlerhood (Pianta & Egeland, 1994).

In attempts to appreciate the ways in which social support satisfaction contributes to healthy cognitive development, we turn to work on protective factors. According to Rutter (1987), "[p]rotection does not reside in the psychological chemistry of the moment but in the ways in which people deal with life changes and in what they do about their stressful or disadvantageous circumstances" (p. 329). According to this conceptualization, a parent's ability to use her social resources in such a way that is personally satisfying reflects the operation of a protective factor. The process underlying the satisfaction reported involves a strong degree of maternal competence or self-efficacy (Izzo, Weis, Rodrigues-Brown, & Shanahan, 1997). Mothers who report satisfaction with their social support represent a group of women who, when faced with daily parenting stressors for which they feel they might benefit from help are able to mobilize their social resources to obtain such help¹³. These women stand in sharp contrast with their peers who also experienced various degrees of stress, but are unable to adequately organize the people in their lives in a helpful fashion. It is possible that the observed competence is really a form of intelligence, transferred via inter-generational continuity to offspring. Reciprocally, those mothers unable to mobilize their social resources represent women with less social competence, and perhaps intellectual limitations that are also transferred to offspring.

¹³ It is interesting to note the relationship between social support and the home environment is particularly strong among mothers of preschool children ($r=.42$, $p<.01$). Not only are these women demonstrating their competence by mobilizing their social resources, but also, by organizing their home environment in such a way as to be both stimulating and warm.

Moving from the effects of social support on parenting to its direct effect on offspring, it is possible that the impact of the presence of additional supportive individuals plays a role in fostering child cognitive development. Women reporting satisfaction with social support likely have members of their social network who are not only present for the mothers themselves, but for their offspring as well. These helpful individuals may be providing additional stimulation and warmth directly to the children (McLoyd & Wilson, 1991).

Behavioural outcomes. One of the strongest findings to emerge from this study is the consistency with which maternal aggression in childhood is directly predictive of negative developmental outcomes within the second generation preschool-aged sample. Regardless of the measure of externalizing child behaviour used, be it maternal report, examiner rating, or blind observer rating, maternal childhood aggression is predictive of child behaviour problems, controlling for all other predictors, including those measured contemporaneously with the outcome variables.

The findings with respect to the direct effects of maternal childhood aggression are somewhat surprising. Evidence has been obtained in support of the mediated pathways perspective in which measures of distal environmental factors no longer relate significantly to adjustment outcomes after their shared variance with key proximal conditions is removed (e.g., Felner et al., 1995). Originally, when conceptualizing inter-generational risk transfer, we anticipated a mediated model wherein the impact of aggression and social withdrawal in childhood would operate primarily through more proximal contextual parenting variables.

As with cognitive findings, a number of possible explanations for the powerful results with respect to maternal childhood aggression are proposed. First, it is possible that the transmission of aversive behaviour from mother to offspring is direct. That is, via genetic contribution and environmental experience, mothers transmit aggressive tendencies to their offspring. Relatedly, children of mothers with childhood histories of aggression may inherit executive functions deficits (see Séguin et al., 1995). As such, these children are less proficient in the use of feedback cues, as well as being less flexible in problem-solving. Further, they experience difficulties with sustained attention and concentration. Consequently, they are more apt to display impulsive, externalizing behaviour.

In addition to the transfer of executive functions deficits, it is also possible that inter-generational continuity arises as a function of parental modeling. Patterns established in early life of the previous generation provide a context for the replication of such patterns by the succeeding generation (Caspi & Elder, 1988a; 1988b). As a function of behavioural stability, parents with histories of childhood aggression continue to display maladaptive behaviour for their offspring including aggression with their spouses and with their children, hostile (Renken, Egeland, Marvinney, Mangelsdorf, & Sroufe, 1989; Verlaan & Schwartzman, 1998), aggressive, or punitive behaviour (Caspi et al., 1987; Cohen & Brook, 1995; Jouriles, Barling, & O'Leary, 1987; Keenan & Shaw, 1994; Patterson, 1986; Stormshak, 1997). Children viewing these forms of conflict resolution and response to frustration respond in kind with little impulse control and externalizing tendencies (Dodge et al., 1994). Through observation and direct teaching, children may take on the belief that aggression is a legitimate means of improving status, gaining

material rewards, and coping with fear (Guerra, Huesmann, & Hanish, 1994). As a result, they are at increased risk for exhibiting such behaviour.

In addition to modeling theory, the intergenerational transfer of risk as manifested by the relationship between mother's aggression in childhood and child behavioural outcomes may in part be explained by parenting behaviour omitted from this study. In a meta-analysis of studies on the relation of family factors to antisocial behaviour and delinquency, Loeber and Dishion (1983) found that parenting strategies were more powerful predictors of delinquency than other risk factors including child behavior, SES, and family instability. Following from Paterson and colleague's model (1992), it is possible that unskilled parents who engage in coercive interchanges with their offspring, promote antisocial behaviour and fail to reinforce prosocial activity. Consequently, these children engage in more aversive behaviour.

Limitations of the Present Study

Prior to drawing conclusions, it is important to consider the limitations of this research endeavor. First, within this study, there exists a certain degree of reliance on questionnaire data. A number of the measures used involve parent reports. In the case of social support and parenting stress, single measures of maternal perceptions are considered. Previous research has indicated that questionnaire data are more likely to result in weaker effects than interview or observational data (Rothbaum & Weisz, 1994). At the same time, to assess both social support satisfaction and parenting stress, it would make little sense to attempt to collect more "objective" ratings since it is the mothers' impressions that are of interest. However, when attempting to predict parenting stress from social support satisfaction, where both predictor and outcome variable originate

from the same data source, it is not possible to disentangle confounded method variance from true prediction (Caspi, Moffitt, Newman, & Silva, in press).

An additional problem resides with the simultaneous collection of social support satisfaction information and parenting stress data, that of directionality. Many studies on social support involve correlational designs limiting causal inference (Yoshikawa, 1994). There exists potential bias in the mediational relationship proposed. It is possible that social support, entered as a mediator, may in fact be the dependent variable (Baron & Kenny, 1986). Within the theoretical model, social support satisfaction is considered to be a predictor of parenting stress. The rationale herein is that mothers, perceiving they lack support, correspondingly find their parenting experience more stressful (Garbarino & Abramowitz, 1992; Klebanov et al., 1994; Stern & Smith, 1995). At the same time, the possibility remains that some mothers are unable to perceive satisfaction with the support they receive as a function of their greater need outweighing the social support that is normally available (see Alternative model, Figure 6).

In keeping with problems related to self-report measures, the CBCL raises concern in terms of the validity of findings (Szykula et al., 1991; Wilson et al., 1998). Parents are believed to be among the most critical sources of information regarding their own children's problems and behaviour (Achenbach, 1991). Yet, mothers experiencing emotional distress and increased levels of stress tend to report more elevated rates of behaviour problems in their children than do their non-depressed counterparts (Byrne et al., 1998; Downey & Coyne, 1990; Fergusson, Horwood, Gretton, & Shannon, 1989). It is possible that such parents project their own feelings or characteristics onto their children (Cohen et al., 1998). Greater confidence exists with respect to findings

regarding child externalizing tendencies than for internalizing tendencies because there exists convergence in predictors, with multiple sources of evaluation of child behaviour.

Not only are there difficulties associated with parent report measures, but as well, cognitive batteries employed present certain limitations. The BSID-II and the SB-FE are normed on samples of Anglophone children. The depressed scores observed in this study, particularly those found on the BSID-II may reflect differential cultural use of particular words or skills. At the same time, the measures, administered in a standardized fashion, serve their purpose well in terms of comparing participating children with each other.

An additional limitation of the measures selected rests with the assessment of parenting. Although the present study does include a global measure of the quality of the home environment, encompassing both environmental characteristics, the quality of stimulation, warmth, and discipline, no direct measures of parenting practices are employed. This gap in the predictors might account for part of the explained variance attributed currently to mothers' childhood aggression. Patterson and colleagues (1992) proposed a model in which parenting practices (including coercion, and inconsistency) are the principal determinants in the development of antisocial behaviour in children. Capaldi and Clark (1998), in a prospective study of intergenerational transmission of aggression also found that unskilled parenting practices play an important role in the prediction of antisocial behaviour in offspring. It is possible that with more precise measures of parenting, the mechanisms linking maternal childhood aggression to externalizing tendencies in the next generation may be clarified. Finally, it is possible as well that by enlarging the focus on parenting to include prenatal factors such as nutrition

and health care, a greater degree of the variance in child outcomes might be explained (McLoyd, 1998; Sameroff & Chandler, 1975).

Similar to the problems associated with the selection of parenting measures, the choice of child measures, with an emphasis on cognitive and behavioural child adjustment at the neglect of child physical health remains a limitation of the study. Previous research into the impact of poverty on child development has uncovered associations between diminished physical health and cognitive deficits (Crooks, 1995). In the present study, the risks associated with poverty are found to operate through a disadvantaged home environment in the prediction of referral status and toddler cognitive development. It is possible that concomitant with lower quality home environment is lower quality nutrition and physical health care. Consequently, findings with regard to the home environment may also reflect threats to physical health. Further, such physical neglect may explain some of the variance that is currently unaccounted for in the model presented.

In addition to omitting certain child outcomes, one of the central limitations of this study rests on the principal mechanism understood to transmit risk from poverty to poor children. In this study, parenting is conceptualized as the primary way in which the risks associated with poverty are transmitted to offspring. While it is true that threats to parenting mark an extremely important, and perhaps central pathway through which child development is threatened, it is not the only means by which the effects of poverty operate (Halpern, 1990). Unsafe environments, crowding, inadequate housing, insufficient access to resources, lower quality schooling, and malnutrition also mediate the effects of poverty on development (Black & Krishnakumar, 1998; Halpern, 1990). It

is equally important to consider more global deprivation characteristic of environments in which there exists financial disadvantage. The implications of adopting a macro focus differ from those when a more micro perspective is taken. In the present study, prevention and intervention are the ultimate goal. On a micro level, we are interested in modifying risk and protective factors that exist within the family context. At the same time, policy change is also of interest and, as such, adopting a more global perspective, government policies regarding financially disadvantaged individuals need to be considered as well. It is only through large scale social change that dramatic transformations can occur reducing some of the stress experienced on a more micro level.

Future Directions for Research

Findings from the present study contribute to a growing literature on the continuity of risk over time and across generations. At the same time, it also leaves room for the consideration of discontinuity and possible mechanisms operating in support of resilience. Future directions will be kept brief and elaborated upon at the close of both studies. First and foremost, greater work needs to be done exploring the mechanisms of risk transfer and resilience promotion. This study reflects an early step; however, if the goal of intervention is to be achieved, more knowledge of the family and its functioning is required. One central area omitted from the present study is observed parenting behaviour. It is important to consider the role of parents in modeling, promoting, and perpetuating aversive behaviour in their offspring. The cycle of coercion is a useful avenue of exploration (see Patterson, 1982). Further, as children move into the school years and onto adolescence, parental involvement and monitoring become increasingly

important points of consideration (Larzelere & Patterson, 1990; Loeber & Stouthamer-Loeber, 1986; Patterson, 1982; Patterson, DeBaryshe, & Ramsey, 1989).

Within the assessment of intragenerational and inter-generational continuity and discontinuity in risk, the mediational role of contextual variables specifically, poverty and its correlates has been emphasized. And while evidence has been uncovered in support of a mediated model in which childhood risk factors operate in part through financial disadvantage, it is also possible that poverty serves a moderating function. Consider the diathesis-stress model of psychopathology where, under particular conditions, inherited vulnerability becomes manifest. Applying a similar approach to psychosocial risk, it is possible that under particular environmental conditions, namely poverty, the risk associated with maternal childhood aggression and social withdrawal, in some instances, amplified. That is, continuity of disadvantage over time is fostered by impoverished environmental conditions (Dodge, 1999). Results of longitudinal studies have supported the notion that events and experiences may serve to exert a strong role in promoting the persistence of behavioural traits (Rutter, 1994; Sampson & Laub, 1993). Future research should be carried out exploring the differences between those mothers with histories of childhood behavioural extremes who, as parents, found themselves in poverty and those who were able to overcome childhood adversity and live in conditions of relative financial security. What personal characteristics, family factors, and environmental circumstances contribute to resilience in the face of adversity? How do children of women with childhood histories of aggression and/or social withdrawal differ from each other depending on the financial circumstances in which they develop?

Conclusions

Evidence obtained supports the continuity of risk over time and across generations for mothers with childhood histories of aggression and/or social withdrawal. Poverty and its concomitants have been identified as manifestations of continued risk as well as perpetuating factors in the inter-generational transfer of risk. Effects of poverty are both direct and indirect, operating through low social support, increased parenting stress, and lower quality home environment. Results from this study underline the importance of context in the continuity of risk and indicate the need to consider not only characteristics of the individual, but those of the environment as well that serve to perpetuate the continuity of risk.

In the next study, the continuity of childhood risk over time is once again considered. This time, the focus is placed on fathers and conditions that shape the context of parenting. Because the state of the science of the study of fatherhood is not as advanced as that of motherhood, the structure of Study 2 is not as complex as that of Study 1. Nonetheless, it marks an important step in beginning to appreciate the role of childhood risk factors in the prediction of threats to fatherhood, and ultimately, factors that jeopardize child development.

Study 2

Fatherhood

In a report put forth by the Federal Interagency Forum on Child and Family Statistics summarizing the results of a series of conferences entitled: Nurturing Fatherhood: Improving Data and Research on Male Fertility, Family Formation and, Fatherhood, Bachrach and Sonenstein (1998) highlight the necessity of a developmental approach to fatherhood. They recommend that longitudinal studies beginning in early childhood be undertaken in order to improve our comprehension of the predictors of attitudes and behaviours of boys and men as they relate to sexuality, pregnancy, and fatherhood. The Concordia Longitudinal Risk Project is beginning to explore the pathways from social withdrawal and aggression in boys to fatherhood.

A small, but developing literature on social withdrawal has begun to support the notion of continuity of inhibited behavioural tendencies from childhood to adulthood (Peters, 1999). By contrast, a considerable literature exists in support of the continuity of aggressive behaviour in men from boyhood to adulthood (Caspi et al., in press; Farrington, 1995; Huesmann et al., 1987; Robins, 1966). Behaviour problems in childhood have been found to be associated with both concurrent and long-term academic difficulties (Caspi et al., 1987; Serbin et al., 1998; Thompson, Lampron, Johnson, & Eckstein, 1990). For instance, Capaldi and Stoolmiller (in press) found that conduct-problem males in adolescence and early adulthood experience academic failure. Boys exhibiting aggressive forms of behaviour in childhood are not only at risk for inhibited educational attainment, but also for delinquency and adolescent sexual behaviour (Capaldi & Yoerger, 1998; Jessor & Jessor, 1977; Whitbeck, Conger, Simons, & Kao,

1993). Results from the Oregon Youth Study indicate that boys who exhibit antisocial behaviour in fourth grade are approximately twice as likely to be precocious in the initiation of sexual behaviour (Capaldi, Crosby, & Stoolmiller, 1996). Miller-Johnson and colleagues (1999) found that peer nominations on aggression in childhood are predictive of early pregnancy. One limitation of this study however is that educational attainment data were not collected. It is possible therefore that a mediated relationship exists whereby low educational attainment serves as the link between childhood aggression and early pregnancy. Poor school achievement has been found to be an important risk factor in the prediction of teenage fatherhood (Dearden, Hale, & Alvarez, 1992; Fagot, Pears, Capaldi, Crosby, & Leve, 1998; Thornberry, Smith, & Howard, 1997). At the same time, according to the social contextual model, teenage fatherhood can be interpreted as a manifestation of continuity in deviant behaviour over time (Scarmella et al., 1998). We might thus expect, as has been observed in women (Serbin et al., 1998), a direct relationship between childhood aggression and early parenthood (Miller-Johnson et al., 1999). However, because much less attention has been given to early fatherhood (Fagot et al., 1998), this conclusion is, for the moment, tentative.

Men who adopt an adult role precociously through fatherhood initiate an acceleration of developmental sequence increasing the rate at which other adult behaviours are assumed (Whitbeck et al., 1993). For instance, as a function of parental responsibilities, these men might leave school earlier than their age peers and thus, limit their occupational opportunities (Lerman & Ooms, 1993). As such, we might predict increased probability of living in poverty for boys with childhood histories of aggression. To further contribute to the likelihood of poverty in the adult lives of aggressive boys, lower

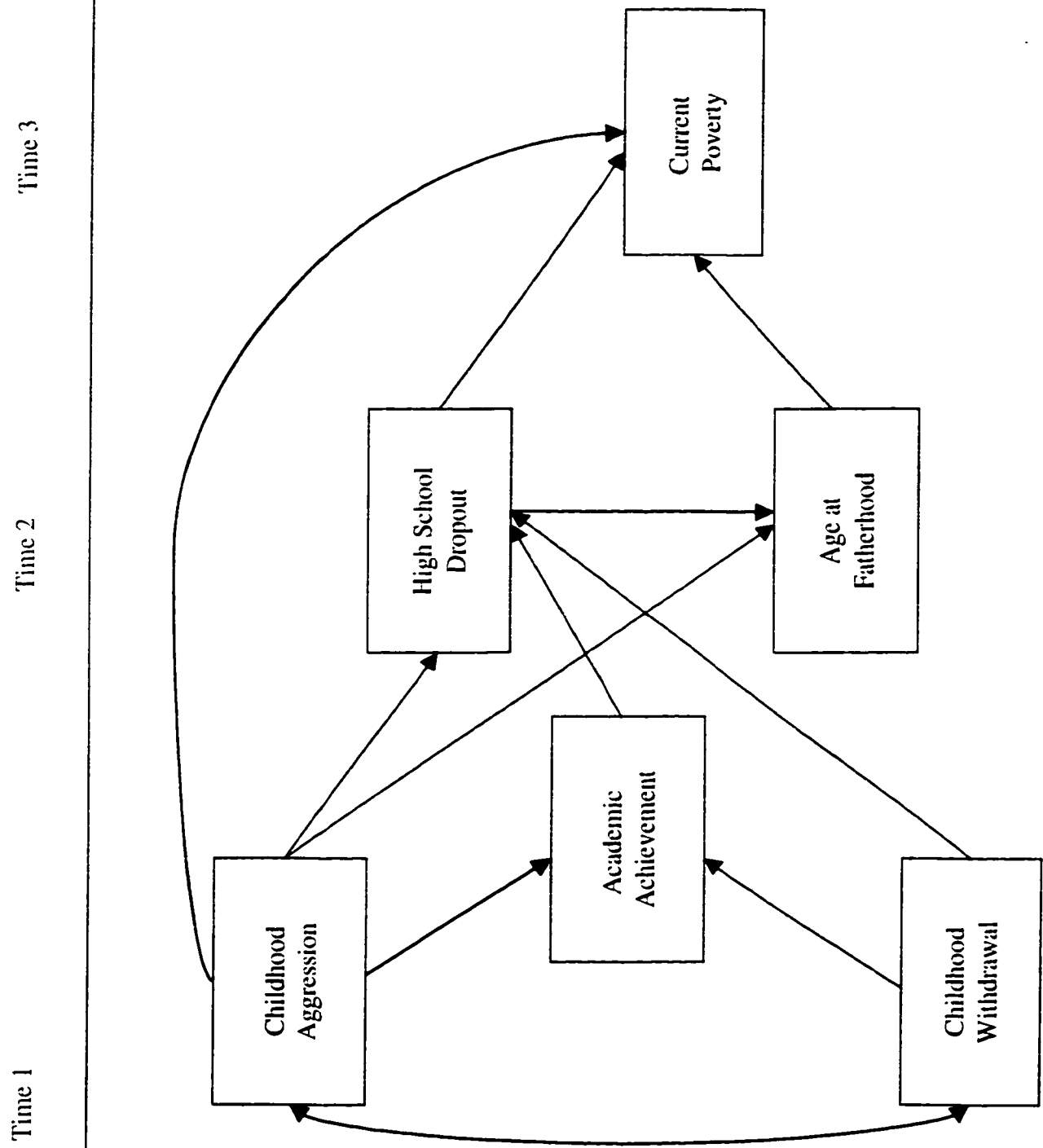
educational attainment, career instability, criminality, and substance abuse problems in adulthood have been linked to childhood aggression (Capaldi & Stoolmiller, in press; Ronka & Pulkkinen, 1995).

Historically, men at risk for psychosocial problems have been extremely difficult to locate in any consistent fashion (Cooperman, 1996; Pfiffner, McBurnett, & Smith, 1998). Further, research evidence supports the notion that men with a history of anxiety and shyness in childhood tend to time transitions in their lives such as marriage later than men who were not so characterized (Caspi & Elder, 1988a). As such, our ability to study high risk boys as they move into fatherhood has been severely impaired. In order to begin studying these men, a model is proposed including educational attainment, early fatherhood, and subsequent family poverty in men with children.

Hypotheses

In considering the life pathways of high risk boys, previous work with high risk girls is used as a frame of reference. The path model predicting high school drop-out and teenage motherhood was adapted for use with the present sample of fathers (see Serbin et al., 1998). Due to the small number of teenage fathers identified in the sample ($n = 8$), age at first child's birth is treated as a continuous variable rather than as a dichotomous variable. Consequently, only men who are fathers are considered. Further, Serbin and colleagues' (1998) model is expanded to include current poverty levels. Within the model (see Figure 7), pathways are hypothesized to operate as follows: first, aggression

Figure 7. Hypothesized Path Model Predicting Conditions Threatening Parenting for Fathers



and social withdrawal in childhood are believed to be related directly to high school dropout and indirectly through lower academic achievement (Serbin et al., 1998).

Moving from academics to parenthood, paralleling the findings that continuity in externalizing behaviour is manifested in part by high risk sexual behaviour (Capaldi et al., 1996; Serbin et al., 1998), a direct relationship is predicted from childhood aggression to early fatherhood (Fagot et al., 1998; Miller-Johnson et al., 1999). In addition, an indirect relationship is anticipated with childhood aggression and social withdrawal increasing the risk of early fatherhood through their association with high school dropout¹⁴ (Fagot et al., 1998; Lerman & Ooms, 1993; Scaramella et al., 1998; Thornberry, Smith, & Howard, 1997). Finally, high school dropout, early fatherhood, and aggression are all anticipated to predict current poverty.

¹⁴ As was the case in the sample of women (Serbin et al., 1998), none of the men became fathers before dropping out of school. Therefore, a unidirectional relationship is proposed.

Method

Participants

The participants in this study consisted of 164 men from the original Concordia sample who were fathers and for whom information was available on educational attainment, age at first child's birth, and current family economic circumstances. In total, the Concordia Longitudinal Risk Project includes 861 men. In the most recent effort to update demographic information, 371 men were traceable and contacted. Of these men, 173 (46.7%) had children. Nine (5%) of these fathers were missing information on age at first child's birth and were thus dropped from the study.

Based on the original classification of fathers by their childhood peers, the present sample consists of the following groups: aggressive ($n = 30$), withdrawn ($n = 19$), aggressive-withdrawn ($n = 17$), and contrast ($n = 98$). A dimensional approach to aggression and social withdrawal was used in favor of the four group classification strategy as a function of small group sizes (see Table 14 for means and standard deviations). At the time of initial assessment, 30 men (18%) were in first grade, 48 (29%) were in fourth grade, and 86 (53%) were in seventh grade.

With respect to family socio-economic status at time of recruitment, family prestige scores based on father's occupation were available for 128 (78%) of the men. Scores ranged from 180 to 714 ($M = 398.05$, $SD = 109.85$) (Nock & Rossi, 1979). Minimum and maximum scores represent the following jobs: cleaner and psychologist, with the mean corresponding to the prestige level of a construction inspector. In terms of academic achievement in childhood, scores in stanines ranged from 1.00 to 9.00 ($M = 4.48$, $SD = 1.42$). With respect to educational attainment, years of completed schooling ranged from seven to 17 ($M = 11.62$, $SD = 2.19$). Fifty-one (30.9%) participating men dropped out prior to high school completion. This figure compares with a provincial rate

Table 14

Means and Standard Deviations of Aggression and Withdrawal Z-scores for Fathers

	Mean	Standard Deviation
Aggression Z-score	.44	1.10
Withdrawal Z-score	.21	.90

Note. N = 164.

of 26% for early school leaving (Gilbert & Orok, 1993). At first child's birth, fathers ranged in age from 18 to 32, ($M = 25.62$, $SD = 3.20$). In terms of current poverty, 15 (9.1%) fathers were on welfare, 55 (33.5%) were considered to be "working poor", and 94 (57.3%) were living above the poverty line.

To assess the degree to which the father sample is representative of the overall sample of high risk men ($N = 861$), a series of t-tests were carried out. Comparing those men who were included in the father sample with the remaining men in the original Concordia sample for whom current demographic information is available, some differences emerged. First, participating men were found to be rated by their peers in childhood as having been more aggressive ($M = .44$, $SD = 1.10$) than nonparticipating men ($M = .24$, $SD = 0.95$) $t(859) = -2.35$, $p < .05$. Participating men were also found to be less withdrawn ($M = .21$, $SD = 0.90$) than nonparticipating men ($M = .39$, $SD = 0.98$), $t(859) = 2.15$, $p < .05$. Academic achievement scores were not significantly different while years of education completed were. Participating fathers have fewer years of schooling ($M = 11.62$, $SD = 2.20$) than nonparticipating men ($M = 12.14$, $SD = 2.43$), $t(859) = 2.24$, $p < .05$. While significant statistically, the size of the difference appears somewhat trivial, particularly since both means reflect high school completion. Finally, no significant differences emerged with respect to comparisons on current levels of family poverty.

Measures

Demographics. A French translation of the Demographic Information Questionnaire (DIQ; Concordia Longitudinal Risk Project, 1993) (see Appendix E) was used to gather background information on participating fathers. Areas accessed by this questionnaire include father's current age, marital status, educational attainment, and family income. Information was also gathered regarding the age, sex and number of children the father had. Finally, the father's current address was verified. The DIQ requires approximately seven minutes to complete.

School achievement. Archival data on parental school achievement were obtained from the results of standardized testing carried out by the school board in the year of participant identification (i.e., between 1976 and 1978). Achievement scores reflect skills in the basic subjects of French language arts and mathematics. Scores are reported in stanines with a population mean of 5 and a standard deviation of 1.

Procedure

Information used in developing the path model predicting conditions of fatherhood was drawn from the DIQ mailed to participants with their consent. This information included years of schooling completed, age at birth of first child, and current income. Income scores were translated into poverty status using Statistics Canada's Low Income Cut-offs (see measures section, Study 1 for a description). School academic achievement scores were obtained from the Commission des Écoles Catholiques de Montreal.

Results

Data screening

Prior to analysis, all data files were reviewed for input errors in coding and missing data. Of the 164 participating men, one was missing information on years of education completed, and 20 (12%) were missing original childhood academic achievement scores¹⁵. In order to maximize the power of analyses, mean replacement was carried out to complete missing information (Tabachnick & Fidell, 1989). Means by original peer classification group were considered the best estimate of participants' scores (Kline, 1998). These scores were substituted when actual scores were missing.

To further prepare data for analysis, both univariate and multivariate assumptions were evaluated through consideration of distribution characteristics. Both aggression and social withdrawal were found to be slightly skewed. We felt it unnecessary to transform original z-scores based on the understanding that analyses undertaken were sufficiently robust to tolerate small violations of assumptions.

Design

Analyses were carried out using a covariance matrix in EQS (Bentler, 1995). In order to test hypotheses, a path analysis exploring continuity of risk from childhood to fatherhood was undertaken.

High school dropout and early fatherhood. The correlation matrix as well as the means and standard deviations of variables included in the path model are found in Table 15. The hypothesized path model is presented in Figure 8. Results of the goodness of fit indexes are indicative of an adequately fitting model: $\chi^2(4, N = 164) = 3.99, p > .10$, CFI = 1.00, NNFI = 1.00, SRMR = .05.

¹⁵ Missing data reflect absenteeism from school the day of standardized testing.

Table 15

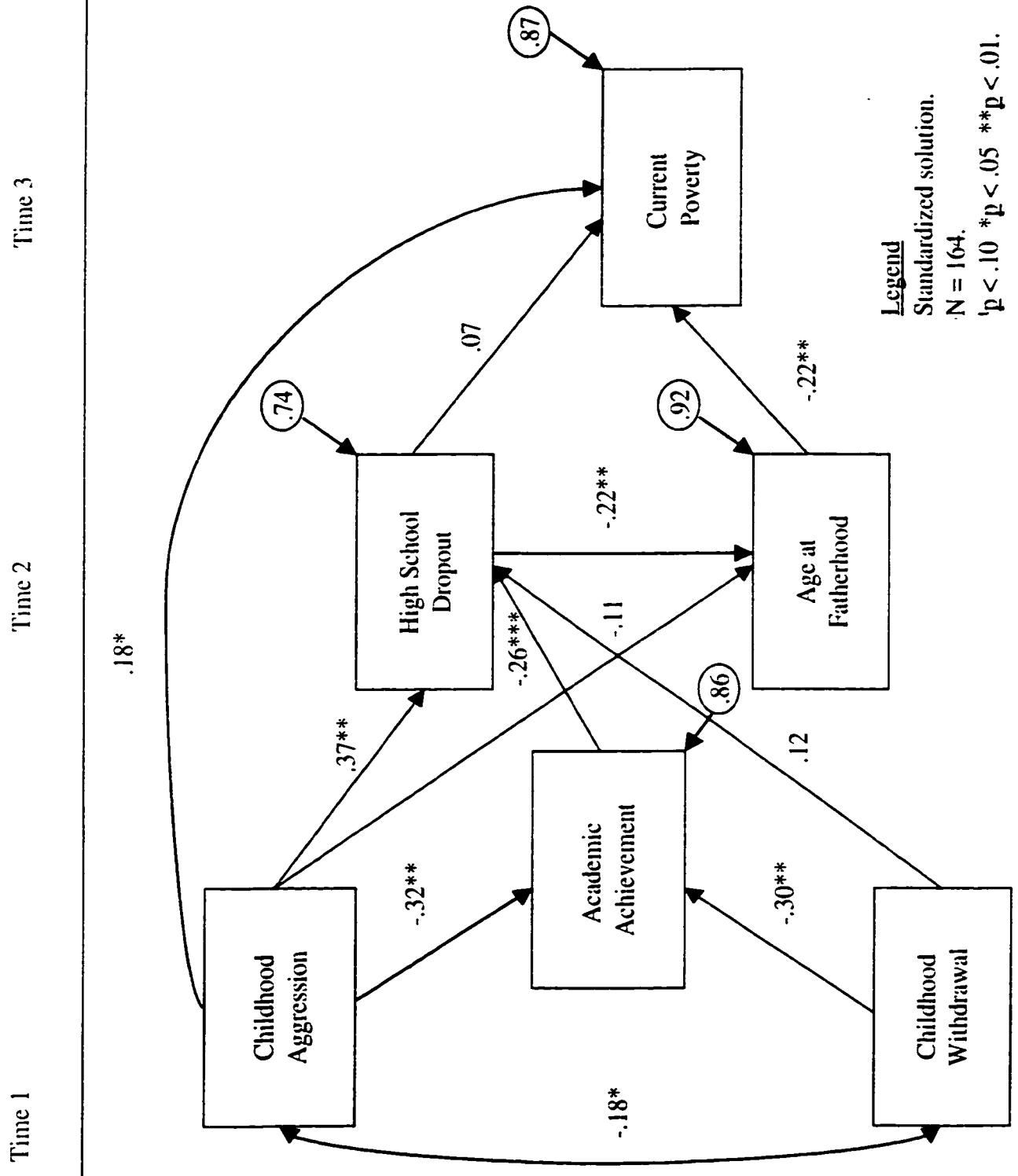
Correlations Between Variables Along the Pathways to Early Fatherhood and Family Poverty

Variables	1	2	3	4	5	6
1. Childhood aggression	--	-.18*	-.27**	.42**	-.21**	.26**
2. Childhood withdrawal		--	-.21**	.09	-.01	.02
3. Academic achievement			--	-.37**	.08	-.09
4. High school dropout				--	-.27**	.21**
5. Early fatherhood					--	-.28**
6. Current poverty						--
<i>M</i>	.44	.22	4.51	.31	25.68	1.49
<i>SD</i>	1.10	.90	1.42	.46	3.20	.66

Note. N = 164.

.10 < p < .10. *p < .05. **p < .01.

Figure 8. Path Model Predicting Conditions Threatening Parenting for Fathers



Moving from the evaluation of the overall fit of the model to the individual pathways, the pattern of significant path coefficients are described. The direct effects observed for childhood aggression were striking. First, in keeping with previous research, aggression was found to predict significantly childhood academic achievement ($\beta = -.32, p < .01$). Moving into adolescence and early adulthood, and in keeping with findings in women (see Serbin et al., 1998), aggression in childhood was found to predict directly high school dropout ($\beta = .37, p < .01$). For high risk men who are fathers, aggression in childhood was not found to be directly predictive of early assumption of the fathering role ($\beta = -.11, p > .10$). Finally, controlling for high school completion and early fatherhood, childhood aggression was found to be predictive of poverty in parenthood, over twenty years later, ($\beta = .18, p < .05$), a similar finding that reached the level of a trend in the mother sample in Study 1 ($N = 112$), ($\beta = .16, p < .10$).

In contrast with the numerous direct pathways observed for aggression, childhood social withdrawal appeared to operate indirectly through academic achievement. In isolation, social withdrawal was only directly predictive of lower academic achievement in childhood ($\beta = -.30, p < .01$). Withdrawn boys who experienced academic difficulties appear to follow the route of disadvantage, a path to which aggressive children are also vulnerable. Along this path, low academic achievement was predictive of high school dropout ($\beta = -.26, p < .01$). In turn, early school leaving predicted adoption of the fatherhood role early in adulthood ($\beta = -.22, p < .01$). Finally, becoming a father early and accepting responsibility for this role was predictive of current poverty ($\beta = -.22, p < .01$). It is interesting to note that high school dropout itself was not directly predictive of poverty.

Discussion

The purpose of the present investigation was consideration of the stability of childhood risk as manifested by later life conditions known to threaten successful childrearing. Overall, support is obtained for the continuity of risk over time. To demonstrate and explain the continued impact of childhood aggression and social withdrawal across the lifespan, the proposed model is examined.

Academic achievement

The first portion of the path model involves the prediction of academic achievement from childhood aggression and social withdrawal. That both behavioural extremes predict lower academic achievement is not surprising, given previous work with the Concordia sample (see Ledingham & Schwartzman, 1984; Serbin et al., 1998) and literature linking in particular aggression with lower intelligence and academic performance (e.g., Brook & Newcomb, 1995; Chen et al., 1997; Caspi et al., 1987; Ensminger & Slusarcick, 1992; Fergusson, 1999; Hindelang et al., 1981; Huesmann et al., 1987; Masten et al., 1995; Ronka & Pulkkinen, 1995). Explanations for this association are reviewed in the discussion of Study I.

High school dropout

Moving along the lifepath from childhood into adolescence and early adulthood, direct and indirect pathways exist in the prediction of high school dropout. These findings parallel exactly those obtained with a sample of women from the Concordia project (see Serbin et al., 1998). Aggression and social withdrawal in childhood increase the risk for early school leaving through lower academic achievement. In addition to this indirect

effect, controlling for school performance, a direct relationship is observed with childhood aggression predicting high school dropout.

Capaldi and Stoolmiller (in press) found that conduct-problem males in adolescence and early adulthood experience academic failure. It is possible that continued difficulties in adjusting to academic settings in part relate to problems with executive functions (see Moffitt, 1993; Séguin et al., 1995). Deficits in this area, including an incapacity to initiate and maintain goal-directed behaviour threaten school adjustment both in terms of academic performance and with respect to social interactions. In keeping with the social component, it is also possible that aggressive boys gravitate to similar peers (Whitbeck et al., 1993). Consequently, they may then go on to develop a subculture in which early school leaving, typically viewed as deviant by mainstream society, is considered as a reasonable option inspiring little or no shame (Jencks & Mayer, 1990).

Early fatherhood

In the prediction of early fatherhood, childhood aggression and social withdrawal operate indirectly through high school dropout such that boys who leave school early are more likely to become young fathers. And while a direct relationship between childhood aggression and early fatherhood was anticipated, no such direct association achieved significance. This non-finding may be attributed to the way in which early fatherhood was defined. The base rate for teenage fatherhood in the overall sample of men for whom we have demographic data was found to be very low ($n = 8$). The infrequency of teenage fatherhood found in the current sample is not unique to this group, but rather, represents the overall low prevalence rate found in representative North American samples such as the National Survey of Adolescent Males (Sonenstein, Pleck, & Ku, 1993). Other

researchers have addressed the problem of few teenage fathers by treating age at first child's birth as a continuous variable (e.g., Lerman & Ooms, 1993). We adopted a similar strategy. In so doing however, we are no longer comparing teenage fathers with older fathers and men who have yet to become fathers. Instead, we are focusing exclusively on those who are fathers. As a result, it is likely that we are failing to capture the most deviant men in the Concordia sample. That is, those who are either unaware of the existence of their children, and those who refuse to admit to knowing they are parents are not included. Because the most extreme men are excluded, the power of childhood aggression is attenuated. While childhood aggression is not a significant predictor of early fatherhood, independent of high school dropout, the path coefficient indicates that the relationship is in the anticipated direction and that the inclusion of more deviant men in the sample might result in a significant finding. Further, using an arbitrary cut point of age 25, preliminary work with the overall sample of men, that is, fathers and non-fathers, indicates that there may in fact be a direct relationship between childhood aggression and early fatherhood. More work however must be done to confirm this finding.

Poverty in parenthood

The final phase of the path model involves the prediction of poverty in parenthood. Aggression and social withdrawal in childhood are found to operate indirectly through early fatherhood. Similar to findings in Study 1, a direct relationship is also observed with childhood aggression predicting current poverty. Surprisingly, no direct relationship emerged with respect to high school dropout. Instead, the risk associated with early school leaving emerges as a function of increased risk for early fatherhood. Thus, within this sample of parents, it is not high school dropout per se that predicts financial

disadvantage, but rather, it is the accumulation of risk resulting from the increased likelihood of limited educational attainment and early parenthood. Teenage fatherhood has been found to inhibit educational attainment and career success (Fagot et al., 1998). Moving from the indirect relationship between childhood risk factors and poverty to the direct association, the link between childhood aggression and current poverty was explored in depth in Study 1. To elaborate points made, and to steer the discussion in a direction particularly relevant to men, consider threats to employment.

An inverse relationship exists between levels of conduct problems and employment (Fergusson, 1999). This relationship holds even when educational attainment is controlled. Similar to the current findings, Fergusson (1999) found that it is not the educational attainment that predicted unemployment, but rather, antisocial behaviour during adolescence. Consider the stability of behaviour problems over time. Men who are impulsive, with low frustration tolerance and elevated rates of interpersonal difficulties are less likely to function adequately in a work setting where a certain degree of adaptive interaction is required for employment and promotion.

As with the sample of women in Study 1, concern remains with respect to omitted variables. The relationship between childhood aggression and current poverty may be spurious and explained by a third variable, poverty in the family of origin. It is possible that we are really measuring the stability of the environment rather than the stability of behaviour problems over time. Family prestige scores, while not the same as income status, are available for a portion of the sample at recruitment (1976-1978). Concerns over the misattribution of the effects of childhood aggression are allayed. For the 130

fathers for whom data are available, the correlation between family prestige at recruitment and current poverty is not significant, $r = .07$, $p > .10$.

Limitations of the Present Study

The principal limitation of the present study involves the recruitment of participants. Only those men who reported having children were included in this sample. It is possible that some men, perhaps even the most deviant of the group, were unaware or denied that they had fathered children, and were thus, omitted from the sample. In a recent comparison of the characteristics of trackable and untrackable fathers of antisocial children, Piffner and colleagues (1999) found that the more deviant men were less likely to be participants. Biological fathers unavailable for study were less educated, had lower incomes, and more antisocial symptoms. Further, it is also important to note that in the present sample, small, but significant differences were found between men eligible to participate and those who were not. Participants, as a group tended to be slightly more aggressive and somewhat less withdrawn than the remainder of the sample. The difference observed may be explained in part by the fact that withdrawn men delay entry into marriage and fatherhood (Caspi et al., 1988).

Future Directions for Research

As with findings for Concordia project women, results of the present study support the notion of continuity of risk over time in individuals with childhood histories of aggression and social withdrawal. And while both sexes appear to demonstrate a particular degree of stability in problems from childhood into early adulthood, some of the pathways and risk factors appear to be common to both while others differ. For instance, within the realm of academic achievement and high school completion, both

sexes have a similar pattern of prediction. Findings diverge for early parenthood and current poverty. Given these differences, it is important to identify relevant domains of influence for each sex and explore accordingly (White & Kowalski, 1994).

Moving from sex differences to fathers in particular, it is important to explore more closely the fathering role and its implications for child development. Ronka and Pulkkinen (1995) identified aggression in boyhood and difficulties in school adjustment as being among the pathways that result in career instability, criminality, and substance abuse in adulthood (Ronka & Pulkkinen, 1995). In addition to occupational difficulties, further continuity is manifested by aggressive and unstable relationships with their female partners such that divorce is more likely (Capaldi & Clark, 1998; Caspi et al., 1987). Taken together, the conditions identified contribute to the risk of unstable home environments, greater parenting stress, and by extension, negative outcomes for offspring. Rather than simply exploring extrafamilial manifestations of problems for high risk men, greater attention must be devoted to the family context and more specifically, the parenting behaviours of fathers. For instance, what is the frequency and nature of interactions between fathers and their young children? Repeated observations of different parent-child situations over time would be beneficial.

Conclusions

Support has been obtained for the long-term consequences of childhood histories of aggression and social withdrawal. The direct and indirect impact of these risk factors span academic achievement, educational attainment, age at becoming a father, and poverty. These conditions have been identified as threats to subsequent parenting and consequently, child development.

General Discussion

The goal of the studies presented was to explore continued manifestations of risk over time and across generations for parents with childhood histories of aggression and social withdrawal. The risk associated with childhood aggression is quite pronounced, with both direct and indirect links to continued disadvantage within a single generation and across generations. Findings with respect to social withdrawal are more modest. Path models indicate that children exhibiting socially withdrawn tendencies are at greater risk for academic failure and consequently, lower educational attainment. This risk to educational careers appears to be the primary means by which socially withdrawn children find themselves on the path of continued disadvantage.

In addition to a focus on childhood risk factors, specific attention was devoted to context and the role of poverty and its concomitants as evidence of the stability of risk as well as mechanisms of risk transfer. Exploration of these current risk factors enables us to begin to make recommendations about how to intervene in the present with at-risk families. Before considering future directions with respect to intervention, limitations of the present work are considered.

Limitations of the Present Studies

Certain limitations are observed to cross the boundaries of both studies presented. The first, and perhaps most important issue is that of longitudinal research. Studies following lives over time provide a number of benefits. For instance, they do not rely on retrospective data, subject to recall bias, but instead, employ a prospective approach (Loeber & Farrington, 1994). Causal inferences can be drawn more convincingly in longitudinal studies for such studies enable the establishment of time sequencing in the

prediction of later maladjustment (Loeber & Farrington, 1994). At the same time however, the pursuit of the causal connection is really only a theoretical possibility. Our conclusions remain speculative as a function of our methodology which is not experimental, but rather, correlational in nature (Wierson & Forehand, 1994). The possibility always remains that variables have been omitted, confounding observed findings, or resulting in the misattribution of the direction of causation (Kline, 1998). For instance, given that family income scores and intelligence scores were not collected for the entire sample at recruitment, it is possible that the observed effects attributed to aggression are in fact the result of spurious associations, and might better be explained by the continuity of intellectual problems and the persistence of poverty respectively. Further, it is also possible that intellectual problems and/or poverty predict aggression, and not the reverse. Thus, as a function of the omission, the significance of aggression may be overestimated (Kline, 1998).

Causal conclusions are threatened not only by the correlational nature of the research and the problem of omitted variables, but also as a function of effect size. For instance, upon review of the disturbance terms in the path models undertaken, it becomes apparent that, while the models fit the data, the amount of variance explained by the proposed pattern of relations is modest. The majority of the variance of the dependent variables remains unexplained (Kline, 1995). Placing these findings within the context of social science research, the explanatory power of the model remains an important contribution. Given the numerous possible variables omitted from the model, it is not surprising that a considerable amount of variance remains to be explained. In order to be confident in causal inference, the relationship between the risk factor and the problematic outcome

variable should be robust. This does not imply that the amount of explained variance must be large. Being that behaviour is multifactorially determined, one would not anticipate a sizeable effect for any one variable (Rutter, 1994; Sameroff et al., 1987). Instead, the strength of the relationship lies in the consistency of the finding, regardless of size. As such, replication, and an accumulation of evidence are essential before committing to a causal explanation (Kline, 1998; Rutter, 1994). "No matter how powerful the statistical method.... no single piece of research is ever likely to achieve the status of "definitive" (Martin, 1987, p. 204).

Path modeling, while grounded in a theoretical causal model, itself cannot respond directly to causal questions (Martin, 1987). In structural equation modeling, failure to reject a model does not imply that the model reflects the "truth" (Kline, 1998). Failure to reject a model implies that the model fits the data; however, this does not preclude another model from fitting the data equally well or better. Further, looking more closely within the model, it is important to consider discrepancies between overall model fit and the goodness of fit of particular portions of the model. In spite of the presence of adequate overall fit, it is possible that particular components of the model do not reflect a good fit with the data (Kline, 1998).

Moving from statistical limitations to those pertaining to methodology, consider the timing of the research. Just as there exists stability over time, there also exists change in both individuals and their environments. In the present studies, the outcome measures employed capture at most three points in time: childhood, adolescence, and early adulthood. Life is dynamic. There occurred a vast array of points in development omitted from the paths proposed. It is possible that the very same people who appear at

risk when assessed for the study might seem otherwise had we elected to follow them up a few years prior or later. Consider by way of example a mother of six participating in this study. At the time of data collection, she and her family were found to be overcoming adversity. During home visits with this mother, we found both she and her family to be coping extremely well, in spite of the poverty-ridden circumstances in which the family existed. Several months after the completion of data collection, we had occasion to re-contact this mother. At this time, we found her to be separated from her spouse, living with her six children in an over-crowded apartment, with her sister and sister's two children. In the face of environmental change, resilience alters (Rutter, 1987). Adaptive functioning is not necessarily static. Instead, it involves the capacity to adapt flexibly to changing developmental needs (Radke-Yarrow & Brown, 1993).

Not only has the timing of our study limited the picture we are able to paint of inter-generational risk transfer, but so too has the focus. In both of the studies presented, we have been successful in presenting only one half of the picture of parental risk to offspring. The observed power of inter-generational continuity may be attenuated by the fact that we are only looking at the childhood histories of one parent (Serbin & Stack, 1998). The influence of the second parent has been omitted. Rutter (1998) proposes that the degree to which intergenerational continuity is observed, to a certain extent, is dependent upon partner selection. Particular patterns of assortative mating may prove crucial (Peters, 1999; Rutter, Giller, & Hagell, 1998). For instance, Peters (1999) found assortative mating among women reporting aggressive behaviour. Women who indicated using aggressive strategies both within the marital context and beyond were likely to have partners who similarly employed aggressive approaches to conflict resolution. Similar

findings were obtained by Farrington, Barnes, and Lambert (1996) who identified a tendency for antisocial individuals to marry or cohabit with a partner who exhibits similar tendencies. As such, it is possible that children are receiving a “double dose” of aggression. In other cases however, the effects of parental childhood risk might be attenuated, as appears to be the situation for those individuals with a history of social withdrawal, by a more socially competent second parent (Peters, 1999).

Future Directions for Research

According to Sears (1975, p. 4 as cited in Hetherington, 1998, p. 93), [c]hild development is a reflection of the tremulous partnership that always seems to exist when pure and applied science, and the services of scientists, are directed toward fulfilling social rather than purely intellectual needs. Today’s novitiates in the science of child development must not complain when they feel the heat of social demands put upon them. The field grew out of relevance. Its content and multidisciplinary structure are a product of the demands for social usefulness.

The current study contributes to the developing literature on stability of risk and inter-generational risk transfer from parents to offspring. Where it serves to advance the state of knowledge is largely with respect to the mechanisms of risk transfer. Here, poverty and its concomitants have been identified as key contextual factors resulting from the continuity of risk over time and perpetuating risk into a second generation. In accepting the responsibility for social usefulness, future directions address issues of social policy and intervention design with emphasis placed on poverty.

Little has been done to provide the most vulnerable families with the resources they require to achieve a degree of success and escape the conditions by which they are oppressed (Comer, 1989). Given that current economic policies reflect a “serious lack of will to eradicate poverty” (McLoyd, 1990, p. 337), little can be done in the short-term to alter larger social conditions. Further, a number of the precipitating and perpetuating factors in poverty reflect structural problems in society (McLoyd, 1998). It is thus the responsibility of researchers to continue to draw attention to the risks to which such families are exposed in hopes of increasing government action. While Canada may not have the deep and persistent poverty of inner city America, our findings do reveal an important degree of disadvantage that is inhibiting parents’ ability to perform adequately in their roles, effectively threatening the development of a second generation. Cutbacks to social programs have an unequal influence with Canadians in each level of poverty being affected in an increasingly severe way (Ross, 1998). One possible means by which we can address the disadvantage associated with poverty is by identifying the degree of social services required to level the playing field so that a child’s opportunity for successful development is not as dependent on family financial circumstances (Ross, 1998).

In addition to drawing policy makers’ attention to the consequences of child development in poverty, it is also the role of psychologists to explore the ways in which the cycle of poverty can be influenced in a proximal fashion by targeting parenting in poor families, and helping parents function in their roles, preparing their children for academics and later life opportunities (Comer, 1989).

The principal direction for future research should be ideally towards the development of intervention strategies serving to break the cycle of problems. The present studies provide an important window into some of the key vulnerability and protective factors in the continuity of risk over time and across generations. We should aim to build upon this knowledge in the development and evaluation of programs targeted to high risk families.

In the samples of both high risk men and women evaluated, childhood aggression, low educational attainment, and poverty are not only interconnected, but also are found to be both direct and indirect predictors of continued problems. We are aware that children of mothers who were aggressive as children are vulnerable to both cognitive and behavioural problems before school entry. Such deficits threaten later academic success resulting in lower academic achievement, and greater risk for grade retention, and early school leaving (Ramey & Ramey, 1998b). These same children are also at elevated risk for teen pregnancy, juvenile delinquency, unemployment, social dependency, and poor parenting practices (Ramey & Ramey, 1998a), effectively replicating their parents' experience.

Through the identification of those at risk, and the provision of opportunities and experiences hypothesized to be missing, preventive interventions aim to promote normative development (Ramey & Ramey, 1998b). Drawing from the promising results of impressive demonstration projects [e.g., the High/Scope Perry Preschool Program (Barnett, 1997; Schweinhart & Weikart, 1988); the Abecedarian Project (Ramey & Ramey, 1998b)], intervention programs need to be developed targeting the children of parents with childhood histories of aggressive and socially withdrawn behaviour. In order to address the adverse and cumulative effects of risk factors on parental functioning and child development, intervention efforts need to be broad in their scope incorporating

ecological, family, parent, and child components. (Illback, 1994; Schorr & Schorr, 1989). An inter-generational framework is ideal with emphasis placed on both parent and child development (Ramey & Ramey, 1998a). Studies evaluating the efficacy of intervention programs have supported the importance of the following characteristics: a) duration of at least two years; b) provision of parenting social support; c) educational and vocational counseling and training; and d) high quality day-care or preschool programs for children (Yoshikawa, 1994). Child components of intervention must not only include cognitive stimulation. Research with the Concordia sample has taught us that academic achievement alone is insufficient for educational attainment. Instead, behaviour plays an important role in determining future academic success and financial security (Chen et al., 1997; Thompson et al., 1990).

When developing intervention programs, a certain degree of individual tailoring is required to take into account the unique needs of individual families (Ramey & Ramey, 1998b). While on the surface families may all appear to be experiencing a similar level of poverty for instance, a great deal of heterogeneity exists among poor families (De Civita, Pagani, Japel, Vitaro, & Tremblay, 1998). Intervention-planning is moving in the direction of a collaborative effort between researchers and families (Kysela & Drummond, 1998). Based on the dynamic nature of risk and resilience, interventions should be flexible and respond to each family's individual needs such that larger doses of intervention would be infused at times of greatest need whereas at other points, only minimal intrusion would be required (Kysela & Drummond, 1998). One possibility is to have available a range of services and to implement only those relevant to a given family at a given time (Ramey & Ramey, 1998b). In the case of families who are in greatest

need, cumulative protection must be instituted to address cumulative risk (Yoshikawa, 1994). The challenge herein is to design efficacy studies that allow for a certain degree of program flexibility while at the same time enabling the drawing of conclusions on what and how much leads to positive change.

Comprehensive programs that enroll children at younger ages and continue for longer produce the greatest benefits (Ramey & Ramey, 1998a). When large, multi-layered intervention programs are proposed however, issues of cost raise concern. It is possible to offer comprehensive services at a rate comparable to that already being invested in those who continue to manifest signs of risk. Consider for example, the work of Browne, Byrne, Roberts, and Gafni (1998). In a study of single mothers on social assistance, five groups were created: a) public health visits, b) employment retraining, c) subsidized child care/recreation, d) a comprehensive package including the three services just mentioned, and e) self-directed care (control). Results indicated similar improvements in maternal psychological health across the intervention groups. Further, the cost of implementing the interventions was similar across groups to that of the control group. The increased cost of providing recreation was offset by the reduced use of medical services, psychologists, probation officers, and child care. Thus, in evaluating implementation costs, it is critical to consider as well the potential results from the initial investment that might be substantial, though not immediate. Politicians tend to be short-sighted in their funding decisions. We must work to influence government by proposing a delay of gratification. Long-term follow-ups of intervention projects inform that the more broad, the more intense, and the longer the project, the better the results (Ramey & Ramey, 1998a).

In addition to considering cost from a long-term perspective, it is also useful to consider intervention strategies that focus on parental self-help skills. Satisfaction with social support has been repeatedly identified as a critical protective factor in the determination of successful outcomes. In order to translate our findings into practical suggestions, one might consider the work of Stewart and Ritchie (1998). These researchers, working with parents of children with chronic conditions had as their aim to increase parenting social support among parents who were geographically isolated from each other. Through the use of a phone intervention, the researchers fostered a connection between parents as well as provided important information with respect to maneuvering the system. Comparing those parents who received the intervention with a control group, participating parents reported an increase in informational, affirmational, and emotional support. As a result, they indicated greater feelings of confidence in their role as parents. Further, they indicated qualitative changes in their coping strategies fostering increased social support and relaxation. The advantage of social support interventions is the possibility of ongoing influence, long after the formal intervention is completed (Cochran & Niego, 1995).

The use of communication systems in the development and fostering of social support has appeal with respect to our sample due to the ease of access. Given that our participants are located in Montreal and beyond, a telephone format would enable all to participate without the stress of travel. Further, all of our participants have phones and as such, would be easily connected with each other in comparison with an internet format or face-to-face structure.

Conclusion

Results from the studies presented reinforce the fact that aggression and social withdrawal in childhood have implications that reach far beyond the realm of childhood. Evidence was obtained in support of both direct and indirect links from childhood behavioural extremes to continued problems into parenthood and the second generation. Contextual factors, specifically poverty and its concomitants, are identified as important markers of continued risk as well as conditions fostering the perpetuation of disadvantage across generations. In order to begin to translate research into practice, future work in this area must address risk factors of the individual as well as the contexts in which individuals develop.

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Appendix A
Variants of social support

Social support in parenting can be deconstructed into three main variants: emotional, instrumental and informational support (Belsky, 1984; Cochran & Niego, 1995).

Emotional support is characterized by the expressions of empathy, affection, acceptance, care, and valuing from individuals in the social network (Belsky, 1984; McLoyd, 1990; Sarason et al., 1983). This form of support is provided either directly through explicit statements or via caring actions (Belsky, 1984). Specifically in the domain of parenting, emotional support includes encouragement that conveys to mothers and fathers a sense that they are understood and able to work through difficulties in order to perform competently in their role (Crockenberg, 1988). Parenting social support thus raises a parent's self-esteem, promoting the confidence required to successfully carry out the parenting role (Andresen & Telleen, 1992). Social support therefore indirectly benefits children by increasing parents' capacity to perform their role effectively (Cowen, Wyman, Work, & Parker, 1990; Dornbusch et al., 1985).

The second form of social support is instrumental support. Instrumental support refers to the provision of concrete assistance that decreases the number or chores or responsibilities a parent must perform (Andresen & Telleen, 1992; Crockenberg, 1988). Examples of instrumental support include help with daily tasks such as housework and the care of children (Belsky, 1984; McLoyd, 1990).

Within the realm of parenthood, informational support involves the transmission of knowledge, advice, and societal expectations (Belsky, 1984; Crockenberg, 1988). This information most often relates to problem-solving vis à vis home management techniques and childrearing advice (Andresen & Telleen, 1992; Cotterell, 1986). In terms of

societal expectations, informational support guides parents in terms of appropriate behaviour through explicit directives and role modeling (Belsky, 1984).

Appendix B
Earlier findings of the Concordia Risk Project

The first phase of the Concordia Longitudinal Risk Project (1976-1981) found that children rated highly by their peers along the dimensions of both aggression and social withdrawal experienced immaturity in both cognitive and motor areas. As well, they obtained low school achievement and intelligence scores. Children rated by their peers as being aggressive were also found to exhibit poor school achievement, but fared well with respect to intellectual ability. As a group, the withdrawn children were not low on intelligence and displayed diverse levels of school achievement (Moskowitz et al., 1989).

The second phase of the Concordia Longitudinal Risk Project (1982-1985) followed participants into their teenage years. Intellectual problems continued for both the aggressive/withdrawn and aggressive groups. With respect to physical health, medical records obtained for approximately 95% of the sample revealed that members of the aggressive group suffered from the most psychiatric and non-psychiatric medical problems, with aggressive women displaying the most non-psychiatric medical problems. Within the realm of the sexual, medical records revealed elevated levels of gynecological problems, treatment for sexually transmitted disease, and pregnancy in women rated as aggressive and aggressive-withdrawn in childhood (Serbin et al., 1991).

In comparison with their aggressive counterparts, withdrawn participants were not found to differ greatly from their contrast counterparts. Differences uncovered rested primarily on self-perceptions, with withdrawn adolescents evaluating themselves as being of low competence. In aggressive adolescents, the major risk factors with respect to continued adaptational problems were found to rest in family difficulties. Aggressive-withdrawn teenagers did not evidence the same overt family problems as did those in the aggressive group; however, their behavioural style may have been in response to more subtle family stresses.

Within the third phase of the Concordia Project (1988-1991) the focus shifted to the domains of social services, the justice system, occupational endeavors and marriage. Sex differences emerged with respect to criminal behaviour in all groups. Most notable was

the aggressive group in which 46% of males had been to court for a criminal offense, while only 4% of aggressive females had had the same experience.

The previous phases of this project just outlined highlight some of the sequelae of the risk factors aggression and withdrawal. The current phase of the project, while continuing to assess the consequences of childhood aggression and social withdrawal across the lifespan is also being fueled by a second question, that of risk transmission. Do parents with a history of childhood psychosocial difficulties transfer that predisposition to problematic behaviour to their offspring (Serbin et al., 1991; 1996; 1998)?

Early efforts with the second generation of participants in the Concordia Risk Project suggest that these children of the original participants are at increased risk for psychosocial difficulties (Serbin et al., 1991; 1998) and health problems (Serbin et al., 1996). In assessing those women who became mothers during adolescence or early adulthood, it was uncovered that mothers who, as children, were rated by their peers as being withdrawn, provided less stimulating environments for their children and were themselves less responsive to their children. Aggressivity during childhood predicted poor developmental progress in offspring and an unresponsive behaviour style in mothers.

An additional study into the transfer of risk found that sons of aggressive mothers and children of aggressive/withdrawn mothers displayed high frequency and severity of injuries as well as other medical emergencies¹⁶ (Serbin et al., 1996). Overall, these initial results suggest that through genetics, environment, or a combination of the two, psychosocial risk has been transferred.

¹⁶Medicare data must be interpreted cautiously as it is in part determined by a parent's decision to seek medical help. At the same time, frequent medical treatment is also an indication of neglect and possibly, physical abuse (Serbin et al., 1996).

Appendix C
Aggression and withdrawal items on the PEI

Aggression Items

3. Those who can't sit still.
4. Those who try to get other people in trouble.
7. Those who act stuck-up and think they are better than everyone else.
8. Those who play the clown and get others to laugh.
9. Those who start a fight over nothing.
12. Those who tell other children what to do.
15. Those who always mess around and get into trouble.
16. Those who make fun of people.
18. Those who do strange things.
20. Those who bother people when they're trying to work.
21. Those who get mad when they don't get their way.
22. Those who don't pay attention to the teacher.
23. Those who are rude to the teacher.
26. Those who act like a baby.
27. Those who are mean and cruel to other children.
29. Those who give dirty looks.
30. Those who want to show off in front of the class.
31. Those who say they can beat everyone up.
33. Those who exaggerate and make up stories.
34. Those who complain nothing seems to make them happy.

Withdrawal Items

- 5. Those who are too shy to make friends easily.
- 6. Those whose feelings are too easily hurt.
- 10. Those who never seem to be having a good time.
- 11. Those who are upset when called on to answer questions in class.
- 13. Those who are usually chosen last to join in group activities.
- 17. Those who have very few friends.
- 24. Those who are unhappy or sad.
- 28. Those who often don't want to play.
- 32. Those who aren't noticed much.

Appendix D
Peer nomination technique and the Concordia Risk Project

In order to identify levels of aggression and withdrawal, the 4,109 children in 152 classrooms selected for the Concordia Risk Project participated in the administration of the Pupil Evaluation Inventory (PEI; Pekarik et al., 1976). The PEI (see Appendix B), a peer evaluation measure, consists of 35 items which load onto three factors: aggression, social withdrawal and likability. For the purposes of the Concordia Risk Project, only the dimensions of aggression and withdrawal are of interest.

As a method of rating behaviour, peer evaluation has been found to be effective in the prediction of adjustment problems (Roff, & Sells, 1968; Rolf, 1972). Peers have the opportunity to interact with and observe the target subject over a long period of time and across more than one setting. Peers form part of the target child's reference group and are thus exposed to the given child's behaviour in a larger array of contexts. As well, it is more probable that peers witness rare events which may prove important in interaction. Hence, unlike the ratings of clinicians, peer ratings consist of multiple evaluations from a variety of individuals who interact with the target subject in his/her "real-life" social context (Pekarik et al., 1976; Moskowitz et al., 1985).

To confirm the accuracy of peer evaluations, Lyons and colleagues (1988) undertook naturalistic observations of grade school children engaging in free play. Findings support the validity of the Pupil Evaluation Inventory (Pekarik et al., 1976) in revealing the distinctiveness of the aggressive and withdrawn groups. The combination of aggressive-withdrawal however was not found to be significantly different from the contrast group. And while the behaviour of members of this group was not found to stand out, the reactions of others to these children was distinct such that they received almost twice as many aggressive initiations from their peers as they gave. Likely, the behaviour of these aggressive-withdrawn children is in some way eliciting negative responses. These children are probably lacking social skills. In general, the aggressive-withdrawn group classification involves questionable validity given that these children have been found to be the least liked by their peers (Feltham, Doyle, Schwartzman, Serbin, & Ledingham,

1985). As such, it could be that these children are nominated repeatedly for all categories that are somewhat undesirable (i.e. both aggressive and withdrawn dimensions).

In the present study, children were asked to complete the PEI by nominating up to four names of classmates they felt best conformed to the description presented in a given item. Evaluations were carried out separately for boys and girls in order to compensate for the sex differences in aggression and withdrawal. The goal herein was the attainment of equal numbers of males and females in each of the categories of interest.

To determine the group membership of a given child, the total number of evaluations received on each of the factors was tabulated and transformed into z -scores. Subsequently, a percentile rank was assigned. Children for whom aggression z -scores were equal to or above the 95th percentile ($z = 1.95$) and for whom withdrawal z -scores fell beneath the 75th percentile ($z = 0.68$) formed the aggressive group. The withdrawn group consisted of those children with withdrawal z -scores equal to or exceeding the 95th percentile and aggression z -scores falling below the 75th percentile. Children who were above the 75th percentile for both aggression and withdrawal were categorized as aggressive-withdrawn. Finally, contrast participants were those children who scored below the 75th percentile and above the 25th percentile on both aggression and withdrawal.

Of the 4,109 participants, the final sample included 1,770 children in the high-risk groups that is, those children who scored high on one or both dimensions of aggression and withdrawal. The control sample consisted of 1,117 children who were randomly selected from among those children whose scores fell below the 75th and above the 25th percentile on both aggression and withdrawal. For a more extensive description of the original methodology, see Schwartzman and colleagues (1985).

Appendix E
Demographic Information Questionnaire (DIQ)

L'INDIVIDU DANS SON MILIEU

Renseignements sociodémographiques

Tous ces renseignements sont traités de façon totalement confidentielle

1. Sexe ☐ M ☐ F

2. Âge _____ ans Date de naissance _____ AN MO JR

3. État civil

***Note*:** "Conjoints de fait": désigne deux personnes qui vivent ensemble comme si elles étaient mariées. Il s'agit de ton état actuel; même si tu es légalement divorcé(e) ou autre, mais que tu vis avec un(e) conjoint(e) présentement. inscris conjoint de fait.

☐ Célibataire

☐ Conjoint de fait

☐ Marié(e)

☐ Séparé(e)

☐ Divorcé(e)

☐ Veuf/veuve

Depuis quelle date?

AN MO JR

4. Nombre d'enfants _____

Si enceinte (ou conjointe enceinte), bébé attendu pour:

AN MO

Sinon, prévoyez-vous avoir un enfant dans les prochains 12 mois? OUI _____ NON _____
dans les prochains 24 mois? OUI _____ NON _____

Pour chaque enfant:

1 - Inscrire le nom, le sexe, la date de naissance

2 - Encercler "TE" si c'est ton enfant (tu es le parent biologique)

"EC" si l'enfant du conjoint (le conjoint actuel est le parent biologique)

"EA" si c'est un enfant adopté / "FA" en foyer d'accueil et qui vit chez toi

Si "TE" et "EC" sont vrais, encercler les deux.

3 - Indiquer si l'enfant vit avec toi, OUI ou NON ou GP (garde partagée)

4 - Inscrire l'année scolaire (si applicable) ainsi que si l'enfant fréquente une classe ou une école spéciale.

(Si tu as plus de quatre enfants, inscrire leurs informations sur une feuille séparée.)

1 NOM _____ SEXE ☐ M ☐ F AN MO JR _____

L'enfant est: TE EC EA / FA Vit avec toi: OUI ☐ NON ☐ GP ☐

Année scolaire: _____ Classe spéciale: _____

2 NOM _____ SEXE ☐ M ☐ F AN MO JR _____

L'enfant est: TE EC EA / FA Vit avec toi: OUI ☐ NON ☐ GP ☐

Année scolaire: _____ Classe spéciale: _____

3 NOM _____ SEXE ☐ M ☐ F AN MO JR
 L'enfant est: TE EC EA / FA Vit avec toi: OUI ☐ NON ☐ GP ☐
 Année scolaire: _____ Classe spéciale: _____

4 NOM _____ SEXE ☐ M ☐ F AN MO JR
 L'enfant est: TE EC EA / FA Vit avec toi: OUI ☐ NON ☐ GP ☐
 Année scolaire: _____ Classe spéciale: _____

5. **Ta scolarité complétée** (dernière année terminée): _____
 En quoi? (spécialisation/général): _____

Étudies-tu présentement? OUI : Temps plein ☐ partiel ☐ NON ☐
 Si oui, quel diplôme postules-tu _____ pour quand? ____/____/____/

6. **As-tu un emploi** (rappel: renseignements gardés confidentiels)?

OUI ☐

Occupation: _____

Tes tâches: _____

Combien d'heures/sem.? _____

Salaire de l'heure _____ \$

Depuis quand es-tu à cet emploi? inscrire la date

AN MO

____/____/

NON ☐

As-tu déjà eu un emploi?

Oui ☐ Non ☐

↓

En quoi? _____

Pendant combien de temps?

____ an(s) ____ mois

Quand as-tu arrêté de travailler:

date: ____/____/

AN MO

Au cours des 12 derniers mois, as-tu bénéficié de:

Oui ☐ Non ☐ l'Assurance chômage?

Oui ☐ Non ☐ Prestations d'aide sociale?

Oui ☐ Non ☐ la CSST? (préciser: _____)

7. **Informations sur le conjoint (renseignements gardés confidentiels):**

AN MO JR

a) Son nom: _____ Date de naissance _____

Son occupation: _____

Ses tâches: _____

Son salaire: _____ \$/ heure Nombre d'heures _____ / semaine

AN MO

Il/Elle travaille là depuis: date _____

b) Au cours des 12 derniers mois, a-t-il/elle bénéficié de:

Oui ☐ Non ☐ l'Assurance chômage?

Oui ☐ Non ☐ Prestations d'aide sociale?

Oui ☐ Non ☐ la CSST? (préciser: _____)

c) Sa scolarité complétée (dernière année terminée): _____

En quoi? (spécialisation/général): _____

Étudie-t-il (elle) présentement? OUI : Temps plein ☐ partiel ☐ NON ☐

Si oui, diplôme postulé? _____ pour quand? (date) ____/____/

8. **Informations sur le père (si n'habite pas avec la mère)**

AN MO JR

a) Son nom: _____ Date de naissance _____

Son occupation: _____

Ses tâches: _____

Son salaire: _____ \$/ heure Nombre d'heures _____ / semaine

AN MO

Il/Elle travaille là depuis: date _____

b) Au cours des 12 derniers mois, a-t-il/elle bénéficié de:

Oui ☐ Non ☐ l'Assurance chômage?

Oui ☐ Non ☐ Prestations d'aide sociale?

Oui ☐ Non ☐ la CSST? (préciser: _____)

c) Sa scolarité complétée (dernière année terminée): _____

En quoi? (spécialisation/général): _____

Étudie-t-il (elle) présentement? OUI : Temps plein ☐ partiel ☐ NON ☐

Si oui, diplôme postulé? _____ pour quand? (date) ____/____/

9. Disponibilité pour le test parent-enfant

- ☐ Le matin ☐ L'après-midi
☐ La semaine ☐ La fin de semaine

10. **Vision des couleurs:** Il y a une section de la recherche qui porte sur les couleurs. Est-ce que tu as de la difficulté à percevoir certaines couleurs?

- ☐ Oui (préciser: _____) ☐ Non

S.V.P. Vérifier l'adresse et les numéros de téléphone.

No	Rue	app.
----	-----	------

Téléphones: Personnel: () -
 Travail: () -
 Parents: () -
 Autre: () -

Ton numéro de téléphone personnel est à quel nom dans l'annuaire téléphonique: Nom complet et lien avec toi: _____

Adresse des parents: _____

[illegible]

Appendix F
Parenting Social Support Index (PSSI)

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Appendix G
Parenting Stress Index

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Appendix H

Home Observation for Measurement of the Environment (HOME)

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Appendix I

Ratings of Child Behaviour During Testing (RCBT)

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Appendix J

Child Behavior Checklist - Parent Report Form (CBCL - PRF)

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Appendix K
Testing Protocol

**PARENT-CHILD/HEALTH CANADA:
Full Protocol**

May 21, 1997

DAY 1 PROTOCOL:

1- Examiner: - takes care of introductions.

- reminds mother that Interviewer cannot interact with child until Series 2 has been filmed,
- builds rapport with child,
- summarizes study and explains general Day 1 procedures to Ss,
- makes sure mother has read and signed consent form,
- for Cohort 2 Ss, explains that saliva sampling is optional and, if mother consents, obtains a sample from both of them **immediately before standard testing** (record the time at which all samples were taken on the saliva form).

Interviewer: - chooses the most appropriate room for interaction series,
- sets up camera and materials for Series 1 in the standard order (see toy lay-out sheet),
- removes all other unnecessary materials, if possible,
- unplugs that room's telephone if present,
- and attempts to remain as invisible to the child as possible until Series 2.

2- Examiner: - begins administering Bayley II or SB4.

Interviewer: - **a)** if mother does not need to stay with child (for SB4): Interviewer begins administration of the demographic, health battery, and general impressions of temperament questionnaires;
- **or b)** if mother needs to stay with her child, the Interviewer can supervise siblings, score data, or read a good book!!!

BREAK - **For Cohort 2 Ss, the 2nd saliva sample is taken from both mother and child within 10 min. following standard testing. Examiner asks mother to come, if she's with Interviewer.**
- **Make sure you ask Ss if they need to go to the bathroom or get a change of diaper.**
- **If needed, Interviewer informs Examiner of interaction setup location.)**

3- Before bringing Ss to the interaction room, the Examiner gives mother the following Series 1 instructions.

SERIES 1

"Maintenant, on aimerait vous voir jouer ensemble. Comme tu sais, on va enregistrer ça sur vidéo. Donc, pour être sûr que vous restiez tous(tes) les deux bien en vue pendant qu'on filme, c'est très important que vous restiez assis(es) tous(tes) les deux sur le tapis qu'on a mis par terre. Moi, je vais quitter la pièce et je vais revenir vérifier la caméra une ou deux fois pour être bien sûr qu'elle fonctionne bien. Alors, la première chose qu'on aimerait que tu fasses est simplement de jouer avec (ENFANT) comme vous le faites d'habitude pendant environ 15 minutes et essayez d'être le plus naturels possible. Vous pouvez prendre les jouets qu'on a mis sur le tapis si vous voulez, mais vous n'êtes pas obligés. Puis, quand tu entendras l'alarme sonner, tu pourras arrêter de jouer. As-tu des questions?"

Examiner then gets Ss settled on the carpet and instructs child (if s/he can understand such instructions) to remain within its limits; e.g.:

"Maintenant, (CHILD), tu vas jouer avec maman, mais j'aimerais que tu restes sur le tapis. Fais comme si le tapis était ton carré de sable et que c'est défendu de sortir du carré de sable..." etc.

Before getting out of view, Examiner tells mother they can begin. Examiner is responsible for timing all 3 Series and should position herself close enough to the interaction area so she can still hear Ss and thus know when to start and stop the timer. No camera person will be present during filming. The camera should be positioned on the tripod so as to encompass the carpet tightly. The Examiner should periodically check the position of the camera so that dyad is being properly filmed. [If there is an interruption of filming during the **first** half of the series (e.g., bathroom), reset the timer to 15 min. and start over. If the interruption occurs in the **second** half of the series **and** lasts less than 2 min., just pause and restart timer when the interaction resumes; but if the trip takes **more** than 2 min., Series 1 will have to be repeated at the end of Day 2.]

At the end of Series 1, Examiner takes saliva samples from both Ss (Cohort 2 only) and administers "Maternal perceptions" questionnaire. If mother reports a score of 1 or 2, thus indicating that either her or her child's behavior was not natural, Series 1 should be repeated on Day 2.

BREAK - **Bathroom check**
(±5 min.) - **The Examiner or the Interviewer repositions materials for Series 2 and, if needed, prepares the barrier so it will safely prevent a 12-42 mo. child from leaving interaction room during separation episode.**

4- While the Examiner supervises the child, she asks mother to join with the Interviewer. The Interviewer will then give mother the following Series 2 instructions so as not to be heard by child. (If child becomes upset about his/her mother's departure, Examiner will give her the instructions in the child's presence.)

SERIES 2

FREE PLAY (4 MIN)

"La prochaine période de jeux va aussi être filmé mais va avoir 4 parties: En premier, tu va recommencer à jouer avec (ENFANT) comme tantôt, avec ou sans les jouets, mais juste pour une couple de minutes jusqu'à ce que tu entendes l'alarme sonner, comme tantôt."

PUZZLES (7 MIN, 4 MIN for 12-42 cohort)

"A ce moment-là, pousse les jouets de côté et choisis un casse-tête à faire avec (ENFANT). (FOR OLDER COHORT, EXPLAIN TO MOTHER THE LABELLED BAGS OF PUZZLE PIECES AND THEIR CORRESPONDING BOARDS. PRESS BEEPER WHEN THEY BEGIN WORKING ON THE PUZZLE). Si vous finissez ce casse-tête-là, vous pouvez travailler sur un autre. Après quelques minutes, l'alarme va sonner de nouveau et je (or INTERVIEWER) vais entrer dans la pièce."

SEPARATION AND REUNION (2+4=6 MIN)

"A ce moment-là, tu sortiras de la pièce pour laisser (ENFANT) jouer tout seul avec les jouets. Et pour être sûr qu'il/elle ne te suivra pas quand tu va sortir, je vais placer une barrière en travers la porte/arche. Bien sûr, si (ENFANT) devient trop dérangé par ton absence, ou si tu te sens mal à l'aise, tu pourras le/la rejoindre. Sinon, après une couple de minutes, (EXAMINER) va te dire que c'est le temps d'aller rejoindre (ENFANT) sur le tapis. Puis, tu passera 3-4 minutes de plus avec lui/elle et on te laissera savoir quand tout est fini."

Interviewer comes in at the beep and waits next to the door until mother has left. Then s/he puts the barrier in place (for 12-42 mo. cohort) or closes the door and then goes behind the camera to keep child in view during both the separation and reunion episodes. Examiner presses "start" when mother exits the room. Then, after 2 minutes, she signals mother to join her child.

"Donc, pour résumer, commencez par jouer ensemble comme vous le faites d'habitude; puis, quand tu entendas l'alarme, pousse les jouets de côté et choisis un casse-tête. Quand tu me verras entrer, sors de la pièce jusqu'à ce qu'on te dise te rejoindre (ENFANT). J'ai une petite liste qui pourra t'aider à te souvenir des étapes, et je vais la placer juste ici. As-tu des questions? J'aimerais juste te rappeler encore de rester sur le tapis pour que vous puissiez rester bien en vue. J'aimerais aussi quand tu sortiras que tu restes invisible pour (ENFANT), mais assez près de (EXAMINER) pour entendre son signal, OK?"

At the end of Series 2, Interviewer administers "Maternal perceptions" questionnaire. If mother reports a score of 1 or 2, Series 2 should be repeated on Day 2. Interviewer also administers Day 1 Touch Questionnaire.

5- At the end of Day 1, Interviewer gives instructions for mother and father questionnaire packages, for cortisol sampling, and makes the appointment for Day 2.

N.B. If child needs to nap during Day 1, Interviewer can take that opportunity to continue interviews with mother.

Fill out the Cortisol and VideoTape log sheet. Clean Bayley II and toys, if needed.

DAY 2 PROTOCOL:

- 1- Examiner reconnects with child and gives Day 2 general instructions.
- 2- Examiner finishes Bayley II or SB4. If mother does not need to stay with child, Interviewer answers any questions she might have about the questionnaires and finishes interviewing her. But if mother still needs to stay with child, Interviewer can set up Series 3 materials and check parental packages for missing data or clinical concerns (e.g., SCID screeners, SCL-90).

BREAK - **Series 3 setup, if not done already**
 - **Bathroom check**

- 3- While Examiner supervises child away from interaction room, she tells mother to go to the interaction room to meet Interviewer who gives her the following Series 3 instructions so as not to be heard by child. If child becomes upset about mother's departure, the Examiner gives her the instructions in the child's presence.

Série 3

FREE PLAY (4 MIN)

"C'est la dernière fois qu'on va vous filmer, et il y a 4 choses qu'on aimerait que vous fassiez ensemble. D'abord, comme l'autre jour, on aimerait que tu joues avec (ENFANT) comme vous le faites d'habitude, avec ou sans les jouets, jusqu'à ce que tu entendes l'alarme sonner.

COMMAND TASK (3 MIN) - NOT DONE FOR 12-24 MO. CHILDREN

A ce moment-là, vous arrêterez de jouer pour faire quelque chose de complètement différent. Pour les 2-3 prochaines minutes, j'aimerais que tu demandes à (ENFANT) de faire quelques petites tâches pour toi. Tiens, voilà une liste de tâches que tu peux utiliser (GIVE HER THE LIST). Comme tu peux voir, il y en a qui sont plus difficiles que d'autres; c'est parce qu'on visite différentes familles avec des enfants d'âges différents. Celles du début sont plus faciles que celles de la fin (READ FIRST 3 AND LAST 3). On aimerait que tu prennes au moins 4 ou 5 des tâches de la liste. Tu peux en prendre plus si tu veux et tu peux même inventer tes propres tâches, mais pourvu que (ENFANT) n'ait pas à quitter le tapis. La liste sera placée tout près du tapis. (PRESS BEEPER WHEN MOTHER BEGINS INTRODUCING TASK)

INTERFERENCE TASK (3 MIN)

Quand tu entendas l'alarme sonner, vous arrêterez pour faire autre chose encore. On aimerait voir comment (ENFANT) réagit quand tu es très occupée. Tu sais comment c'est des fois quand tu es au téléphone ou bien en train de faire à manger et que c'est pas possible de lui donner toute l'attention qu'il/elle demande. Pour observer ça, on aimerait que tu remplisses le questionnaire qui est juste en-dessous (SHOW HER). Et pendant que tu le remplis, on aimerait que tu te retournes un peu pour lui faire comprendre que ce que tu fais est très important. Si tu termine ce questionnaire avant l'alarme, tu pourras lire ces magazines-là (SHOW HER). (ENFANT) pourra continuer à jouer avec les jouets pendant ce temps-là; mais assure-toi encore qu'il/elle reste assis(e) sur le tapis. Tu continueras de travailler sur le questionnaire ou de lire

jusqu'à ce que tu entendes une autre alarme. (PRESS BEEPER WHEN MOTHER BEGINS QUESTIONNAIRE)

FREE PLAY (4 MIN)

A ce moment-là, mets tout ça de côté et recommence à jouer avec (ENFANT) comme vous le faites d'habitude jusqu'à ce l'alarme te dise que c'est fini. N'oublie pas de rester à l'intérieur des limites du tapis pour que la caméra puisse vous garder tous les deux bien en vue.

Donc, en résumé, commencez par jouer avec (ENFANT) comme vous le faites d'habitude; ensuite, quand tu entends la 1ère alarme, prends la liste et fais-lui faire des tâches; puis, à la 2e alarme, commence à travailler sur le questionnaire jusqu'à ce que tu entendes la 3e alarme. A ce moment-là, tu recommences simplement à jouer avec (ENFANT). Comme la dernière fois, on a une petite liste qui va t'aider à te rappeler des étapes. As-tu des question?"

At the end of Series 3, Interviewer administers "Maternal perceptions" and finishes "Touch" questionnaires.

BREAK

4- Examiner administers the remaining HOME interview items (**both HOME versions are completed for 37-42 mo. children**), and investigates any clinical concerns that might have arisen through other questionnaires. Examiner and Interviewer then decide who will administer the "Parenting Practices Interview" (AUDIOTAPED), the SCID modules (if required), and the Peabody to the child. When Examiner is done with her interviews, the Interviewer joins her for the wrap-up which includes the "Needs Assessment Questionnaire" (AUDIOTAPED).

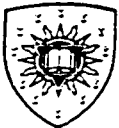
Fill out the Cortisol and VideoTape log sheet. Clean Bayley II and toys between each visit, if needed.

Summary breakdown of administration times

Time: mean (range) - in minutes

- Introductions + rapport building + materials set-up =	15 (10-20)
- Series 1-3 + maternal perceptions quest. + touch quest. =	75 (60-90)
- Bayley or SB4 + behavior ratings =	75 (60-90)
- Additional sociodemographic info. =	10 (5-20)
- Obstetric quest. =	90 (60-120)
- Health quest. =	10 (5-20)
- Genetic profile =	30 (15-60)
- General impressions of child temperament =	10 (5-15)
- Needs assessment =	15 (10-20)
- Cohort 2 cortisol sampling + instructions =	20 (15-30)
- Parenting interview + HOME =	45 (30-60)
- Wrap-up =	15 (10-20)

Appendix L
Consent Forms



U N I V E R S I T É
Concordia

"L'INDIVIDU DANS SON MILIEU: Les parents et leurs enfants"

Directeurs du projet: - Lisa A. Serbin, Ph.D.
- Dale M. Stack, Ph.D.
- Alex E. Schwartzman, Ph.D.

FORMULAIRE DE CONSENTEMENT

Je, _____, m'engage volontairement avec mon enfant, _____, à participer à l'étude "L'individu dans son milieu: Les parents et leur enfant" de l'Université Concordia. Les buts du projet m'ont été expliqués. L'étude comprend une série de questionnaires, une évaluation du fonctionnement intellectuel de mon enfant, des entrevues qui pourront être enregistrées, ainsi que trois périodes de jeux lors desquelles nous serons observé(e)s et filmé(e)s. L'étude comporte deux sessions d'une durée maximale de 3 heures chacune et une rémunération totale de \$60.00 me sera allouée aussitôt que les questionnaires seront remis. En signe de courtoisie, les résultats sommaires de l'évaluation de mon enfant me seront communiqués par la poste. De plus, les chercheurs seront prêts à effectuer une ou deux visites additionnelles, au besoin, pour terminer l'évaluation, discuter de résultats problématiques, ou m'offrir un service de référence.

Je comprends que toutes les informations que nous fournissons, qu'elles soient écrites, enregistrées ou filmées, sont strictement confidentielles et qu'elles ne serviront qu'à des fins de recherche. Dans toutes les circonstances, je suis assuré(e) que l'anonymat sera conservé. Cependant, selon la loi sur la protection de la jeunesse, toute information indiquant de l'abus physique ou sexuel devra être divulguée à l'Office de la Protection de la Jeunesse.

Je comprends aussi que je suis libre de cesser notre participation à n'importe quel moment. Comme le projet "L'individu dans son milieu" est à long terme, je comprends que je pourrais être appelé(e) dans l'avenir pour participer à d'autres étapes de ce projet. Je me réserve le droit de décider, à ce moment, de donner suite ou non à la demande de participation.

Signature: _____

Nom: _____ Date: _____

Assistant(e) de recherche: _____

"L'INDIVIDU DANS SON MILIEU: Les parents et leurs enfants"

Directeurs du projet: - Lisa A. Serbin, Ph.D.
- Dale M. Stack, Ph.D.
- Alex E. Schwartzman, Ph.D.

FORMULAIRE DE CONSENTEMENT - f4(a)

Je, _____, m'engage volontairement avec mon enfant, _____ (nom complet), à participer au projet "L'individu dans son milieu: Les parents et leur enfant" de l'Université Concordia. Les buts du projet m'ont été expliqués et ma participation comprend une série de questionnaires. Une rémunération totale de \$20.00 me sera allouée aussitôt que les questionnaires seront remis.

Je comprends que toutes les informations fournies, ainsi que mes données antérieures, sont strictement confidentielles et qu'elles ne serviront qu'à des fins de recherche. Dans toutes les circonstances, je suis assuré que l'anonymat sera conservé. Cependant, selon la loi sur la protection de la jeunesse, toute information indiquant de l'abus physique ou sexuel devra être divulguée à l'Office de la Protection de la Jeunesse.

Je comprends aussi que je suis libre de cesser notre participation à n'importe quel moment. Comme le projet "L'individu dans son milieu" est à long terme, je comprends que je pourrais être appelé(e) dans l'avenir pour participer à d'autres étapes de ce projet. Je me réserve le droit de décider, à ce moment, de donner suite ou non à la demande de participation.

Signature: _____

Nom: _____ Date: _____

Assistant(e) de recherche: _____

"L'INDIVIDU DANS SON MILIEU: Les parents et leurs enfants"

Directeurs du projet: - Lisa A. Serbin, Ph.D.

- Dale M. Stack, Ph.D.

- Alex E. Schwartzman, Ph.D.

FORMULAIRE DE CONSENTEMENT - f4(b)

Je, _____, consens à ce que les chercheurs du projet "L'individu dans son milieu: Les parents et leur enfant" de l'Université Concordia contactent la mère, _____, de mon enfant, _____ (nom complet), pour lui offrir de participer à ce projet.

Je comprends que toutes les informations fournies, ainsi que mes données antérieures, sont strictement confidentielles et qu'elles ne serviront qu'à des fins de recherche. Dans toutes les circonstances, je suis assuré(e) que l'anonymat sera conservé. Cependant, selon la loi sur la protection de la jeunesse, toute information indiquant de l'abus physique ou sexuel devra être divulguée à l'Office de la Protection de la Jeunesse.

Je comprends aussi que je suis libre de révoquer ce consentement à n'importe quel moment. Comme le projet "L'individu dans son milieu" est à long terme, je comprends que je pourrais être appelé(e) dans l'avenir pour participer à d'autres étapes de ce projet. Je me réserve le droit de décider, à ce moment, de donner suite ou non à la demande de participation.

Signature: _____

Nom: _____ Date: _____

Assistant(e) de recherche: _____

"L'INDIVIDU DANS SON MILIEU: Les parents et leurs enfants"

Directeurs du projet: - Lisa A. Serbin, Ph.D.

- Dale M. Stack, Ph.D.

- Alex E. Schwartzman, Ph.D.

FORMULAIRE DE CONSENTEMENT - fl + sf if pcf 3,6

Je, _____, m'engage volontairement avec, _____ (nom complet de l'enfant), à participer à l'étude "L'individu dans son milieu: Les parents et leur enfant" de l'Université Concordia. Les buts du projet m'ont été expliqués. Ma participation à l'étude comprend une série de questionnaires. Une rémunération totale de \$20.00 me sera allouée aussitôt que les questionnaires seront remis.

Je comprends que toutes les informations fournies, ainsi que mes données antérieures (le cas échéant), sont strictement confidentielles et qu'elles ne serviront qu'à des fins de recherche. Dans toutes les circonstances, je suis assuré(e) que l'anonymat sera conservé. Cependant, selon la loi sur la protection de la jeunesse, toute information indiquant de l'abus physique ou sexuel devra être divulguée à l'Office de la Protection de la Jeunesse.

Je comprends aussi que je suis libre de cesser notre participation à n'importe quel moment. Comme le projet "L'individu dans son milieu" est à long terme, je comprends que je pourrais être appelé(e) dans l'avenir pour participer à d'autres étapes de ce projet. Je me réserve le droit de décider, à ce moment, de donner suite ou non à la demande de participation.

Signature: _____

Nom: _____ Date: _____

Assistant(e) de recherche: _____

"L'INDIVIDU DANS SON MILIEU: Les parents et leurs enfants"

Directeurs du projet: - Lisa A. Serbin, Ph.D.

- Dale M. Stack, Ph.D.

- Alex E. Schwartzman, Ph.D.

FORMULAIRE DE CONSENTEMENT - f2,3 + m5

Je, _____, m'engage volontairement avec, _____ (nom complet de l'enfant), à participer à l'étude "L'individu dans son milieu: Les parents et leur enfant" de l'Université Concordia. Les buts du projet m'ont été expliqués. Ma participation à l'étude comprend une série de questionnaires. Une rémunération totale de \$10.00 me sera allouée aussitôt que les questionnaires seront remis.

Je comprends que toutes les informations fournies, ainsi que mes données antérieures (le cas échéant), sont strictement confidentielles et qu'elles ne serviront qu'à des fins de recherche. Dans toutes les circonstances, je suis assuré(e) que l'anonymat sera conservé. Cependant, selon la loi sur la protection de la jeunesse, toute information indiquant de l'abus physique ou sexuel devra être divulguée à l'Office de la Protection de la Jeunesse.

Je comprends aussi que je suis libre de cesser notre participation à n'importe quel moment. Comme le projet "L'individu dans son milieu" est à long terme, je comprends que je pourrais être appelé(e) dans l'avenir pour participer à d'autres étapes de ce projet. Je me réserve le droit de décider, à ce moment, de donner suite ou non à la demande de participation.

Signature: _____

Nom: _____ Date: _____

Assistant(e) de recherche: _____

"L'INDIVIDU DANS SON MILIEU: Les parents et leurs enfants"

Directeurs du projet: - Lisa A. Serbin, Ph.D.

- Dale M. Stack, Ph.D.

- Alex E. Schwartzman, Ph.D.

FORMULAIRE DE CONSENTEMENT - f6(a)

Je, _____, m'engage volontairement avec mon enfant, _____ (nom complet), à participer au projet "L'individu dans son milieu: Les parents et leur enfant" de l'Université Concordia. Les buts du projet m'ont été expliqués et ma participation comprend une série de questionnaires. Une rémunération totale de \$10.00 me sera allouée aussitôt que les questionnaires seront remis.

Je comprends que toutes les informations fournies, ainsi que mes données antérieures, sont strictement confidentielles et qu'elles ne serviront qu'à des fins de recherche. Dans toutes les circonstances, je suis assuré que l'anonymat sera conservé. Cependant, selon la loi sur la protection de la jeunesse, toute information indiquant de l'abus physique ou sexuel devra être divulguée à l'Office de la Protection de la Jeunesse.

Je comprends aussi que je suis libre de cesser notre participation à n'importe quel moment. Comme le projet "L'individu dans son milieu" est à long terme, je comprends que je pourrais être appelé(e) dans l'avenir pour participer à d'autres étapes de ce projet. Je me réserve le droit de décider, à ce moment, de donner suite ou non à la demande de participation.

Signature: _____

Nom: _____ Date: _____

Assistant(e) de recherche: _____

"L'INDIVIDU DANS SON MILIEU: Les parents et leurs enfants"

Directeurs du projet: - Lisa A. Serbin, Ph.D.

- Dale M. Stack, Ph.D.

- Alex E. Schwartzman, Ph.D.

FORMULAIRE DE CONSENTEMENT - f6(b)

Je, _____, consens à ce que les chercheurs du projet "L'individu dans son milieu: Les parents et leur enfant" de l'Université Concordia contactent la mère, _____, de mon enfant, _____ (nom complet), pour lui offrir de participer à ce projet.

Je comprends que toutes les informations fournies, ainsi que mes données antérieures, sont strictement confidentielles et qu'elles ne serviront qu'à des fins de recherche. Dans toutes les circonstances, je suis assuré(e) que l'anonymat sera conservé. Cependant, selon la loi sur la protection de la jeunesse, toute information indiquant de l'abus physique ou sexuel devra être divulguée à l'Office de la Protection de la Jeunesse.

Je comprends aussi que je suis libre de révoquer ce consentement à n'importe quel moment. Comme le projet "L'individu dans son milieu" est à long terme, je comprends que je pourrais être appelé(e) dans l'avenir pour participer à d'autres étapes de ce projet. Je me réserve le droit de décider, à ce moment, de donner suite ou non à la demande de participation.

Signature: _____

Nom: _____ Date: _____

Assistant(e) de recherche: _____

Appendix M

Regression predicting current poverty, taking into account family prestige at recruitment

Prediction of current poverty, taking into account family prestige at recruitment

Predictor	Beta	sr ²	t
Childhood aggression	-.21	.04	-1.98*
Childhood withdrawal	-.04	.00	0.71
Childhood academic achievement	.10	.01	0.88
Childhood family prestige	.06	.00	0.56
	R ² = .08	R ² adj. = .04	F = 2.08 ^t

Note. N = 100.

^tp < .10. *p < .05. **p < .01.

Appendix N

Comparison of two financially disadvantaged families

In order to draw attention to the heterogeneity that exists among the poor, consider the following two families for comparison. Both families lived in poverty. What distinguished between the two was the way in which they put to use what little they had. In the first family, living quarters were cramped. Five people and a large dog occupied a small apartment containing four rooms with no green space outside. What was striking upon entering the apartment was the expensive entertainment unit complete with stereo system, big screen television, video cassette recorder, cable, and hook up to a movie channel. Large bottles of expensive alcohol were also casually placed within reach of small hands. Very few toys were found in the apartment and what toys were found were old and broken. In contrast with this deprived environment with respect to stimulation, consider the living conditions of a second family. This family, also living in an impoverished neighbourhood, created a warm and stimulating haven in the middle of the inner city. The apartment contained six rooms for its four inhabitants with one room reserved specially for the children and their play materials. The walls were decorated with art work and toys fostering cognitive and motor development were found. And while such toys were not overflowing, to compensate for the lack of funds to purchase store-bought toys, the parents took great care in making toys with their children. Paper towel rolls were conserved, and together with egg cartons were converted into guitars and other musical instruments.

Appendix O

**Regression predicting Stanford-Binet IQ scores,
controlling for child behaviour during testing**

Prediction of Stanford-Binet IQ scores controlling for child behaviour during testing

Predictor	Beta	sr ²	t	R ² ch	F
Step 1				.25	17.09**
Child behaviour during testing	.50	.25	4.13**		
Step 2				.21	9.65**
Child behaviour during testing	.33	.10	3.01**		
Childhood aggression	-.48	.21	-4.33**		
Childhood withdrawal	-.03	.00	-.031		
Step 3				.02	2.34
Child behaviour during testing	.33	.09	2.96**		
Childhood aggression	-.41	.12	-3.43**		
Childhood withdrawal	-.00	.00	-.04		
Educational attainment	.18	.02	1.53		
			R ² = .49	R ² adj. = .44	F = 11.42**

Note. N = 53.

[†]p < .10. *p < .05. **p < .01.

Appendix P

**Regression predicting Stanford Binet IQ scores.
controlling for maternal childhood achievement**

Prediction of Stanford-Binet IV IQ scores controlling for maternal childhood academic achievement

Predictor	Beta	sr ²	t
Childhood aggression	-.54	.23	-4.44**
Childhood withdrawal	.00	.00	.04
Childhood academic achievement	.17	.02	1.34
	R ² = .41	R ² adj. = .37	F = 11.70**

Note. N = 53.

[†]p < .10. *p < .05. **p < .01.

Appendix Q

Regression predicting Stanford-Binet IQ scores including maternal prenatal smoking

Prediction of Stanford-Binet IQ scores including maternal prenatal smoking

Predictor	Beta	sr ²	t	R ² ch	F
Step 1				.41	16.98**
Childhood aggression	-.63	.39	-5.72**		
Childhood withdrawal	-.03	.00	-0.28		
Step 2				.04	3.32 [†]
Childhood aggression	-.55	.25	-4.64**		
Childhood withdrawal	.01	.00	.12		
Educational attainment	.22	.04	1.82 [†]		
Step 3				.01	1.14
Childhood aggression	-.54	.24	-4.58**		
Childhood withdrawal	-.01	.00	-0.08		
Educational attainment	.18	.02	1.39		
Prenatal smoking	-.12	.01	-1.07		
			R ² = .64	R ² adj. = .41	F = 10.03**

Note. N = 53.

[†]p < .10. *p < .05. **p < .01.