# Mother-Child Conflict in an At-Risk Sample: Links to Historical and Concurrent Factors and Children's Socio-Emotional Functioning

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## ABSTRACT

**Mother-Child Conflict in an At-Risk Sample: Links to Historical and Concurrent Factors and Children's Socio-Emotional Functioning**

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Disagreements over mundane, and sometimes more serious, issues represent an integral aspect of day-to-day mother-child interactions that have important implications for children's development. Investigating mother-child conflict in at-risk families is especially important given the increased probability of psychosocial problems.

The present dissertation was designed to examine how mothers and preadolescent children manage and resolve conflicts, including associations with problem-solving, maternal risk (childhood histories, concurrent functioning, and education), and children's socio-emotional functioning across contexts (i.e., perceived social competence, internalizing and externalizing problems, and test-taking behaviors). Participants ($n$ = 95) were mothers and their 9-to 13-year-old children from the Concordia Longitudinal Risk Project; a prospective, intergenerational study of children from low SES neighborhoods screened along dimensions of aggression and social withdrawal and followed into parenthood. Observational measures were used to code mother-child conflict and problem-solving behaviors during a videotaped conflict task. A multi-informant approach was employed to assess children's social skills and problems, including children's behaviors during a standardized cognitive assessment.

Results from Study 1 demonstrated that mother-child conflict is not necessarily aversive and destructive, as well as revealed several core features of mother-child conflict during middle childhood. Whereas maternal education was uniquely associated with constructive and relatively harmonious mother-child conflict behaviors (controlling for other SES markers), the reverse was found for the effects of maternal distress at the time of testing. Maternal education also served as a protective factor for mothers with childhood histories of social withdrawal by enhancing their ability to communicate in an assertive and nonthreatening manner. Results from Study 2 underscored the importance of flexible and problem-focused behaviors in promoting mother-child problem-solving, while highlighting children's role in shaping resolution. The cross-context applicability of children's positive and negative conflict behaviors was also demonstrated, with variations across contexts and informants. Maternal childhood histories of aggression or social

withdrawal negatively predicted children's IQ scores, which in turn, predicted more careless and disorganized test-taking behaviors.

Results from this series of two studies advance current knowledge on mother-child conflict in middle childhood and draw attention to contextual variables that influence these conflicts. Findings elucidate how risk and protective factors interact to contribute to pathways leading to adaptive and maladaptive outcomes in disadvantaged communities. Together, results have implications for developing policies and programs that promote healthy relationships in vulnerable families and potentially disrupt cycles of intergenerational risk.

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## Chapter 1: General Introduction

Fundamental to individual well-being is the ability to form meaningful connections with others in ways that provide a sense of belonging and security. Relationships vary in their functions and characteristics (Laursen & Collins, 1994), yet remain important across the lifespan. Healthy relationships can reduce and even offset the negative effects of adversity, whereas dysfunctional ones can be the catalyst to psychological distress and physical ailment (Conger, Cui, Bryant, & Elder, 2000; House, Landis, & Umberson, 1988). Evidence suggests that early relationship problems persist over time, resulting in a host of difficulties that transfer into adulthood (e.g., Whitton, Waldinger, Schulz, Allen, Crowell, & Hauser, 2008). For those who become parents, these ongoing problems incur tremendous risk to parenting, compromising a variety of developmental, physical, and mental health outcomes in the next generation (Conger, Neppl, Kim, & Scaramella, 2003; Capaldi, Conger, Hops, & Thornberry, 2003; Putallaz, Costanza, Grimes, & Sherman, 1998; Serbin & Karp, 2004; Smith & Farrington, 2004). Consequently, efforts to elucidate how and why individuals vary in their ability to successfully develop and maintain healthy relationships are critical to a more comprehensive understanding of the etiology, prevention, and treatment of a broad range of problems at every stage of life.

The building blocks for the development of skills that promote healthy relationships lie within the parent-child relationship. As primary socialization agents, parents represent the greatest source of social and emotional support for children during the first years of life (Stack et al., 2012) and their important role(s) continues. Through modeling, instruction, and guidance, parents play a vital role in fostering their children's social and emotional development from infancy onwards (Herrera & Dunn, 1997; Ingoldsby, Shaw, & Garcia, 2001; Stack et al., accepted). Attachment theory further posits that the bonds that form during parent-child interactions contribute to children's self-esteem, self-efficacy, and other mental representations about the self and the social world that guide the interpretation and planning of interpersonal transactions with significant others (Bowlby, 1980; Collins, Madsen, & Susman-Stillman, 2001; Garcia-Ruiz, Rodrigo, Hernandez-Cabrera, Maiquez & Dekovic, 2013). Parent-child interactions provide the social context to examine this relationship.

A core feature of the parent-child relationship that offers enormous potential for information exchange, learning, growth, and development is parent-child conflict. Indeed, conflict is at the center of nearly all theories in developmental psychology (Erikson, 1963; Piaget,

1932; Shantz, 1987; Sullivan, 1953). Although high levels of parent-child conflict marked by passivity and/or hostility have been associated with children's behavior problems, school difficulties, and peer rejection (Ostrov & Bishop, 2008; Rubin, Burgess, Dwyer, & Hastings, 2003; Smetana, 1996), appropriately expressed conflicts have a profound impact on children's developing knowledge about family processes, relationships, rules of conduct, social conventions, and their identity (Sillars, Canary, & Tafoya, 2004). Through conflictual (and non-conflictual) interactions, children also learn a wide range of competencies related to emotion regulation, verbal and nonverbal communication, argumentation, persuasion, negotiation, cooperation, problem-solving, and conflict resolution (Laursen & Hafen, 2010; Rose-Krasnor, 1997). Acquiring an understanding of how one's behaviors impact others, as well as an awareness and sensitivity to the needs of interacting partners are other crucial elements of children's early notions of conflict that develop within the parent-child relationship (Stein & Albro, 2001). These skills are essential for promoting and maintaining healthy relationships throughout the lifespan.

Interpersonal conflict is understood as a complex interaction between multitudes of factors (e.g., cognitive, personality, personal history, relational characteristics and history, etc.). The complexity of interpersonal conflict is exemplified by the number of definitions that permeate this rich interdisciplinary literature, each with varying degrees of emphasis placed on intra-and interpersonal variables (for a review, see Dishion & Snyder, 2016; Laursen & Collins, 1994; Valsiner & Cairns, 1992; Wilson & Sabee, 2003). Given the inherently relational context in which interpersonal conflict is accomplished, an interpersonal perspective guided the present dissertation although individual factors were also examined in order to obtain a more comprehensive understanding of the variables that influence the character, scope, and direction of parent-child conflict. Surprisingly, few theoretical models, if any, currently exist that simultaneously capture factors of influence at both the individual and interpersonal level. Consequently, our analysis and interpretation of findings drew from different disciplines and theoretical perspectives rather than a single model.

Parent-child conflict was herein defined as an interaction pattern characterized by mutual behavioral opposition between two interdependent individuals (Adams & Laursen, 2007; Canary et al., 1995; Foster & Robin, 1997; Laursen & Pursell, 2009; Shantz & Hartup, 1992). This definition signifies that *both* parents and children must perceive disagreement in order for conflict

to be defined. Moreover, an oppositional conceptualization of conflict places emphasis on overt and readily observable behaviors, as well as allows conflict to be examined in the absence of negative emotion to include a wide range of both constructive and adaptive behaviors, *and* non-constructive and maladaptive behaviors, from verbal disagreement and criticism to physical aggression.

Several relational features along with greater emphasis on development separate research on parent-child conflict from research on other close relationships. Since parents have authority over their children, as well as control over their environment and resources (Grusec & Davidov, 2007; Kuczynski, 2003), parent-child relationships are hierarchical. Parent-child relationships are also represented by an involuntary rather than voluntary association that can never be formally severed; a characteristic privy to family members only. Furthermore, parents stand apart by their obligation to act as caregivers, adding another dimension of interdependency that is unparalleled to other relationships. Each of these relational features (i.e., hierarchical, involuntary, stable, and interdependent) are associated with coercion (Adams & Laursen, 2001, Hinde, 1979). In contrast, more egalitarian relationships (e.g., siblings) and those formed by choice (e.g., peers and romantic partners) predict collaboration and disengagement (Adams & Laursen, 2001; Hinde, 1979). Not surprisingly, therefore, parent-child conflicts are often represented by power assertion and win-loss resolutions (Della Porta & Howe, 2012; Recchia, Ross, & Vickar, 2010).

Conflict between parents and children is inevitable at all stages of development, often arising from the inherent opposition between children's desire to self-govern and parents' duty to socialize children into internalizing the values and standards of the family and larger social contexts (Grusec & Davidov, 2007). Although fathers undoubtedly play an important role, mothers remain the primary caregivers of their children and may therefore be particularly influential (Laursen & Collins, 1994). The manner in which mother-child conflicts manifest, takes shape, and unfolds varies across developmental periods as a function of children's growing socio-emotional, cognitive, and language abilities. During the preschool years, mothers primarily employ behavioral techniques such as physical power assertion and distraction for harm prevention and to gain compliance over conflicts that typically center on personal rights/possessions, rules and manners, and destructive/hurtful actions (Dunn & Slomkowski, 1992). Increased capacity for perspective-taking and abstract thinking enables children to gain an

appreciation for mothers' points of view and become more successful at negotiating, reasoning, and problem-solving (Stein & Albro, 2001). Although mothers continue to have the upper hand when it comes to decision-making, they can promote these emerging skills in their children by showing respect for, eliciting, and taking into account children's opinions (Fondacaro, Dunkle, & Pathak, 1998; Nelson, Boyer, Sang, & Wilson, 2014). In adolescence, there is greater emphasis on negotiation, and rates of compromise gradually increase while punishments and concessions decrease (Sandy & Cochran, 2000; Smetana, 1996; Smetana, Daddis, & Chuang, 2003; Vuchinich, Angelelli, & Gatherum, 1996). Consistent with these developmental changes, issues that provoke disagreement during adolescence reflect children's mounting responsibilities (in-and outside the home environment) and desire for autonomy; factors which lead to realignment in parental authority towards a more egalitarian parent-child relationship (Sillars et al., 2004; Riesch et al., 2000).

Much of the research on mother-child conflict has centered on early childhood and adolescence because these developmental periods are perceived as especially tumultuous due to children's rapid growth and/or heightened desire for autonomy. Middle childhood (ages 6 to12 years; Feldman, 2005) has received some, but comparatively less research attention relative to early childhood and adolescence as it is seen as a time of relative calm and inactivity (Collins, 1984). Quite the contrary, however, middle childhood is represented by major transition points and remarkable physiological, neurological, cognitive, and psychosocial growth (Collins & Dulmen, 2006; Del Giudice, 2014) that undoubtedly affect the nature of mother-child conflict. Whereas infancy and early childhood provide the foundation for all areas of development, middle childhood is a time for consolidating, expanding, and integrating competencies in preparation for responsibilities that wait in adulthood (Collins, 2005; Collins et al., 2001). Consequently, exchanges that occur within the mother-child relationship during middle childhood are particularly meaningful because they have the potential to halt, thwart, solidify, or amplify any advantages and disadvantages acquired in earlier development stages (Huston & Ripke, 2006). The two studies making up the present dissertation were designed to contribute to the current literature on mother-child conflict by investigating conflict behaviors between mothers and children during middle childhood in at-risk dyads from disadvantaged backgrounds. Throughout the dissertation, the term *preadolescents* will be used interchangeably to describe children from the middle childhood period.

**Middle Childhood**

The transition to formal institutions of learning and the resulting shift away from the home environment are dominant forces that guide and structure children's socio-emotional and cognitive development throughout the middle childhood period (Collins, 1984). Although daycare is commonplace for most preschoolers today (Sinha, 2011), the transition to elementary school gives rise to unprecedented demands and responsibilities that parallel the intensity and range of tasks in early adulthood (Collins & van Dulmen, 2006). Children's responsibilities at home also increase as parents expect children to help more with domestic chores (Del Giudice, 2014). Throughout the middle childhood years, children encounter a wide range of previously unfamiliar in-and out-of-school settings (e.g., buses, playgrounds, classrooms, and extracurricular activities), as well as perform novel social and academic tasks that stimulate their thinking and social skills (Collins et al., 2001). These new demands not only incur changes in children, but also the parent-child relationship. As children's focus increasingly turns to relationships and activities outside the home environment, mothers must adjust their level of direct supervision while maintaining control by staying informed of children's daily activities (Collins et al., 2001; Maccoby, 1984). These adjustments may strain the mother-child relationship (Shanahan, McHale, Osgood, & Crouter, 2007) and spark new topics of conflict as mothers and children might differ in their goals and readiness for change. In fact, parents report that they are uncertain about how to optimally respond and support their children's growth and well-being during middle childhood (Bennett, 2011). While research shows that autonomy and identity formation are pronounced themes in the mother-adolescent conflict literature (Adams & Laursen, 2001; Laursen, 1995; Missoten, Luyckx, Branje, Vanhalst, & Goossens, 2011; Riesch et al., 2000), it is less clear which themes cause the most opposition in the years prior to adolescence. Given that issues that provoke disagreement signal their significance, gaining a better grasp of conflict topics between mothers and *pre*adolescents is one important avenue for understanding the unique features associated with mother-child relationships in middle childhood.

How mothers and children manage and resolve conflicts during middle childhood also reflects remarkable changes in children's neurological and cognitive functioning, which enable them to become increasingly insightful, resourceful, and competent. Whereas children below 6 years of age are focused on the here-and-now and have difficulty mentally manipulating information (i.e., Piaget's *preoperational* stage), children between the ages of 6 and 9 are able to

apply concrete logic, as well as reason about more complex topics and circumstances (i.e., Piaget's *concrete operational* stage; Collins et al., 2001). By 10 to 12 years, they enter a new stage of cognitive development (i.e., Piaget's *formal operational* stage) characterized by greater capacity for abstract reasoning, systematic problem-solving, organization, and planning. Such cognitive growth has vast implications for children's ability to self-regulate, monitor their own activities, as well as undertake more complex responsibilities at home and in other settings (Collins et al., 2001). In parallel, children's ability to think abstractly enables them to define themselves in more complex and multidimensional terms, resulting in a stronger emerging sense of self (Oosterwegel & Oppenheimer, 1993). Beyond self-awareness, abstract thinking also lends itself to the development of moral reasoning and perspective-taking (Collins, 2005; Kohlberg, 2008). Extending Piagetian ideas on social cognition, Selman (1980; 2003) theorized that children approximately 7-to-10-years of age can "step into someone else's shoes" and therefore comprehend the thoughts, feelings, and behaviors of others while also recognizing that others can do the same. In the few years that follow until roughly 12 years of age, children become capable of stepping outside a two-person interaction to include a third-party perspective, thereby enabling them to consider multiple points-of-view at once. Overall, these characteristic cognitive changes of middle childhood imply that children in this developmental period can handle conflicts with more maturity and be entrusted with more independence than in early childhood, yet perhaps not to the same degree as in adolescence.

In addition to bridging toddlerhood, preschool, and adolescence, middle childhood is represented by growth in three major dimensions of competency: (1) academic achievement, (2) rule-governed conduct (e.g., obeying rules of society and prosocial behavior), and (3) peer relations (i.e., primarily peer acceptance and development and maintenance of friendships; Masten & Coatsworth, 1998; Masten, Coatsworth, Neemann, Gest, Tellegen, & Garmezy, 1995). Opportunities to practice interpersonal skills abound as children's social networks expand to include peers and adults outside the family. Children with good social functioning are also more likely to progress well academically (Arrnold, Kupersmidt, Voegler-Lee, & Marshall, 2012).

Children generalize the skills acquired in earlier parent-child interactions to other social contexts and integrate new information based on interactions with new social partners (Black, 2002; Masten & Coatsworth, 1998). Within the context of conflict, evidence suggests that parent-child conflict influences how children communicate with others and negotiate conflicts

outside the home environment (Black, 2002; Feldman, Bamberger, & Kanat-Maymon, 2013; Feldman, Masalha, & Derdikman-Eiron, 2010; Van Doorn, Branje, VanderValk, De Goede, & Meeus, 2011). However, research directly examining the potential associations between children's conflict behaviors with mothers and their behaviors in other settings is lacking. As far as can be determined, no studies to date have examined whether children's behaviors during mother-child conflict are directly related to their behaviors in academic and cognitively-oriented contexts. Doing so would broaden our understanding of the parameters of influence that parent-child conflict interactions have on children's development in the three major domains of competency in middle childhood.

**Interpersonal Problem-Solving**

One way in which mothers can teach their children adaptive conflict resolution skills and strengthen their competencies is through problem-solving. Children`s social problem-solving skills have been primarily investigated from an individualistic perspective, often within peer contexts using hypothetical scenarios to gather information on how children respond to problematic situations (prominent models include *interpersonal cognitive problem solving*, Spivack, Platt, & Shure, 1976; *social problem-solving model*, D`Zurilla & Goldfried, 1971, D`Zurilla, Nezu, and Maydeu-Olivares, 2002). Problem-solving from this body of work is conceptualized as a self-directed cognitive-behavioral process which emphasizes the importance of generating a wide variety of solutions (i.e., brainstorming) and/or identifying a limited number of effective solutions to everyday social problems. The Social Problem-Solving Model also draws attention to beliefs, judgments, and feelings about social problems, as well as individuals' perception about their own problem-solving ability (Chang, D'Zurilla, & Sanna, 2004). Other important social-cognitive processes that impact problem-solving are brought to the forefront in the Social-Information Processing Model by Crick and Dodge (1994), including encoding (i.e., attention to internal and external cues present in the situation) and attribution of intent (interpreting relevant cues to determine the motivation of others).

Interpersonal problem-solving, on the other hand, is viewed as a collaborative process aimed towards identifying solutions to relational conflicts that are deemed suitable to all those involved (Chang et al., 2004). Mutual agreement is strongly dependent on interacting partners' willingness to listen to the other's concerns with an open mind, as well as expand and/or modify their own viewpoints by integrating the other's perspective (Rose-Krasnor, 1997). How

individuals behave and interact during interpersonal conflicts is therefore intricately linked to the quality of their problem solving efforts. Although not all conflict topics may be suitable for negotiation (e.g., issues reflecting families' core values), mothers and children who work towards reaching a compromise are more likely to fully resolve their disagreement in a mutually satisfying manner and report greater relationship quality (Branje, 2008; Collins, 1997; Nelson et al., 2014). The problem-solving process also strengthens children's ability to collaborate with others, think of multiple solutions to problems, reason consequentially, and plan during decision-making (Bloomquist, August, Brombach, & Skare, 1996; Neitzel & Stright, 2003; Stein & Albro, 2001).

Given the opportunity for information exchange and growth that mother-child problem-solving interactions provide, there are surprisingly few studies examining the types of behaviors that facilitate or hinder problem-solving between mothers and children. Many of those that do exist are somewhat dated (e.g., Capaldi, Forgatch, & Crosby, 1994; Forgatch, 1989; Greene & Bry, 1991; Hughes et al., 2004; McColloch, Gilbert, & Johnson, 1990; Pakashlahti et al., 1998; Rueter & Conger, 1995; 1998; Vuchinich et al., 1996). Moreover, because interpersonal problem-solving is conceptualized as a mainly positive and dyadic construct, most studies on mother-child conflict have overlooked two important considerations that the literature on social problem-solving (i.e., individualistic, cognitive-behavioral) has empirically demonstrated. The first consideration is that individuals vary in their ability to generate solutions, which implies that some are better at it than others (Nezu, 2004). As a consequence, problem-solving *deficiencies*, such as being unable to brainstorm a variety of solutions and/or flesh out ideas to render them more effective, are not sufficiently represented in studies examining conflict from an interpersonal, rather than individualistic perspective. Examining both positive and negative problem-solving strategies in mother-child dyads is particularly important for investigating children's developing skills and contrasting them to mothers' more advanced competencies. Still, mothers are not equally proficient problem-solvers (Sternberg & Bry, 1994) and may propose solutions to their children that are poorly-developed and/or intended to dominate rather than collaborate (Pakaslahti, Spoof, Asplund-Peltola, & Keltikangas-Jarvinen, 1998). Children also vary in their problem-solving skills. For example, children with socio-emotional problems tend to display several problem-solving deficits (e.g., less problem-focused, more impulsive and/or avoidant; Arslan, 2010; Dereli-Iman, 2013; Walker, Henderson, Degnan, Penela, & Fox,

2014; Wilson, Bushnell, Rickwood, Caputi, & Thomas, 2011), and generate fewer and more aggressive solutions (Shure & Spivack, 1972; Mott & Krane, 1994; Mize & Cox, 2001; Youngstrom et al., 2000). For these reasons, it is important to investigate mothers' and children's problem-solving efforts separately and include variables reflecting adaptive and constructive, as well as maladaptive and destructive problem-solving outcomes. In other words, these are important to better understand how individuals within the dyad shape the expression and outcome of interpersonal conflicts.

The second consideration is that problem-solving is a heterogeneous construct composed of several distinct yet interrelated skills. The Social Problem-Solving Model outlines five important skills related to the problem-solving process: problem recognition and definition, goal setting, solution generation, decision-making, solution implementation, and decision evaluation (Chang et al., 2004; D'Zurilla & Nezu, 1990; 1999). Evidence of the heterogeneity of problem-solving can be found in earlier studies from the literature on social problem-solving suggesting that the quality of solutions may be a stronger predictor of behavior and social competence than merely the quantity of solutions (Richard & Dodge, 1982; Evans & Short, 1991; Fischler & Kendall, 1998; Guerra & Slaby, 1989; Martin et al., 2012; Youngstrom et al., 2000). The majority of studies on mother-child interpersonal problem-solving have collapsed these skills into a single variable (e.g., Capaldi et al., 1994; Forgatch, 1989; McColloch et al., 1990; Vuchinich et al., 1996), or combined them with other interpersonal variables (e.g., Rueter & Conger, 1995; 1998). While valuable, such research designs are unable to detect important processes that explain how children develop specific problem-solving skills during conflict interactions with their mothers. Moreover, investigating how mother-child conflict behaviors interact with mother-child problem-solving efforts helps to bridge the gap that currently exists between intrapersonal and interpersonal approaches to studying conflict.

**Bidirectional and Transactional Nature of Mother-Child Interactions**

It is essential to keep at the forefront when studying mother-child interactions that, not only are mothers and children both active participants, but their behaviors are the product of reciprocal influences (Hinde, 1979; Kucyzynski & De Mol, 2015; Serbin et al., 2015). Mother-child conflict behaviors do not merely reflect internal attributes but rather emerge out of interpersonal processes (Rose-Krasnor & Denham, 2009). For example, a child who engages with a warm and supportive parent is more likely to have his or her needs met and reciprocate

prosocial behavior than the child who engages with a hostile and overly-controlling parent. Similarly, a parent who engages with a difficult tempered child may be less patient and supportive than when engaging with that child's more agreeable sibling. Patterson (1982; 2002) was among the first to empirically demonstrate bi-directional influences between parents and children during conflict. His detailed work showed that parents' efforts to punish their children's transgressions using coercive tactics increased children's negative conduct which, in turn, further aggravated parents' coercion and children's noncompliance. In contrast, teaching parents to ignore and/or show disapproval in less aggressive ways was found to diminish children's negative behaviors, as well as reduce negative parenting practices. Vygotsky (1978) also emphasized the role of bi-directionality in social interaction by suggesting that the degree to which children learn depends on the proficiency of the individual who is teaching.

Transactional and dynamic systems models offer a more macro-level analysis of bi-directionality by proposing that development results from multiple, mutual, interdependent, and continuous interactions between children, parents, and all levels within the developing system (Sameroff, 2009), including other key relationships and their proximal and distal environments. These transactions entail co-construction and co-regulation; mothers and children modify their reactions from moment-to-moment as they respond to one another while simultaneously being influenced by a multitude of environmental factors both within and outside the mother-child subsystem (e.g., situational, developmental, psychosocial, socio-economical; Enns, 2013; Fogel, 2009; Stack et al., 2012). As these processes unfold over time (from milliseconds to years), relational patterns emerge. At the same time, the experiences, behaviors and skills of partners change and transform as a function of the dynamic interplay between forces of influence (Fogel, 2009; Sameroff, 2009). Both past and present factors shape transactions between mothers and children as they engage with each other. According to Belsky's (1984) model of the determinants of parenting, processes stem from characteristics of the child, the parent, as well as the parenting context.

**Historical and Concurrent Maternal Risk Factors**

Beyond the importance of individual characteristics, as well as their transactional interactions with variables contributing to the multiple layers of influences, ecological perspectives remind us of the powerful influence of the larger social context in which mother-child interactions are embedded (Bronfenbrenner, 1979). Transactional, dynamic systems, and

ecological models fit hand in hand, highlighting the dynamic nature of human development and relationships within their changing context or environments. Bronfenbrenner conceptualized the ecological environment as a set of five nested systems, starting more proximally with institutions and groups in communities (e.g., home environment, schools) and ending more distally with cultural contexts (socio-economic status, poverty, and ethnicity), as well as events and transitions over the life course (e.g., effects of divorce on family interactions). The concept of these nested environmental systems has guided the work of developmental psychologists for decades (Pinquart & Silbereisen, 2004).

One of these macro-level environmental systems that has received a great deal of research attention has been the impact of socio-economic status (SES) on children's development and family dynamics (e.g., Bornstein & Putnick, 2012; Conger, Conger, & Martin, 2010; Eamon, 2008; Schofield et al., 2011; Twenge & Campbell, 2002). In low socio-economically disadvantaged communities, families face cumulative risk factors (e.g., low income, low educational achievement, unstable occupational patterns, and poor social support) that have the potential to increase psychological distress and thereby disrupt the availability and nurturing qualities of mothers, as well as the provision of stimulating and supportive home environments to children (Arditti, Burton, & Neeves-Botelho, 2010; Conger et al., 2010; Weinfeld, Ogawa, & Egeland, 2002). Mothers from low socio-economic backgrounds are more likely to have hostile attribution biases, interact in a more hostile manner towards their children, view aggression as an appropriate means of problem-solving, and use harsher disciplinary tactics (Arditti et al., 2010; Raikes & Thompson, 2008; Root & Jenkins, 2005). Accordingly, mother-child conflict tends to be more elevated in disadvantaged neighborhoods and have been longitudinally associated with patterns of antisocial behavior in youth (Ingoldsby et al., 2006). In fact, children reared in low SES families are at greater risk for developing a wide range of negative physical, socio-emotional, cognitive, and academic outcomes (Letourneau, Duffettt-Leger, Levac, Watson, & Young-Morris, 2011; Stack et al., accepted). Evidence suggests that parent-child conflict mediates the relationship between the effects of low SES and children's poor socio-emotional functioning (Zhang, 2014). However, more research is needed to clarify the factors that contribute to the rise in mother-child conflict in socio-economically disadvantaged families.

Given that the processes underlying the development and maintenance of conflict patterns between mothers and children stem from transactional interactions between the individual, the

family and the environmental over time, it is essential that researchers consider both historical and concurrent variables as sources of influence. From a concurrent perspective, mothers' ability to appropriately manage and resolve disagreements with their children may be compromised by psychological distress when faced with persistent economic and social pressures. Thus, maternal concurrent distress within the context of low SES is a particularly worthwhile avenue for research on mother-child conflict.

From a historical perspective, mothers' parenting is also greatly influenced by their own experiences and characteristics as children and as adults. For example, intergenerational studies show that childhood histories of behavior problems, such as aggression and social withdrawal, are associated with poor psychosocial outcomes that persist into adulthood and subsequently hinder the quality of mother-child interactions (e.g., Sebin et al., 2002; Stack Serbin, Schwartzman, & Ledingham, 2005). In particular, childhood patterns of aggression and social withdrawal predict problems such as low self-esteem, academic difficulties, internalizing problems, adolescent delinquency, risk-taking behaviors, early sexual activity and teen pregnancy, unstable occupational patterns, low income and marital problems (Bailey, Hill, Oesterle, & Hawkins, 2009; Caspi, Elder, & Bem, 1987; Englund, Egeland, Oliva, & Collins, 2008; Harrist, Zaia, Bates, Dodge, & Petttit, 1997; Nagin & Tremblay, 1999; Ramrakha et al., 2007; Serbin et al., 2000). Aggression and social withdrawal in girls can be particularly damaging for developing adaptive parenting skills as both directly and indirectly hinder their capacity to learn competent social skills (Serbin et al., 2004; Stack et al., accepted). These problematic behavioral patterns have also been found to be stable across time (Cairns, Cairns, Xie, Leung, & Hearne, 1998; Oh et al., 2008; Rubin, Chen, McDougall, Bowker, & McKinnon, 1995). Due to their trajectories of negative psychosocial outcomes and maladaptive parenting styles, mothers who were aggressive and/or socially withdrawn as children place their own children at risk for developing a host of developmental, psychosocial and behavior problems as well (and ultimately potential parenting difficulties). Such continuity from parent to offspring is known as the intergenerational transfer of risk.

**Intergenerational Research Designs**

The notion that psychological and behavioral problems persist across multiple generations is a major concern for researchers, policy makers, and laypersons alike (Serbin & Karp, 2004; Stack et al., 2015) given the associated social, economic, and health costs. As such, a great deal

of interest has been directed towards implementing prevention programs that target children from high-risk populations *before* they show signs of impairment, in addition to early intervention strategies for already existing socio-emotional and cognitive difficulties in young children (e.g., Boring, Sandler, Tein, Horan, & Vélez, 2015; Dawson-McClure et al., 2015; Leuzinger-Bohleber et al., 2014; Raviv & Wadsworth, 2010). Prevention and intervention strategies are necessary to ameliorate the lives of those less fortunate. Society as a whole benefits from these efforts in order to break this negative cycle. Critical to the development of effective prevention and intervention programs is an understanding of the processes responsible for placing disadvantaged children at risk. Although only experimental designs can truly answer questions regarding causal effects, longitudinal prospective designs can speak to mediators and moderators through the use of time and sequence. Longitudinal prospective designs provide more objective information than retrospective designs as individuals are followed at relevant stages in their life course from childhood to parenthood (Neppl, Scaramella, Conger, & Ontai, 2009; Shaw, 2003; Serbin et al., 1998).

Current developmental theories and empirical research point to parenting and related family processes as key factors in the socialization of interpersonal behavior, suggesting that interactions within the mother-child relationship may be one of the primary forces driving intergenerational continuities (Bailey et al., 2009; Belsky, Jaffee, Sligo, Woodward, & Silva, 2009; Rothenberg, Husson, & Chassin, 2015). Numerous research questions arise about family processes within this field of research. In particular, how do the behaviors and circumstances of mothers during their own childhood resemble those of their offspring and in what ways do mother-child interactions bind these past experiences with those of the present? To answer these questions and elucidate mechanisms of cross-generational continuity and change, developmental psychologists must go beyond interactions within the mother-child relationship and consider antecedents to mothers' parenting, such as their social backgrounds in childhood. Although all aspects of the mother-child relationship are important to children's development, mother-child conflict may be especially relevant in perpetuating maladaptive behavioral patterns given that high levels of family conflict are associated with youth problems such as poor academic achievement, delinquency, and substance abuse (Rothenberg et al., 2015). Whereas parenting has been the focus of numerous intergenerational studies (Bailey et al., 2009; Belsky et al., 2005;

Kovan, Chung, & Sroufe, 2009; Neppl et al., 2009; Shaffer, Burt, Obradović, Herbers, & Masten, 2009) few have directly examined interactions during mother-child conflicts.

Causal mechanisms that threaten development rarely involve a single risk factor. Rather, risk processes emerge as part of a dynamic and complex network of factors, some of which interrelate and interact (Appleyard, Egeland, van Dulmen, & Sroufe, 2005; Conger et al., 2010; Zahn-Waxler, 1996). Covariance risk processes are particularly common in disadvantaged populations (Cicchetti & Toth, 2009; Stack et al., 2012). For example, individuals living in poverty encounter hardship beyond low income to also include a greater likelihood of social, psychological and health problems (Linver, Brooks-Gunn, & Kohen, 2002; Ge et al., 1996; Schofield et al., 2011). Risk factors are not necessarily causal mechanisms. Moreover, not all factors that influence development in high-risk and at-risk populations involve risk; in some cases, factors that support development actually buffer or moderate the negative effects of risk (Bonanno, 2005; Masten, 2001). Furthermore, risk and protective factors interact with individual differences to produce a wide range of outcomes. Individual differences are therefore substantial and occur at multiple levels, including proximal family and nonfamily environments, as well as personality and psychological individual characteristics. Equally important to consider is that behavior is determined by both environmental and genetic influences (Ge et al., 1996; Loehlin, Neiderhiser, & Reiss, 2005). Developmental psychopathology models (Cicchetti, 2006; 2013) emphasize the importance of investigating individual variations in socio-emotional functioning in disadvantaged populations by studying interactions between risk and protective factors.

In the present dissertation, attention was focused on maternal education and the role that it may play in buffering the negative effects of concurrent levels of maternal distress and maternal childhood histories of social withdrawal. Maternal education was given primary focus given the wide range in educational aspirations and achievement of individuals from low socio-economic backgrounds, as well as the significance of maternal education in predicting positive child outcomes across a number of domains of functioning (e.g., Carr & Pike, 2012; Magnuson, 2007; Neitzel & Stright, 2004; Reese & Newcombe, 2007). Moreover, the effects of mothers' occupation and family income were teased apart from those associated with maternal education in order to assess whether maternal education uniquely predicts mother-child conflict behaviors.

**The Present Studies**

The Concordia Longitudinal Risk Project (hereafter referred to as the Concordia Project) is an ongoing, community-based intergenerational investigation of families at psychosocial risk. The Concordia Project began in 1976-78 (Ledingham, 1981; Schwartzman, Ledingham, & Serbin, 1985; Serbin et al., 1998) during which time 1774 inner-city children from low socio-economic neighborhoods were recruited and screened with the use of peer nominations along dimensions of aggression, social withdrawal, and likeability. The sample comprised an equal representation of boys and girls who were identified as highly aggressive, withdrawn, as well as high or low on both dimensions. At three to five year intervals, these children were followed into parenthood in smaller representative subsamples, providing the unique opportunity to study the transfer of parental characteristics and environmental stresses to offspring. Among many, results have revealed that childhood behavioral risk leads to numerous negative outcomes including increased rates of academic failure, teen pregnancies, poor quality home environments, lowered family income, and marital problems (Saltaris et al., 2004; Serbin et al. 2002; Serbin et al., 2000; Temcheff et al., 2008). Findings also suggest that women who were aggressive in childhood continue to be aggressive when interacting with their own children (Bentley, 2002; Enns et al., 2009; Stack et al., 2012; Stack et al., accepted) and mothers who were socially withdrawn in childhood interact in a more disengaged and intrusive manner (Bentley, 2002; Enns et al., 2009; Grunzeweig et al., 2009; Perez, 2005; Serbin et al., 1998; Stack et al., accepted; Stack et al., 2015). Furthermore, children of mothers with childhood histories of aggression and/or social withdrawal have demonstrated poorer social skills during mother-child interactions (e.g., less responsive, negative emotion displays, noncompliance, low assertiveness; Bentley, 2002; Enns et al., 2009; Grunzeweig et al., 2008; Perez, 2005). In addition to childhood behavior problems, broader environmental stressors such as low SES and poor social support have also hindered mothers' ability to be supportive and nurturing towards their children, as well as adequately stimulating their cognitive development (Serbin et al., 2011; Stack et al., 2012). Behavioral risk and environmental stressors have subsequently been associated with lower child IQ, teacher-rated behavior problems, and numerous health problems in offspring (De Genna et al., 2007; Fisher et al., 2007; Saltaris et al., 2004; Serbin et al., 2000; Serbin, Hubert, Hastings, Stack, & Schwartzman, 2014). Together, results from these studies demonstrate that parenting and mother-child interactions serve as essential mechanisms of socialization and underscore the importance of environmental and familial contexts in which they are embedded.

Guided by research emphasizing the importance of mother-child conflict for family functioning and child development, the focus of the present series of two studies was on investigating the behavioral dynamics between mothers and children during mutual disagreement. This was achieved in two studies. The first study considered historical and concurrent socio-demographic factors known to influence mother-child interactions. The second focused more on the 'here-and-now' by examining behavioral processes associated with mother-child problem-solving, as well as children's socio-emotional functioning in social and more cognitive contexts. The components of each study are illustrated in Appendix A. Taken together, the dissertation was designed to contribute to the current literature on family conflict by providing a more detailed and complete understanding of mother-child conflict, as well as addressing several gaps, namely: the examination of maternal education above and beyond other markers of SES and its capacity to moderate risk; the investigation of how mother-child conflict behaviors are related to *specific* problem-solving skills (rather than in aggregated form); and the examination of cross-context applicability of children's behaviors during interactions with their mothers to their behaviors in other social settings. Additional objectives of the present studies were to examine the impact of maternal childhood histories of aggression and social withdrawal on mother-child conflict behaviors and children's socio-emotional functioning, and in so doing, assess the intergenerational transfer of risk to offspring.

The overarching goals of Study 1 were to strengthen our understanding of mother-child interactions during discussions about personal conflicts in middle-childhood, as well as elucidate risk and protective factors that may hinder or facilitate such exchanges. To this end, a rich observational dataset was created on several core features of mother-child conflict including a wide range of interaction and conflict management behaviors. Among mothers who were original participants of the Concordia Project, variations in how dyads behaved during disputes were examined in relation to psychosocial and demographic variables (e.g., concurrent maternal psychological functioning and stress experienced by the dyad; maternal childhood histories of social withdrawal; mothers' educational attainment). Study 1 also added to the literature on mother-child conflict by employing statistical models associated with resiliency (Masten, 2001) to determine *how* maternal education engages with different type of risk factors. Building on Study 1 and a previous investigation of the same subsample of high-risk dyads (Martin et al., 2012), Study 2 was developed to further investigate the significance of mothers and children's

conflict behaviors by examining their relationships to specific problem-solving abilities (solution generation and resolution outcomes, separately). Along similar lines, *Study 2* assessed the degree of applicability of children's conflict behaviors to those outside the mother-child relationship (i.e., social skills, internalizing and externalizing problems; observational ratings of test-taking behaviors). Lastly, children's functioning in these others social contexts was examined in relation to maternal childhood histories of aggression and social withdrawal in order to more directly assess intergenerational (dis) continuities in maladaptive behavioral patterns.

Overall, the present dissertation was designed to provide breadth and depth to the understanding of how mothers and preadolescents manage their day-to-day disputes in an at-risk community sample. Taking an ecological approach, results from the studies add to the literature by considering multiple proximal and distal contextual variables that shape mother-child interactions. To our knowledge, this was the first set of studies to examine associations between children's conflict behaviors with mothers and their behaviors during a standardized cognitive assessment. Similarly, few studies on mother-child conflict have simultaneously included both historical and concurrent psychosocial risk factors (thereby permitting some degree of comparison). Numerous methodological strengths (e.g., prospective, multi-informant, mixed-method, observational) characterize both studies, providing an optimal design to examine the role of mother-child conflict in shaping children's socio-emotional development. Taken together, results from this body of work provide valuable insight into the quality of mother-child relationships and children's developing socio-emotional and cognitive abilities in an at-risk sample of disadvantaged families. Findings have important implications for the development of community-based prevention and intervention programs designed to promote adaptive parenting, healthy parent-child relationships and positive child outcomes in families from disadvantaged backgrounds, and hold promise for their potential to aid in the disruption of cycles of intergenerational risk.

## Chapter 2: Dissertation Study 1

# Mother-child conflict during middle childhood: Links to maternal childhood histories of behavior problems, concurrent distress, and education

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## ABSTRACT

This study examined core features of mother-child conflict during middle childhood in at-risk dyads, and explored links to maternal historical and concurrent risk and protective factors. Mothers and children (age 9-13) from a prospective, longitudinal intergenerational study of families from low socio-economic backgrounds were videotaped discussing personal conflicts; observational coding was employed in order to investigate mother-child conflict behaviors. Indices of mothers' psychosocial functioning were used to create a maternal concurrent distress factor score. Results revealed that dyads disagreed most about parent-generated activities and familial relationships; the greater the conflict, the less adaptive and constructive the conflict behaviors. The structure and content of interactions reflected the hierarchical and bi-directional nature of mother-child relationships. Whereas maternal distress predicted negative mother-child conflict behaviors, the reverse was found for the effects of maternal education (controlling for other SES markers). Maternal education had a protective-enhancing effect for mothers with childhood histories of social withdrawal, promoting their ability to communicate in a more assertive and less threatening manner. Together, findings advance current knowledge on mother-child conflict in middle childhood and highlight contextual variables that shape how these disagreements behaviourally unfold. Results also provide support for the developmental psychopathology model and the intergenerational transfer of risk.

## Mother-child conflict during middle childhood: Links to maternal childhood histories of behavior problems, concurrent distress, and education

As in all interpersonal relationships, conflicts between parents and children are inevitable and normative. When approached constructively, these quarrels can strengthen bonds and promote children's growth by providing valuable opportunities to express concerns and discontentment, as well as re-negotiate authority (Adams & Laursen, 2007; Branje, 2008; Dunn, 2004; Sillars et al., 2004). These constructive interactions facilitate the development of skills that are indispensable for promoting and maintaining healthy relationships across the lifespan (e.g., perspective-taking, empathy, listening, persuasion, negotiation, cooperation, and problem-solving; Black, 2002; Dix & Branca, 2003; Foster & Robin, 1997; Sillars et al., 2004; Stern, 2000). Conversely, parent-child conflicts also have the potential to be highly aversive and destructive, contributing to a broad range of problems among children including low self-esteem, depression, delinquency, antisocial behavior, low grades, and poor peer relations (Burt & Klump, 2013; Rengasamy et al., 2013; Saxbe, Ramos, Timmons, Rodriguez, & Margolin, 2014). Given the potential for adaptive and constructive, as well as maladaptive and destructive outcomes, elucidating the processes that either promote or hinder parent-child conflict interactions is a crucial area of study.

An essential first step to investigating processes that promote or hinder parent-child conflict interactions is to examine how typical conflicts between parents and children are managed and resolved. For purposes of the present study, the focus is on *mother*-child conflict in part due to their typical role as primary caregivers and because more conflicts are reported with mothers relative to fathers (Laursen & Collins, 1994). Conflict is defined herein as interaction patterns characterized by mutual behavioral opposition, ranging from verbal disagreement and criticism to physical aggression (Adams & Laursen, 2007; Canary et al., 1995; Foster & Robin, 1997; Laursen & Pursell, 2009; Shantz & Hartup, 1992). This definition places emphasis on overt and readily observable behaviors, as well as allows conflict to be examined in the absence of negative emotion.

The characteristics and salience of mother-child conflicts are determined by several distinct yet interrelated and sequentially structured features, including: the issues that provoke disagreement, the frequency and emotional valence of a conflict, the behavioral responses that perpetuate and/or resolve conflicts, and the outcome, which may or may not entail a resolution

(Adams & Laursen, 2001; Shantz, 1987). Most studies on mother-child conflict examine only one feature at a time, often through self-report methods. Given that interactional patterns between mothers and children are bi-directional, co-regulated, and co-constructed (Fogel & Garvey, 2007; Sameroff, 2009), self-report methods are limited in their ability to capture the dynamic and transactional nature of mother-child conflict. Consequently, the aim of the present study was to provide a more comprehensive and naturalistic account of mother-child conflicts by examining several features at once using observational means in order to better understand how these conflicts manifest, take shape, and unfold.

Extant research on mother-child conflict indicates that arguments occur daily and typically center on hassles such as household chores, school-work, sibling relations, and autonomy issues (Adams & Laursen, 2001; Hughes et al., 2004; Riesch et al., 2000). These disagreements are characterized by neutral-to-positive affect and low to-moderate levels of interpersonal negativity (Branje, 2008, Capaldi et al., 1994; Laursen & Collins, 1994; Steinberg & Silk, 2002). Thus, both positive and negative behaviors are exhibited while high levels of hostility are uncommon. Girls may be more likely than boys to behave in a prosocial and socially skilled manner with mothers (Dodge, Pettit, & Bates, 1994; Pinquart & Silbereisen, 2002; Smetana et al., 2003), although gender differences appear to be less pronounced with age (Garcia-Ruiz et al., 2013). Consistent with the hierarchical nature of mother-child relationships, mothers tend to initiate conflict discussions and be more verbally engaged (Branje, 2008; Hughes et al., 2004). Similarly, mother-child conflicts are often resolved by win/loss resolutions that favour mothers or disengagement by both partners (Recchia et al., 2010; Vuchinich et al., 1996). As children's cognitive abilities mature with age and the mother-child relationship becomes more egalitarian, concessions and punishment decrease while rates of compromise and negotiation increase (Collins, 1997; Grusec & Hastings, 2014; Sandy & Cochran, 2000; Smetana et al., 2001; 2003; Smetana & Gains, 1999; Vuchinich et al., 1996).

Developmental patterns in mother-child conflict are often investigated in early childhood and adolescence, despite evidence showing that the frequency and intensity of these conflicts peak in late middle childhood (i.e., ages 9-12) and decline thereafter (Laursen et al., 1998; Riesch et al., 2000; Shanahan et al., 2007). Mother-child conflict interactions may be particularly valuable in middle childhood given the unprecedented rise in the demands and responsibilities that children face during this developmental period, as well as the tremendous growth in social,

cognitive, and self-regulatory capacities (Collins & van Dulmen, 2006). These developmental changes imply that children in middle childhood may be able to handle disagreements with their mothers in a more prosocial, flexible, and mature manner than during the preschool years, yet not to the same degree as in adolescence (Collins et al., 2001; Jambon & Smetana, 2014; Selman, 2003; Sillars et al., 2004). Children's social competence is particularly vital during critical transitions, such as the transition from elementary to high school (Miller, Murry, & Brody, 2005). The literature on mother-child conflict must further take into account the unique features and processes that characterize development in middle childhood. The present study was designed to address this gap.

During middle childhood, children are more likely to develop social competence when their mothers model effective communication and conflict management strategies. In particular, mothers' ability to facilitate children's engagement (e.g., clear and direct communication, responsive listening, and warmth), as well as the ability to demonstrate interpersonal flexibility (e.g., patience, cooperation, negotiation and compromise) are positively associated with successful conflict resolution, children's problem-solving skills, and mother-child relationship quality (Adams & Laursen, 2007; Branje, 2008; Collins et al., 2001; Lichtwark-Aschoff, Kunnen, & van Geert, 2009; Lundell et al., 2008; Mantzicopoulos & Oh-Wang, 1998; McClun & Merrell, 1998; Raikes & Thompson, 2008; Rueter & Conger, 1995; Vuchinich et al., 2002). In contrast, high levels of maternal restrictiveness, hostility, defensiveness, and avoidance, disrupt problem-solving, fail to produce satisfactory resolutions, perpetuate angry or unpleasant mother-child interactions, as well as predict poor socio-emotional and cognitive functioning in children (Capaldi et al., 1994; Forgatch & DeGarmo, 2002; Foster & Robin, 1997; Raikes & Thompson, 2008; Rueter & Conger, 1995). Together, results from these studies underscore the importance of maternal sensitivity for eliciting children's participation and achieving adaptive and constructive mother-child conflicts interactions.

**Historical and Concurrent Risk Factors**

Ecological perspectives (Bronfenbrenner, 1979) posit that parenting behaviors, such as maternal sensitivity, are influenced by the context or the social circumstances in which they occur. In socio-economically disadvantaged communities, families face cumulative risk factors (e.g., low income, low educational achievement, unstable occupational patterns, and poor social support) that produce deleterious effects on parenting and child outcomes, concurrently and over

time (Ensminger & Fothergill, 2003; Eamon, 2008; Linver et al., 2002; Russell, Harris, & Gockel, 2008; Serbin et al., 2011). These risk factors are believed to cause undue pressure that contribute to maladjustment and parenting stress, thereby disrupting the availability and nurturing qualities of mothers, as well as the provision of stimulating and supportive home environments to children (Arditti, Burton, & Neeves-Botelho, 2010; Conger et al., 2010; Eamon et al., 2008; Pomerleau, Scuccimarri, & Malcuit, 2003; Stack et al., 2012; Vuchinich et al., 2002). For example, mothers from low socio-economic backgrounds are more likely to employ harsh disciplinary tactics, insufficiently validate children's emotional experiences, as well as report more frequent and intense mother-child conflicts (Arditto et al., 2010; Raikes & Thompson, 2008; Ingoldsby et al., 2006). In turn, children from low socio-economic families tend to report lower self-esteem and display greater externalizing problems, including aggression towards peers (Root & Jenkins, 2005; Twenge & Campbell, 2002; Zhang, 2014).

Mothers' own histories and experiences when they were children can also affect parenting and children's outcomes. For example, social withdrawal in childhood is associated with negative psychosocial outcomes that place girls at risk for poor long-term functioning and the development of maladaptive parenting skills (Stack et al., 2012; Stack et al., 2015). Research indicates that social withdrawal combined with peer rejection and loneliness predicts anxiety, aggression, school avoidance, as well as low self-esteem and self-efficacy (Coplan & Armer, 2007; Qualter & Munn, 2002). As such, socially withdrawn girls may place themselves and their future offspring at risk by hindering their capacity to learn adaptive social skills, develop positive self-evaluations, as well as experience achievement (Masten, Burt, & Coatsworth, 2006; Rubin, Bukowski, & Parker, 1998; Serbin et al., 2004). Girls who display maladaptive behavioral patterns within the context of low SES may be particularly vulnerable to these negative developmental outcomes. Overall, a large body of research, including prospective longitudinal studies, provide strong evidence that cycles of psychosocial risk permeate disadvantaged families across generations and that parenting is a major pathway through which risk is transferred from parent to child (e.g., Bailey et al., 2009; Enns et al., 2016; Grunzeweig et al., 2009; Ramrakha et al., 2007; Shaw, 2003; Serbin & Karp, 2004; Sohr-Preston et al., 2013; Stack et al., 2012). Thus, to understand processes that influence mother-child conflict behaviors, one must move beyond concurrent indices of family functioning to include past experiences and characteristics that shape mothers' lives.

Given the inherently probabilistic nature of risk, some mother-child dyads will display adaptive functioning despite their elevated risk for poor outcome (Masten, 2001). Studying the interplay between risk and protective processes at different levels of influence (e.g., intra and interpersonal) on the basis of contextual variables (i.e., both micro and macro-level) is an essential means for understanding the factors that cause and maintain maladjustment, according to the developmental psychopathology model (Cicchetti, 2006; 2013). One factor that has been linked to positive parent-child outcomes is maternal education (Brooks-Gunn & Duncan, 1997; Carr & Pike, 2011; Neitzel & Stright, 2004; Tamis-LeMonda, Briggs, McClowry, & Snow, 2009). Surprisingly, maternal education has rarely been the focal point of research on mother-child interactions beyond studies examining cognitive or academic tasks. This gap in the literature may be partially due to an a priori assumption that higher educational attainment is simply the inverse of risk akin to good occupation and economic stability (Conger et al., 2010). Given that education, occupation, and income are moderately correlated (Ensinger & Fothergill, 2003; Querido et al., 2002), education is sometimes analyzed in combination with other markers of SES (e.g., Hollingshead index of social status; Hollingshead, 1975), which masks its individual contributions. However, recognition that education, occupation, and income may fluctuate over the lifespan depending on life circumstances has led some researchers to consider that education may differentially affect family behavior (Duncan & Magnuson, 2001; Melby et al., 2008; Smith & Graham, 1995). Education also stands out from other markers of SES in that it is the product of *early* school experiences that chronologically precedes income and occupation and may therefore have transformative potential (Mueller & Parcel, 1981).

**Maternal Education**

Although limited, extant research on the unique contributions of maternal education provides mixed results, with some studies showing indirect effects of maternal education and parenting through income (Brody & Flor, 1998; Jackson, Brooks-Gunn, Huang, & Glassman, 2000), while others demonstrating direct links to maternal scaffolding and nurturing (Carr & Pike, 2012; Klebanov et al., 1994; Melby et al., 2008; Neitzel & Stright, 2004). Evidence also suggests that maternal education may be more predictive of warmth than income (Callahan & Eyberg, 2010; Fox et al., 1995; Klebanov et al., 1994), indicating that it may uniquely contribute to parenting in ways that financial wealth does not. Although occupation is rarely investigated within the family context, results suggest that parental occupation is more strongly associated

with children's educational attainment than parenting (Melby et al., 2008). To our knowledge, no studies to date have examined whether maternal education uniquely contributes to conflict behaviors in mother-child interactions, above and beyond income and occupation.

Even less research has been conducted to determine how maternal education interacts with risk factors such as maternal distress and childhood histories of social withdrawal. Two statistical models exist to illustrate the relationship between risk and resiliency (Lansford et al., 2006). In the 'main effect' model, risk and resiliency processes have a direct and additive effect on outcome that benefit individuals universally such as with 'assets' or 'attributes', regardless of adversity (Luthar, Cicchetti, & Becker, 2000; Fergusson & Horwood, 2006; Masten, 2001). Although identifying assets is important because they correlate with positive outcomes, they may be less informative for understanding the factors that are particularly relevant to individuals exposed to hardship (Lansford et al., 2006; Rutter, 1985). Instead, the 'interaction' model is used to describe resiliency factors that moderate the effects of risk factors to enhance outcome (Rutter, 1985). The term 'protective' factor denotes effects whereby benefits occur only (or mainly) in adverse conditions but not (or less so) in optimal environments (Luther et al., 2000). A protective-*stabilizing* effect indicates that the protective factor enables high-risk individuals to be comparable to low risk individuals on an outcome measure despite increasing risk. A protective-*enhancing* effect indicates that the protective factor engages with adversity such that positive outcomes augment with increasing risk (Luther et al., 2000).

To date, evidence supporting the interaction model with education has been found in a sample of young poorly educated women who received additional schooling *after* they became mothers (Magnuson, 2007). In this study, education improved the quality of their home environments and children's reading abilities, whereas no such effects were found for older mothers who already had more years of schooling. However, it remains unclear whether these benefits were attributable to changes in occupation or family income. Undoubtedly, more research is needed to assess the protective potential of maternal education in disadvantaged communities and tease apart the unique effects of maternal education from those related to other SES markers. Beyond scientific interest, such research endeavours have valuable practical applications for policy makers and the design of prevention and intervention programs for vulnerable girls and women.

The Concordia Longitudinal Risk Project (Concordia Project) offers the unique opportunity to investigate the influence of historical and concurrent risk and protective factors on mother-child interactions in an intergenerational framework. This ongoing community-based longitudinal prospective study began nearly 40 years ago with the recruitment of boys and girls from socio-economic disadvantaged communities who were rated on aggression and social withdrawal using peer nominations and then followed into parenthood (Schwartzman et al., 1985). Studies from the Concordia Project (e.g., Fisher et al., 2007; Granger et al., 1998; Grunzeweig et al., 2009; Martin et al., 2012; Stack et al., 2012) have found that childhood social withdrawal in girls is a relatively stable trait (Serbin et al., 1998) with far-reaching negative consequences (e.g., low self-esteem, academic difficulties, health problems, teen pregnancy, lowered family income; Serbin et al., 2011). These poor psychosocial outcomes later spill over into the family context, resulting in suboptimal parenting and less constructive mother-child interactions (e.g., less responsive parenting, poor problem-solving, and child noncompliance), as well as higher rates of behavioral, academic, and health problems in offspring (Serbin et al., 2011, 2014; Stack et al., 2012). Several studies within the Concordia Project demonstrate that higher levels of maternal education can buffer against adverse circumstances of mothers from disadvantaged background, with or without childhood histories of social withdrawal (e.g., Martin et al., 2012; Saltaris et al., 2004; Stack et al., 2015). Such findings suggest that low SES and childhood behavior problems disrupt parenting not through one clear path, but through multiple processes that interrelate to produce a wide range of both adaptive and maladaptive outcomes. An important next step that has yet to be undertaken is to test the two statistical models of resiliency (Lansford et al., 2006) to determine whether maternal education acts as an asset or a protective factor for mothers experiencing psychosocial distress and those with childhood histories of behavior problems.

**Objectives and Hypotheses**

The present study was designed to address three research objectives with a subsample of mothers and preadolescent children from the Concordia Project using observational measures. The first objective was to contribute to the literature on mother-child conflict by examining several components of conflict at once (i.e., topics that provoked conflict, frequency and severity of disagreements, behaviors displayed during mother-child interactions, and differences in behaviors across time), as well as narrow an important gap by focusing on a relatively

understudied developmental period, that of middle childhood. These components of conflicts were expected to highlight the hierarchical nature of mother-child relationships, as well as certain characteristics of middle childhood such as children's increasing responsibilities within and outside the home environment. The second objective was to examine the unique effects of maternal education on mother-child conflict behaviors after controlling for mothers' occupational prestige, and family income. Consistent with extent research demonstrating the importance of maternal education in promoting adaptive parent and child outcomes (e.g., Carr & Pike, 2012; Callahan & Eyberg, 2010; Martin et al., 2012), it was hypothesized that higher levels of maternal educational attainment would predict more positive and fewer negative conflict behaviors for both mothers and children, above and beyond other indices of SES. Building on this second objective, our third objective was divided in two parts. The first part of the third objective focused on investigating the influences of historical and concurrent risk factors (i.e., childhood histories of social withdrawal and maternal distress at the time of testing) on mother-child conflict behaviors. Given prior research demonstrating the negative impact of both of these types of risk factors on parenting and child outcomes (e.g., Bentley, 2002; Enns, 2008; Grunzeweig et al., 2009; Martin et al., 2012; Stack et al., 2012), it was hypothesized that mothers' childhood histories of social withdrawal and concurrent levels of maternal distress (determined by several facets of mothers' functioning and home environment) would predict more negativity, as well as less supportive and constructive behaviors compared to dyads without these risk factors. The second part of the third objective centered on testing whether maternal education operates as an asset (i.e., main effect model) or as a protective factor (i.e., interaction model) to mitigate the negative effects associated with maternal concurrent levels of maternal distress and childhood histories of social withdrawal. Similar to Magnuson (2007), maternal education was expected to operate as a protective factor (i.e., moderator) for both maternal concurrent levels of distress and childhood histories of social withdrawal. Given the lack of research on the interplay between maternal education and psychosocial risk, we did not further specify whether maternal education would act as a protective-*stabilizer* or protective-*enhancer*.

## Method

### Participants

Between 1976 and 1978, 4,109 students in grades one, four, and seven attending French speaking public schools were recruited from inner-city, low SES neighborhoods of Montreal,

Quebec, Canada. Both boys and girls were rated by their peers on dimensions of aggression and social withdrawal by means of a French version of the Pupil Evaluation Inventory (PEI; Pekarik, Prinz, Liebert, Weintraub, & Neale, 1976; see Serbin et al., 1998 for more detail on this measure; see Appendix B for sample items). Oversampling at the extremes of the sample (i.e., the upper tails of the aggression and withdrawal dimensions) was done deliberately when arriving at the final sample of 1,774, allowing for a range of scores, including children from across the continuum on aggression and withdrawal drawn from the same schools and neighborhoods. Using percentile cut-offs, children were identified as being at high psychosocial risk if they had extreme scores on dimensions of aggression (above the 95 percentile), withdrawal (above the 95$^{th}$ percentile), or both (above the 75$^{th}$ percentile). A normative comparison group of children who were low on these dimensions from the same schools and neighborhoods was also selected at the same time. This sample of children was subsequently followed in smaller representative subsamples at 3- to 5-year intervals, with many of the original participants having since had children themselves. A more detailed description of the original methodology can be found in Schwartzman, Ledingham and Serbin (1985). In the present study, the focus was on childhood histories of social withdrawal and histories of aggression were thus omitted from statistical analyses; research on conflict has historically emphasized aggression (on the part of either the parent and/or child; e.g., Root & Jenkins, 2005), whereas comparatively little is known about the effects of maternal childhood histories of social withdrawal on mother-child conflict.

The present study focuses on 95 mothers (mean age = 37.52) and their 9- to 13-year-old children (mean age = 10.79 years; 43% boys) who were drawn from a larger sub-sample of 175 mother-dyads from the Concordia Project. These 175 families were longitudinally followed beginning when children were preschoolers. Of the 175 dyads from the original dataset, 119 consented to participate when children were between the ages of 9 and 13 years. Of these 119, 24 were excluded in the current study: 17 completed questionnaires but chose not to participate in the videotaped mother-child interaction tasks, five had procedural errors during testing, and two were videotaped with family members other than the mother. The remaining 95 dyads that participated in the current study included 64 mothers who were original participants from the Concordia Project and 31 who were spouses of original male participants (see Appendix C for a visual conceptualization of the longitudinal and intergenerational nature of the current sample).

The study is divided into three parts for purposes of clarity and objectives. Both original female participants and spouses of original male participants ($n$ = 95) were the focus of *Part 1,* which examined core components of conflict between mothers and children during middle childhood. These 95 mother-child dyads were also included in *Part 2*, which investigated whether maternal education uniquely predicted mother-child conflict behaviors, above and beyond other markers of SES. In contrast, only original female participants ($n$ = 64) were included in *Parts 3*a and *3b.* In *Part 3a*, contributions of maternal risk factors measured at different time points during mothers' lives (i.e., social withdrawal in childhood and distress experienced years later in parenthood at the time of testing) were examined as predictors of mother-child conflict behaviors. To elucidate interactive processes between risk and protective factors, *Part 3b* examined whether maternal education moderated the effects of either of these two maternal risk variables. Spouses of original male participants were omitted from these analyses because they were not the parents with childhood histories of behavior problems and examining the same group of women provided the opportunity to detect differences between the effects of historical and concurrent indices of maternal risk. As in previous studies of the Concordia Project (De Genna, et al., 2006; Grunzeweig et al., 2009), mothers' childhood social withdrawal scores were analyzed as dimensions rather than categorical predictors to maximize statistical power. These scores were normally distributed in the present sample.

Table 1 summarizes the participants' demographic and information on other measures used in the present study, by subsample. Mothers' education was the average equivalent to a Quebec high school diploma that ends in grade 11. The mean occupational prestige rating as measured by the Standard International Occupational Prestige Scale (SIOPS; Treiman, 1977) for all mothers corresponds to the following types of jobs: office clerk, cashier and building superintendent (Ganzeboom & Treiman, 1996). Regarding marital status, 44.2% of mothers were married, 34.7% were cohabitating, 9.7% were single, 5.3% divorced, and 4.2% were separated. As the demographic characteristics suggest, mother-child dyads came from diverse educational, occupational, financial, and social backgrounds at the time of testing. Such variability is ideal as it widens the parameters being tested, thereby increasing the likelihood of determining how potential risk factors (e.g., behavioral, psychological, environmental) operate at differing levels of socio-economic risk and impact the quality of mother-child interactions.

To assess the representativeness of the current sample to those who did not participate but that are part of the larger Concordia Project, the 95 mothers who participated in the present study were compared to two samples that also included original mothers and mothers who were spouses of original fathers: one sample included 175 mothers who participated in the original dataset and the other sample was of 424 mothers from the Concordia Project who were contacted between 1995 and 1998. These samples were compared on years of education, occupational prestige, and age at birth of first child (Table 2). Z-scores revealed that mothers in the current study had 1-to-2 more years of schooling than those in the two larger samples. Occupational prestige scores did not significantly differ across these subsamples, indicating that mothers' greater educational attainment did not directly translate into their employment status. To ensure the representativeness of the 64 original mothers in the current study on dimensions of social withdrawal, comparisons were completed on this dimension using two larger subsamples comprised of only original female participants: one sample included 114 mothers who were part of the original dataset of 175 and the other sample was of 298 mothers who were contacted between 1995 and 1998 (Table 2). Z-scores revealed no significant differences, indicating that the present subsample of $n = 64$ is considered representative on dimensions of social withdrawal.

Although mothers' childhood withdrawal scores were treated as dimensions across analyses, comparisons between those with extreme scores on aggression and withdrawal (i.e., above the 95$^{th}$ percentile) and those with low scores (between 25$^{th}$ and 75$^{th}$ percentile) were conducted to ensure similarity between those with histories of behavioral risk and those without histories of behavioral risk. Participants were compared on children's age at testing, mothers' age at testing and at the birth of the first child, mothers' education in years, occupational prestige scores, and family income (Table 3). One-way ANOVAs revealed that mothers low on dimensions of aggression and social withdrawal had more years of education than those high on these dimensions, $F(63) = 7.62$, $p < .05$.

**Procedure**

Mothers who consented to participate were scheduled for a home visit (see Appendix D for the consent form), during which they participated in interviews, completed a battery of questionnaires and were videotaped interacting with their children during several tasks. Experimenters (i.e., undergraduate student and Ph.D. level research associate) were blind to mothers' risk status. For the purposes of this study, only the conflict task was selected based on

its ability to examine mother-child conflict management under a semi-naturalistic situation. The conflict task entailed a discussion that lasted up to six minutes about topics that had been chosen according to the participants' highest ratings on a conflict questionnaire that had been completed prior to the interaction. Mothers and children rated (separately) the frequency and severity of 18 different conflict issues (e.g., chores, homework, respecting parents, problems with siblings, etc.) on a 5-point Likert-scale ranging from 1 (*never a source of disagreement*) to 5 (*always a source of disagreement*). Dyads were permitted to request the next highest-ranked topic if fewer than 4 minutes had elapsed and they were no longer able to discuss the one previously given to them. Four themes were differentiated: routine chores, interpersonal relationships with parents or siblings, personal style/autonomy (e.g., appearance, choice of friends, desire for more intimacy), and regulating behavior (e.g., homework, bedtime, and curfew).

Experimenter error resulted in two changes in procedure for 28% of the overall sample. First, dyads had the conflict questionnaire in their possession and if desired, were able to freely switch to the next most highly rated topic than be provided one by the experimenter. Three of the common highest-ranked topics were ordered and circled by the experimenter to guide their selection. Second, dyads were instructed to interact for the entire 6 minutes rather than having the option of stopping after 4 minutes. For those affected by these procedural errors, we elected to end observational coding if a new topic began after 4 minutes. Furthermore, topics that were discussed for 10 seconds or less were disregarded. In a few cases, dyads disregarded instructions and discussed several topics at once. Most of the dyads who this applied to did so following the four minute cut-off, thereby eliminating this irregularity from analyses. Given that all participants were instructed to focus on a limited number of highly ranked topics and stringent coding rules were applied to those dyads where different procedures occurred, it was elected to include all dyads. One-way analysis of variances revealed that, compared to dyads without the list, those with the list discussed 0.95 more topics $F(1, 93) = 40.90$, $p < .01$, mothers' age at testing was 1.41 years greater $F(1, 93) = 4.77$, $p < .05$, mothers' age at the birth of their first child was 1.7 years greater $F(1, 93) = 5.89$, $p < .05$, and children were 0.69 years younger, $F(1, 93) = 12.89$, $p < .01$. Dyads did not differ on any of the outcome variables.

**Measures**

**Demographic Information Questionnaire (DIQ).** The DIQ was completed by the experimenter during the home visit to obtain socio-demographic information on the families,

including child age, number and birth order of children, mothers' age at testing, age at birth of first child, marital status, number of years of education, occupation, and family income.

**The Parenting Stress Index (PSI short version; Abidin, 1995)**. A French translation of the PSI was used; a 36-item self-report inventory designed to identify stressful domains of parenthood as perceived by the caregiver. Items are scored on a 5-point Likert-scale ranging from 1 (*strongly agree*) to 5 (*strongly disagree*), with higher scores representing higher stress levels. For purposes of the present study, only the Total Stress score was used, which is a summation of scores across three domains of parenting stress: the child (e.g., degree of difficultness), the parent (e.g., dissatisfaction with parenthood), and the parent-child relationship (e.g., rejection or alienation by/from the child). Validity and reliability for this measure are found to be satisfactory to excellent (Abidin, 1995; Moran, Pederson, Pettit, & Krupka, 1992).

**The Parenting Social Support Index (PSSI; Telleen, 1985).** A French translation of the PSSI was used to assess mothers' level of parenting support**.** The PSSI is a self-report measure consisting of 24 items, which tap into seven forms of support that could be received by parents: relationship with a confidant, material aid, advice about child rearing, positive feedback, assistance with household chores, child care, and social participation. Parents rate their need for each type of support on a 5-point Likert-scale ranging from 1 (*very dissatisfied*) to 5 (*very satisfied*), with higher scores representing greater perceived support. For the purposes of the current study, only the Total Support Satisfaction score was used. The PSSI has high internal reliability, concurrent validity, and detects the effects of interventions designed to decrease social isolation (Telleen, 1985).

**Symptom Checklist-90R (SCL-90R; Derogatis, 1983).** A French translation of the SCL-90 was used; a self-report measure designed to assess a broad range of psychological problems. Participants rate the degree to which they are distressed by each symptom on a 5-point Likert-scale. The items (90) are scored and interpreted based on nine primary symptom dimensions (somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism). The Global Severity Index (GSI) was used in the current study as an indicator of mothers' overall psychological distress. Validity and reliability of this measure have been found to be satisfactory to excellent, with high convergent validity with the MMPI (Derogatis, Rickels, & Rocks, 1976).

**Home Observation and Measurement of the Environment (HOME; Caldwell & Bradley, 1984).** A French translation of the middle childhood version of the HOME was administered as a measure of the quality and quantity of support and stimulation available to the child in the home environment. The HOME is a widely used standardized observational and interview instrument that is composed of 59 items clustered into 8 subscales (e.g., emotional and verbal responsiveness, encouragement of maturity, emotional climate, growth fostering materials and experiences, provision for active stimulation, family participation in developmentally stimulating experiences, aspects of the physical environment). A point is awarded to each item that is 'present', with higher scores reflecting more supportive and stimulating home environment. Reliability and validity for this measure have been found to be satisfactory to excellent (Caldwell & Bradley, 1984). The HOME has detected differences in the quality of the home environments of high-risk populations such as families living in poverty (Keltner, 1994) and mothers experiencing emotional distress (Goodman & Brumley, 1990). In addition, it has been shown to predict children's socio-emotional and cognitive development (Gottfried & Gottfried, 1984; Totsika & Sylva, 2004; Saltaris et al., 2004; Stack et al., 2012).

**Observational Coding**

**Interactions and Conflict Management Behaviors Coding System (ICMB).** The ICMB (Martin, Stack, & Ng, 2011) is an observational coding system developed by the authors designed to quantitatively capture how mothers and children discuss and manage their personal disputes. The ICMB was adapted from a pre-existing coding scheme, the Iowa Family Interaction Rating Scales (Melby et al., 1998). Videotaped mother-child interactions were observed and two categories of conflict behaviors were differentiated: Interaction and Conflict Management Behaviors. Operational definitions of all observational codes are presented in Table 4. Interaction Behaviors globally examined how mothers and children related to each other as a function of both verbal and nonverbal cues. At each 30-second interval, coders rated on a 5-point Likert-scale the degree to which both participants evidenced the following five codes: Listening, Assertiveness, Warmth, Withdrawal, and Negativity. Anchor points and midpoints for the 5-point scale were 1 (*no evidence of the behavior*), 3 (*mixed evidence, moderate levels of the behavior)* and 5 (*much evidence, high levels of the behavior*). The frequency, duration, and intensity of behaviors guided ratings. Low intensity behaviors were subtle (or covert) and brief (e.g., nod, smile, frown, or averted eye gaze). High intensity behaviors entailed more overt forms

of communication, likely having greater visible impact on the interaction (e.g., praising the others' opinion, shifting entire body away from other participant, a condescending remark with negative affect). The more frequent, long-lasting and intense the behaviors were during each 30-second interval, the higher the rating.

Conflict Management Behaviors focused solely on speech content and were meant to assess behavioral exchanges at a more molecular level than Interaction Behaviors, as well as extract certain resolution strategies. Eight Conflict Management Behaviors were differentiated: Empathy, Interpersonal Flexibility, Yield, Denial, Praise Self/Other, and Criticism Self/Other. Verbal statements were sequentially coded in the order that they were delivered. These were coded as 'thought-units', each containing one idea/argument. Thus, if more than one concept or thought was included in several statements, each would be coded separately. Conflict Management Behaviors thereby reflected frequency-counts.

Interrater reliability for Interaction and Conflict Management Behaviors was achieved by having an undergraduate student, who was blind to the hypotheses of the study, code a portion (30%) of the interactions. The undergraduate student was trained for several months prior to commencing reliability and was blind to the study hypotheses. Both the primary and secondary coders were blind to maternal risk status. Inter-observer agreement was calculated using Kappa coefficients. Reliability for each Interaction Behavior was satisfactory (i.e., .74 for Listening, .69 for Assertiveness, .74 for Warmth, .76 for Withdrawal, and .74 for Negativity). Reliability for the overall identification of Conflict Management Behaviors was satisfactory (.71). Accuracy in determining which of the eight categories Conflict Management Behaviors belonged to was excellent (.96).

**Data Preparation and Reduction**

Two datasets were created from a larger bank of data in which conflict behaviors were entered sequentially across 30-second intervals and data remained in their simplest form. In one dataset, variables were collapsed across the entire interaction. Average ratings of Interaction Behaviors were calculated by dividing the sum of behavioral ratings of each code by the total number of 30-second intervals. Average frequencies of Conflict Management Behaviors were calculated by dividing the sum of each code by the total number of topics for each dyad. Thus, Conflict Management Behaviors variables reflected an average of each category *per issue* or *problem*.

In the second dataset, mother-child behaviors were divided into three time periods based on the total number of intervals for each dyad. For example, interactions consisting of 12 intervals (i.e., six minutes) were divided into three equal periods of four intervals. Data were divided separately for each dyad since dyads varied in their total number of intervals. When interactions could not be divided evenly, the first and third periods were made equal. For example, interactions consisting of 10 intervals (i.e., 5 1/2 minutes) were divided into a first period of three intervals, a second period of four intervals and a third period of three intervals. Due to low frequencies, Conflict Management Behaviors were not subdivided into three periods; doing so would have resulted in too greatly skewed distributions.

## Results

Prior to conducting statistical analyses, descriptive statistics were used to assess the normality of the distribution, skewness of each variable, and to identify outliers. Outliers were systematically assigned a value two times the standard deviation to the mean. Despite bringing in extreme scores, Conflict Management Behaviors remained skewed. Those with very low average frequencies (i.e., 0.20 per topic or less) were omitted from analyses to eliminate substantially skewed variables (i.e., mother Yield, mother Deny, mother and child Criticize Self, mother and child Praise Self, and child Praise Other). Remaining Conflict Management Behaviors were not transformed as these represented naturally infrequent behaviors.

Hierarchical regressions were employed to address the research questions in *Parts 2* and *3*. All analyses involved a minimum of 15 subjects per predictor variable, a number above the recommended minimum requirement by Tabachnick and Fidell (1996). Significant results ($p < .05$) are reported in the text. Trends ($p < .10$) were only reported if the results were consistent with hypotheses and the literature. Mothers' findings are presented first (when relevant), followed by those for children. The findings pertaining to Interaction Behaviors are presented before those for Conflict Management Behaviors. Intercorrelations among all variables analyzed in regressions are provided in Tables 5 (Part 2) and 6 (Part 3). Summary tables for regression analyses are reported in Table 7. Summary of non-significant findings are in Appendix B.

### Part 1. Description of the Conflict Behaviors

The overall objective of *Part 1* ($n = 95$; original female participants and spouses of original male participants) was to explore how mother-child conflict is expressed during middle childhood by examining several key components of conflict, including the types of conflict

behaviors displayed, variations in conflict behaviors throughout the length of discussions, the topics that provoke disagreement, as well as the frequency and severity of disagreements.

**Conflict Behaviors.** The means and standard deviations for all observational variables are reported in Table 8, in addition to percentage scores created for Conflict Management Behaviors to permit meaningful comparisons (i.e., reflecting the sum of each variable relative to the total sum of all verbal statements, by topic). Average ratings of Interaction Behaviors suggested that mothers and children were moderately attentive, assertive and warm, as well as rarely demonstrated overt forms of aggressive behavior. Children were more likely than mothers to be withdrawn (e.g., averted eye gaze and body posture, and passive participation). High variability among Conflict Management Behaviors rendered the means difficult to interpret. An examination of percentage scores revealed that mothers generally made Empathy statements the most, followed by Criticize and Praise Other. Mothers almost never Praised themselves, Yielded and Denied. They also never Criticized themselves. In contrast, children Denied and Yielded the most and Criticized themselves and Praised (both Self and Others) the least. Their number of Empathy statements was equally low.

To explore whether mothers' and children's Interaction Behaviors varied across the length of their discussion, a two-way mixed-model analysis of variance with Time Period (first, second and third) as a within-subjects factor and Participant (mother and child) as a between-subject factor was conducted. Although there were no interaction effects, findings revealed a significant main effect for Time Period with Withdrawal as an outcome variable $F(2) = 32.16$, $p = .000$, $\eta_p^2 = .146$. Mothers and children gradually became more withdrawn from the first period ($M = 2.17$, 95% CI[2.66, 2.98]) to the second ($M = 2.36$, 95% CI[2.24, 2.48]) to the third ($M = 2.58$, 95% CI[2.44, 2.71]). A significant main effect was also found for Participant with four outcome variables: Listening $F(1, 188) = 17.14$, $p = .000$, $\eta_p^2 = .084$, Assertiveness $F(1, 188) = 122.21$, $p = .000$, $\eta_p^2 = .394$, Warmth $F(1. 188) = 6.62$, $p = . 011$, $\eta_p^2 = .034$, and Withdrawal $F(1. 188) = 145.47$, $p = . 000$, $\eta_p^2 = .436$. Compared to children, mothers demonstrated better listening skills ($M = 3.17$, 95% CI[3.03, 3.31] versus $M = 2.77$, 95% CI[2.63, 2.90]), more assertiveness ($M = 3.38$, 95% CI[3.15, 3.40] versus $M = 2.28$, 95% CI[2.15, 2.40]), more warmth ($M = 2.67$, 95% CI[2.50, 2.84] versus $M = 2.35$, 95% CI[2.18, 2.53]), as well as less withdrawal ($M = 1.69$, 95% CI[1.53, 1.85] versus $M = 3.04$, 95% CI[2.89, 3.20]).

**Conflict Topic and Intensity.** The topic and intensity of conflicts are considered core features of interpersonal conflict that signal the significance of issues and provide indices of family functioning (Adams & Laursen, 2001; Foster & Robins, 1997; Shantz, 1987). For the purposes of the current study, only the first topic was selected in order to limit findings to issues that mothers and children rated as most problematic in their relationship. Overall, half of mother-child dyads selected *chores* as their first topic of discussion ($N = 47$; 49.5%), followed by *interpersonal relationships* ($N = 30$; 31.6%), *regulating behavior* ($N = 14$; 14.7%), and finally *personal style/autonomy* ($N = 4$; 4.2%).

Conflict intensity was assessed using mothers' and children's ratings from the Conflict Questionnaire. Mean rating for the first topic was 3.41 (range: 1-5, $SD = 1.01$) for mothers and 3.55 (range: 1-5, $SD = 1.17$) for children. These average scores indicate that most dyads discussed personally relevant issues that generated moderate levels of opposition. The ranges also suggest that some dyads discussed less problematic topics whereas others considered their disputes to be more frequent and severe. Exploratory analyses revealed that these conflict intensity ratings negatively correlated with mothers' Positive Engagement ($r = -.37$, $p = .000$) and positively correlated with children's Negative Disengagement ($r = .24$, $p = .02$) and Denial statements ($r = .29$, $p = .004$). Thus, mothers were less positive and constructive when discussing problematic issues and similarly, their children became more withdrawn, disruptive, and more likely to deny responsibility during these discussions.

**Part 2. Maternal Education and Mother-Child Conflict Behaviors**

The overall objective of *Part 2* ($n = 95$; original female participants and spouses of original male participants) was to examine the unique effects of mothers' education on mother-child conflict behaviors, above and beyond other markers of SES. To reduce the number of analyses, two principle components factor analyses with oblique rotation (using Eigenvalues greater than 1 criterion) were conducted on mother and child Interaction Behaviors separately. In both analyses, two factors were retained. For mothers, Factor 1 explained 62.10% of the variance and was labelled Positive Engagement (high Listening, Assertiveness, and Warmth, and low Negativity). For children, Factor 1 explained 56.66% of the variance and was also labelled Positive Engagement (i.e., high on Listening, Assertiveness, and Warmth and low Withdrawal). Factor 2 for mothers explained 21.67% of variance and was labelled Disengagement (i.e., low Assertiveness and high Withdrawal). For children, Factor 2 accounted for 20.47% of variance

and was labelled Negative Disengagement (i.e., low Listening and Warmth, and high Negativity). The factor loadings are presented in Table 9.

In each regression, Family Income and Occupational Prestige were entered in the first step, followed by Maternal Education (in years) in the second step. A third step was included with Child Age and Gender as control variables to examine their association with Maternal Education once Family Income and Occupational Prestige were considered.

For mothers' Positive Engagement, the regression accounted for 10.9% (adjusted) of the total variance. At steps 2 and 3, Maternal Education was significant ($\beta$ = .24, $p$ =.04, $r^2$ = .05). At step 3, Child Gender was significant ($\beta$ = .22, $p$ =.03, $r^2$ = .05). Mothers were more likely to interact in a prosocial and constructive manner when they were more highly educated and when their child was a girl.

For mothers' Disengagement, the hierarchical regression accounted for 5.9% (adjusted) of the total variance. At steps 2 and 3, Maternal Education was significant ($\beta$ = -.33, $p$ =.006, $r^2$ = .08), indicating that mothers with higher levels of education were less likely to lack assertiveness skills and be withdrawn during mother-child interactions.

For children's Positive Engagement, the regression accounted for 21.7% (adjusted) of the total variance. At steps 2 and 3, Maternal Education was significant ($\beta$ = .28, $p$ =.01, $r^2$ = .07). At step 3, Child Gender was significant ($\beta$ = .37, $p$ < .001, $r^2$ = .15). Children were more likely to interact in a prosocial and constructive manner when their mothers were more highly educated and when they were girls.

For children's Negative Engagement, the hierarchical regression accounted for 6.3% (adjusted) of the total variance. At step 1, Family Income was significant ($\beta$ = -.21, $p$ =.047, $r^2$ = .04), suggesting that children of families with lower annual incomes were more likely to exhibit poor listening, low warmth, and interpersonal negativity. However, this association became non-significant in steps 2 and 3.

For mothers' Empathy statements, the regression accounted for 5.8% (adjusted) of the total variance. At step 3, Child Age was significant ($\beta$ = .30, $p$ =.005, $r^2$ = .09), indicating that mothers were more likely to demonstrate perspective-taking and express sympathy when children were older.

For mothers' Criticize Other statements, the regression accounted for 7.9% (adjusted) of the total variance. At step 3, Child Gender was significant ($\beta$ = -.27, $p$ =.01, $r^2$ = .07), indicating that mothers were more critical with their sons rather than their daughters.

For children's Empathy statements, the regression accounted for 2.8% (adjusted) of the total variance. At step 1 and throughout all steps, Occupational Prestige was significant ($\beta$ = -.31, $p$ =.008, $r^2$ = .08). Children were more likely to demonstrate perspective-taking and express sympathy when their mothers held lower-status jobs.

**Part 3. Risk and Protective Factors Associated with Mother-Child Conflict**

*Parts 3a* and *3b* ($n$ = 64; original female participants) derive from the same set of analyses. In *Part 3a*, the overall objective was to examine the contributions of two maternal risk factors measured at different time points during mothers' lives: (1) childhood histories of social withdrawal, and (2) maternal distress levels at the time of testing determined by four measures described further below. In *Part 3b*, we investigated whether maternal education served as a protective factor (i.e., moderator) for either one of these risk factors. Separate regressions were conducted for mothers' childhood histories of social withdrawal and concurrent distress levels. Given the relatively small sample size and the number of analyses that was planned, Child Age and Gender were omitted as control variables to maximize statistical power.

**Maternal Histories of Social Withdrawal.** For all regressions in this section, mothers' Withdrawal was entered first, followed by Maternal Education (in years) in the second step. The interaction between Education and maternal histories of Withdrawal (centered) was entered in the third step.

For mothers' Positive Engagement, the hierarchical regression accounted for 7.6% (adjusted) of the total variance. At step 2, Maternal Education was significant ($\beta$ = .29, $p$ =.03, $r^2$ = .07), yet became nonsignificant at step 3. At step 3, the interaction between Education and Withdrawal emerged as a trend ($\beta$ = .25, $p$ =.085, $r^2$ = .05).

For mothers' Disengagement, the regression accounted for 12% (adjusted) of the total variance. At steps 2 and 3, Maternal Education was significant ($\beta$ = -.28, $p$ =.04, $r^2$ = .07), indicating that mothers with higher levels of schooling were more attentive, assertive, warm, and engaged with their children. At step 3, the interaction term of Education and Withdrawal was a trend ($\beta$ = -.25, $p$ =.077, $r^2$ = .05).

Given their relevance to the study's hypotheses, these two trends regarding the interaction between Education and histories of Social Withdrawal warranted further attention and exploratory analyses were conducted. Bivariate correlations were conducted between each of the five Interaction Behaviors (i.e., Listening, Assertiveness, Warmth, Withdrawal and Negativity) and the interaction between Education and Withdrawal. The interaction term was found to be significantly associated with maternal Assertiveness, Withdrawal, and Negativity. Hierarchical regressions were conducted with these three variables.

For mothers' Assertiveness, the regression accounted for 12.5% (adjusted) of the total variance. At step 2, Maternal Education was significant ($\beta$ = .34, $p$ =.01, $r^2$ = .10) and became a trend ($p$ = .066) at step 3. At step 3, the interaction term of Education and Withdrawal was significant ($\beta$ = .29, $p$ =.04, $r^2$ = .07). As shown in Figure 1, higher levels of Maternal Education enhanced mothers' ability to speak in a firm, straightforward and non-threatening manner *only* when mothers had been socially withdrawn in childhood. For mothers who were low on Withdrawal, their degree of assertiveness remained the same regardless of their number of years of schooling.

For mothers' Negativity, the regression accounted for 11.8% (adjusted) of the total variance. At step 2, Maternal Education was significant ($\beta$ = -.30, $p$ =.02, $r^2$ = .08), yet became nonsignificant at step 3. At step 3, the interaction term was significant ($\beta$ = -.32, $p$ =.02, $r^2$ = .09). As shown in Figure 2, higher levels of education decreased mothers' negative behavior *only* when mothers had higher levels of Withdrawal in childhood. In contrast, mothers who were low on Withdrawal in childhood had similar levels of negative behavior regardless of their educational attainment.

For children's Denial statements, the regression accounted for 2.1% (adjusted) of the total variance. At step 1, maternal childhood histories of Withdrawal was significant ($\beta$ = -.25, $p$ =.04, $r^2$ = .07), indicating that children of mothers who were withdrawn in childhood were less likely to avoid personal responsibility during mother-child conflict interactions. However, this association became a trend at step 2 ($\beta$ = -.25, $p$ =.06) and non-significant at step 3.

**Maternal Concurrent Distress**. Given the number of planned analyses, a maternal concurrent distress factor score was derived from four measures: parenting stress (PSI), maternal social support (PSSI), psychological functioning (SCL-90R), and the stimulation and support provided to the child in the home environment by the parents (HOME). Previous research

conducted with subsamples of the Concordia Project has successfully created similar indices of mothers' current risk status (e.g., Bentley, 2002; Stack et al., 2012). The principal components factor analysis (oblique rotation with Eigenvalues greater than 1 criterion) retained one factor and explained 49.2% of the variance (i.e., high maternal stress, poor maternal psychosocial functioning, low social support, and low quality of home environment). The factor loadings are presented in Table 10. The variable HOME contained 3 missing cases. It was elected not to replace these missing variables since the scores derived from experimenters' observational ratings. Thus, the sample used to investigate contributions of maternal concurrent distress was reduced from 64 to 61 mother-child dyads.

For each regression analysis, Maternal Concurrent Distress was entered first. In the second step, Maternal Education (in years) was entered, followed by the interaction of Education and Concurrent Distress (centered by standardization) in the third step.

For mothers' Positive Engagement, the regression accounted for 10.6% (adjusted) of the total variance. At step 1 and throughout all steps, Maternal Concurrent Distress was significant ($\beta$ = -.33, $p$ =.02, $r^2$ = .10), indicating that mothers who had higher levels of distress at the time of testing (i.e., high parental stress, elevated symptoms of psychopathology, poor social support, and low quality home environment) were less likely to behave in a warm, responsive, assertive, and problem-focused manner.

For children's Positive Engagement, the regression accounted for 5.8% (adjusted) of the total variance. At step 1, Maternal Concurrent Distress was significant ($\beta$ = -.26, $p$ =.04, $r^2$ = .07), indicating that children of mothers experiencing psychosocial distress at the time of testing exhibited poorer listening and assertiveness skills, less warmth and more negativity. Maternal Concurrent Distress was no longer significant at steps 2 and 3.

## Discussion

Consistent with the overarching goal of the present study, findings strengthened and advanced current knowledge of several key components of mother-child conflict in middle childhood: a developmental period that has been largely overlooked in the literature. The rich dataset of observational measures that was developed for purposes of the present study highlighted the hierarchical nature of mother-child relationships, as well as mothers' superior communication and interpersonal skills. For example, children were more likely to be submissive, withdrawn, and defensive, whereas mothers were more attentive, assertive, and

actively engaged. Similar interaction patterns have been reported in previous studies on mother-child conflict and interpreted within the context of power and competency differentials (Adams & Laursen, 2001; Branje, 2008; Hughes et al., 2004; Della Porta & Howe, 2012; Recchia et al., 2010). Due to the limited research comparing mother-child conflict across middle childhood and adolescence, it is difficult to precisely determine how these relational characteristics change over time to eventually become more egalitarian. One way in which such developmental changes have been brought to the forefront is by demonstrating how rates of compromise, which were relatively low in the current study, begin to rise in mid-adolescence (Smetana et al., 2001; 2003).

Another way in which mother-child conflict in middle childhood may be characterized differently from other developmental periods is in the types of issues that provoke disagreement. Our findings revealed that issues related to parent-generated activities and relations between family members represented the greatest sources of disagreement. Moreover, descriptive results suggested that conflicts related to autonomy (e.g., choosing friends, body image) may be proportionally less important during middle childhood (at least in this sample of high-risk dyads) than in adolescence (Clemans, Miller, Graber, & Brooks-Gunn, 2007; Riesch et al., 2000). That mothers tended to express high levels of both empathy and critical statements appears consistent with their socialization goals and desire to correct unwanted behavior (Grusec & Davidov, 2007). Together, findings from the present study call for more research on mother-child conflict in middle childhood in order to better understand how its unique features and processes differ from those in early childhood and adolescence. Studies that compare mother-child conflict across developmental periods would be particularly valuable.

While some dyads reported more extreme levels of conflict, average ratings provided by mothers and children on the frequency and severity of conflicts indicated that these topics represented personally relevant issues that were moderately problematic in their relationship. Consistent with these ratings and findings from previous studies on mother-child conflict (Adams & Laursen, 2001; Branje, 2008; Capaldi et al., 1994; Forgatch, 1989), mothers and children tended to display 'neutral' behaviors that were neither very warm nor very hostile; an approach that seems appropriate to the given context. Interestingly, dyads were found to be more withdrawn (e.g., averted eye gaze and discussing tangential issues) during the middle and end of discussions compared to the beginning. Furthermore, conflict topics with high frequency and severity ratings were associated with less positive and constructive conflict behaviors. These

findings support the contention that emotional arousal signals the significance of issues (Laursen & Koplas, 1995) and suggest that interpersonal skills between mothers and children deteriorate as conflict increases.

**Historical and Concurrent Risk Factors**

A primary objective of the current study was to elucidate maternal risk variables that predict suboptimal conflict behaviors between mothers and children. We examined the influence of maternal childhood histories of social withdrawal and concurrent levels of distress (an index represented by high maternal stress, poor psychological functioning, low perceived social support, and poor quality home environments). Between these two risk factors, the present findings demonstrated that maternal distress was the variable most strongly related to maladaptive and potentially destructive mother-child conflict behaviors. Specifically, more highly distressed mothers were less likely to convey warmth, demonstrate good listening and assertiveness skills, as well as more likely to display interpersonal negativity. Children of more distressed mothers also tended to exhibit poorer communication skills and behave in a less empathic, prosocial and cooperative manner; an association that weakened once control variables were entered. Overall, these results are consistent with a growing body of evidence indicating that psychosocial risk factors hinder mothers' nurturing and supportive qualities (Arditti et al., 2010; McLoyd et al., 2006; Pianta & Egeland, 1990; Weinfeld, Ogawa, & Egeland, 2002). Family Stress Theory (Conger et al., 2010) posits that cumulative contextual risk factors are associated with a decline in coping abilities. As such, mothers from disadvantaged backgrounds with high levels of distress may perceive disagreements with children as hassles that evoke irritation and anger rather than opportunities to model or coach adaptive socio-emotional skills. Although findings from the current study are correlational, they support Patterson's (1982) theory of coercive processes that contends that aggressive responses in one individual triggers like-minded reactions in others, thereby leading to a cycle of aggression that escalates. Research shows that children who repeatedly experience these types of harsh exchanges with mothers during disagreements are less likely to resolve their disputes effectively and are more likely to learn maladaptive ways of interacting with others and handling problems (Forgatch & DeGarmo, 2002; Foster & Robin, 1997). The quality of the mother-child relationship is also hindered (Branje, 2008; Stack et al., 2012).

Surprisingly, results did not support our hypothesis that social withdrawal is a risk factor that directly hinders the quality of mother-child conflict behaviors. Although social withdrawal has been found to be a stable behavioral pattern (Oh et al., 2008; Rubin et al., 1995) that is associated with negative psychosocial outcomes that spill into the home environment (Moskowitz & Schwartzman, 1989; Serbin et al., 2002; Serbin et al., 2000; Stack et al., 2012), its pathways to risk can be covert and therefore hard to detect. Nevertheless, other studies within the Concordia Project have found that mothers who were socially withdrawn in childhood are less responsive during parent-child interactions (Stack et al., 2012). One possibility is that the measures used in the present study to describe withdrawn/unresponsive behaviors were too broad to capture the subtly maladaptive ways socially withdrawn mothers engage in when discussing conflicts with their children. It is also possible that maternal childhood histories of social withdrawal influence mother-child conflict behaviors via indirect channels that were not considered in the current study, such as intellectual ability. Early research from the Concordia Project found that girls who were highly socially withdrawn were more likely to experience academic failure (Schwartzman et al., 1985). More recently, their offspring have been found to have lower verbal IQ scores (Martin et al., unpublished manuscript). Within the context of interpersonal problem-solving, maternal childhood histories of social withdrawal have also been associated with poor communication skills in the form of vague and unstructured decision-making; Martin et al., 2012). Together, these findings suggest that some socially withdrawn girls may have lower cognitive abilities that are transferred to their offspring (likely through biological and environmental mechanisms), which in turn, hinder their ability to effectively express their disagreements and reach successful resolutions. One direction for future research therefore would be to focus on more complex verbal communication abilities of dyads with mothers with childhood histories of social withdrawal during conflicts. For example, Rueter and Conger (1995) examined how family members facilitate each other's engagement by measuring the frequency and quality of clarifying and summarizing statements, as well as guiding questions.

**Maternal Education**

Although maternal childhood histories of social withdrawal did not directly contribute to mother-child conflict behaviors, findings from the present study partially supported hypotheses by demonstrating that the negative effects of social withdrawal were moderated by mothers' educational attainment (in years) for assertiveness and negativity interaction behaviors. That is,

maternal education operated as a protective factor such that, the more years of education mothers with histories of social withdrawal had achieved, the more assertive they became and the less they tended to display negativity towards their children. Importantly, maternal education had little-to-no effect on mothers' conflict behaviors when dimensions of social withdrawal were low. It is important to note that protective factors differ from assets because assets contribute to positive outcome through compensatory processes; the more assets one has (e.g., self-esteem, positive outlook on life), the greater the likelihood of counterbalancing the negative effects of adversity (Fergusson & Horwood, 2003; Mannes, Roehlkepartain, & Benson, 2005). As such, it has been argued that protective factors are more meaningful than assets because they have particular significance in high-risk populations and unlike assets, are considered to be more than the inverse of risk factors (Lansford et al., 2006; Rutter, 1985). Furthermore, identifying protective factors (and their underlying mechanisms) can further inform prevention and intervention efforts and programs so that factors most relevant to vulnerable children are targeted. According to Luthar, Cicchetti, and Becker's (2000) system for classifying protective factors, the interaction between maternal histories of social withdrawal and maternal education found in this study was indicative of a protective-*enhancing* effect. That is, the protective factor (i.e., maternal education) engages with adversity (i.e., maternal childhood histories of social withdrawal) such that positive outcomes (i.e., greater assertiveness and less negativity) augment with increasing risk.

The fact that maternal education did not operate as a protective factor for mothers with high levels of distress at the time of testing (contrary to hypotheses) implies that maternal education engages with adversity differently depending on the type of risk factors experienced. Moreover, that maternal education was a protective factor for mothers with childhood histories of social withdrawal and not for those with concurrent levels of distress suggests that at least some transactional processes may stem from *early* childhood experiences that culminate into adulthood. Data collected when Concordia Project participants were children indicate that those identified as socially withdrawn were more susceptible to negative self-perceptions about academic performance and early school drop-out (Moskowitz & Schwartzman, 1989; Serbin et al., 2011; Stack et al., accepted). Positive educational experiences may have buffered or reduced feelings of low self-worth by providing a sense of accomplishment, allowing children to better handle life challenges and acquire more positive life experiences. Alternatively or in

conjunction, attending school may have increased the number of quality peer relationships, thereby decreasing social isolation and allowing socially withdrawn girls to develop better social skills, including assertiveness and prosocial behavior. While these ideas are consistent with a social causation view (Haas, 2006; Wadsworth & Achenbach, 2005), it is also possible that socially withdrawn girls who pursued higher levels of education may have been advantaged by individual characteristics or dispositions related to intelligence or personality, as posited by social selection perspectives (McLeod & Kaiser, 2004). According to the interactionist model of human development, individual characteristics interact with the broader socio-economic context to produce adaptive and maladaptive outcomes (Conger et al., 2010; Conger & Donnellan, 2007). Thus, more highly educated mothers with childhood histories of social withdrawal may possess assets or dispositions that facilitate academic success (e.g., intellectual capacity and adaptive personality traits) that, in turn, placed them on a path leading to more favourable circumstances. More research is warranted to elucidate these processes, as well as examine how maternal education interacts with adversity across high-risk populations.

Although it was beyond the scope of the current study to pinpoint the mechanisms that underlie the protective role of maternal education for socially withdrawn girls, one of our key objectives was to assess whether the positive effects of maternal education on mother-child conflict behaviors differed from those of other markers of SES, namely mothers' occupational prestige and average yearly family income. Given that education is a component of SES that can influence occupation and income (Conger et al., 2010; Krieger, Williams, & Moss, 1997), a common assumption is that all three variables work via similar processes and pathways (e.g., economic stability, lowered economic pressure/stress, greater affordability of and access to goods and services, as well as ability to live in neighborhoods that foster healthy child development). As expected, our results challenged this assumption by demonstrating that maternal education is directly associated with mother-child conflict behaviors, above and beyond the effects of occupational prestige and family income. Specifically, mothers with higher levels of education demonstrated more constructive interaction behaviors including greater listening, assertiveness, warmth, as well as less withdrawal and negativity. Children with more highly educated mothers were also more attentive, more assertive, warmer, as well as less withdrawn. Similarly, previous research, including studies within the Concordia Project, highlights education as an important resource in supporting parenting and children's outcomes (Booth, Rose-Krasnor, & Rubin, 1991;

Bornstein & Putnick, 2012; Brody & Flor, 1998; Callahan & Eyberg, 2009; Carr & Pike, 2012; DeGenna, Stack, Serbin, Ledingham, & Schwartzman, 2006; Magnuson, 2007; Stack et al., 2015; Temcheff et al., 2008).

Maternal education may operate in ways that are distinct from occupational prestige and family income in a number of ways. For example, research has shown that schooling plays an important role in socializing children about social rules and mores, having implications for identity formation and behavioral tendencies (Elstad, 2010). Institutionalized systems of learning are also designed to sharpen individuals' ability to communicate and problem-solve effectively, as well as provide a larger repertoire of strategies and cognitive resources (Blechman & McEnroe, 1985; Neitzel & Stright, 2004; Rogoff & Chavajay, 1995). While good employment and financial stability in adulthood are important for diminishing stress and promoting mental health (Conger et al., 2010), the advantages associated with education may differ in that they have transformative potential during early developmental periods known to be critical in shaping socio-emotional and cognitive development.

**Conclusions and Implications**

The design and results of the present study advanced current understanding of both positive and negative conflict behaviors in mother-child interactions, as well as addressed an important gap in the literature by investigating how mother-child conflict manifests in late middle childhood. Using observational measures, a rich dataset was created comprised of (1) global ratings of communication and interpersonal behaviors, and (2) frequencies of verbal statements designed to assess conflict management behaviors at a more molecular level. Whereas the majority of studies to date focus on only one component of mother-child conflict, often through self-report methods, we offered a more comprehensive, dynamic, and naturalistic analysis by examining several components with both self-report and observational data. Framed within an ecological approach (Bronfenbrenner, 1979), the present study also underscored the role of macro-level processes (psychosocial and demographic) that influence conflict behaviors in mother-child interactions. To our knowledge, our study is among the first to tease apart variance accounted for by family income and mothers' occupational prestige within the context of mother-child conflict in order to assess whether factors other than SES may explain the benefits of maternal education to parenting. In accordance with developmental psychopathology models (Cichetti, 2006, 2013), the design of our study went beyond the examination of single risk

predictors to elucidate how interactive processes between risk and protective factors contribute to pathways leading to adaptive and maladaptive outcomes in socio-economically disadvantaged communities. As far as we can determine, the present study is also the first to test statistical models of resiliency (see Luther et al., 2000) with maternal education, thereby demonstrating that maternal education operates as a protective-*enhancing* factor for mothers with maternal childhood histories of social withdrawal and not for concurrently distressed mothers.

Several limitations should be considered in the interpretation of the present findings, including the inclusion of only one time point and the semi-naturalistic nature of the conflict task. Perhaps one of the most significant limitations is the correlational nature of the data which made it impossible to determine the direction of effects that were highlighted herein. For example, the finding that maternal concurrent distress was related to poorer quality communication skills and fewer prosocial behaviors suggests that distress *causes* mothers' propensity towards negative conflict behaviors. However, these highly distressed mothers may have had poorer communication and interpersonal skills at the outset regardless of their distress levels that may have lead to maladaptive parenting behaviors and poor quality mother-child interactions. At the same time, it is important to consider that interactions within parent-child dyads are co-regulated, co-constructed, and bi-directional (Fogel & Garvey, 2007; Sameroff, 2009; Sameroff & Fiese, 2000), implying that linear causal effects are unlikely. That mothers and children in the current study appeared to reciprocate both positive and negative behaviors reflects the bi-directional nature of mother-child interactions (Kuczynski & Mol, 2015).

Equally important to consider as a limitation is the fact that social withdrawal was broadly measured as one dimension, whereas research shows that social withdrawal is a multidimensional construct that encompasses all types of solitary behaviors, including, but not limited to: behavioral inhibition, anxious withdrawal, social reticence, preference for solitude, social avoidance, and shyness (Rubin & Barstead, 2014). While social withdrawal has been identified as a risk factor for maladjustment (for a review see Rubin, Burgess, Kennedy, & Stewart, 2003), not all facets of social withdrawal are uniformly maladaptive, nor have the same functions, or are driven by the same motivations (Rubin & Coplan, 2004). For example, individuals who prefer to be alone, deny feelings of loneliness, and are minimally affected by peer exclusion do not necessarily experience maladjustment (Rubin, Coplan, & Bowker, 2009). By examining social withdrawal as an umbrella construct, we were therefore unable to isolate the forms of solitary

behavior most strongly associated with maternal education. Nevertheless, results from the present study offer an important first step for informing future research on the interplay between social withdrawal and maternal education.

Given that children learn from their mothers through social learning processes such as observation and modeling, findings from the current study demonstrate the need to provide greater support for women in low socio-economic neighborhoods who may be experiencing multiple stressors and struggling to meet the demands of parenting. Prevention programs designed to support women from disadvantaged socio-economic backgrounds *before* they become distressed are warranted. In particular, results from the present study point to education as a valuable mechanism for change that is especially viable given that its infrastructure is already in place in today's North American societies. Encouraging girls from low SES backgrounds, particularly in the context of the present study those who present as socially withdrawn and/or isolated, to pursue higher levels of education may have profound repercussions for their socio-emotional development and ability to effectively manage parent-child disputes and ultimately, fostering healthier parent-child relationships. Given that parent-child conflict is a daily occurrence in most households (Laursen & Collins, 1994), this represents an important component of mother-child relationships. The findings from the current study also highlight the need for parent-training programs geared towards helping mothers with psychological issues and their children communicate in a more constructive and nonthreatening manner. Such interventions have profound implications for children's socio-emotional growth and have the potential to disrupt cycles of intergenerational risk.

Table 1

*Means (Standard Deviations) of Demographic and Maternal Distress Variables, by Subsample*

| | Parts 1 & 2 | Part 3 |
|---|---|---|
| | (*n* = 95) | (*n* = 64) |
| Children's age at testing | 10.79 (0.89) | 10.88 (0.95) |
| Mothers' age at testing | 37.52 (2.89) | 37.57 (2.49) |
| Mothers' age at first child (years) | 25.03 (3.16) | 24.79 (3.00) |
| Mothers' withdrawal (z-score) | 0.39 (0.99) | 0.57 (1.03) |
| Mothers' education (years) | 12.59 (2.37) | 12.39 (2.47) |
| Occupational prestige | 37.98 (11.73) | 38.33 (11.59) |
| Family Income | 56297 (30352) | 53847 (27881) |
| Index of total parental stress | 67.02 (19.94) | 69.46 (20.93) |
| Total support satisfaction | 4.92 (1.47) | 4.93 (1.44) |
| Global Severity Index of SCL-90R | 51.72 (10.03) | 52.73 (10.04) |
| HOME (z score) | 0.16 (0.96) | 0.04 (1.05) |

Table 2

*Representativeness of Mothers (Within-Mean Comparisons)*

| | Original mothers and spouses | | | Original mothers | | |
|---|---|---|---|---|---|---|
| | Parts 1 & 2 | Concordia Project | | Part 3 | Concordia Project | |
| | *n* = 95 | *n* = 175 | *n* = 424 | *n* = 64 | *n* = 114 | *n* = 298 |
| Mothers' age at first child (years) | 25.03 (3.16) | 24.09 (3.66) | 24.54 (3.64) | | | |
| Mothers' education (years) | 12.59 (2.37) | 11.81 (2.29)* | 11.79 (2.33)* | | | |
| Occupational prestige | 37.98 (11.73) | 38.42 (10.91) | 38.19 (11.16) | | | |
| Mothers' withdrawal (z-score) | | | | 0.57 (1.03) | 0.45 (0.98) | 0.38 (0.97) |

*Note. *Z-score greater than 1.96, indicating a significant difference.*

Table 3

*Mean (Standard Deviation) of Demographic Information by Risk Status (n =64)*

| | Original Mothers | |
|---|---|---|
| | High Scores[a] N = 33 | Low Scores[b] N = 31 |
| Children's age at testing | 10.81 (0.84) | 10.96 (1.07) |
| Mothers' age at testing | 37.51 (2.61) | 37.62 (2.39) |
| Mothers' age at first child (years) | 24.66 (3.25) | 24.92 (2.77) |
| Mothers' education (years) | 11.61 (2.03) | 13.23 (2.64)* |
| Occupational prestige | 35.72 (9.04) | 41.09 (13.40) |
| Family Income | 52438 (25925) | 55348 (30182) |

*Note:* Higher scores[a] refers to mothers with scores above the 95th percentile on one dimension of aggression or social withdrawal or above the 75th on both. Low scores[b] refers to mothers with scores between the 25th and 75th percentile on both dimensions.* $p < .05$.

Table 4

*Operational Definitions for the Interactions and Conflict Management Behaviors Coding System (ICMB; Martin, Stack, & Ng, 2011)*

| Code | Description |
|---|---|
| **Interaction Behaviors** | |
| Listening | Extent to which a participant listens to the other in an engaging, responsive, and validating manner |
| Assertiveness | Extent to which a participant expresses him or herself through clear, appropriate, neutral, and/or positive avenues using an open, straightforward, self-confident, non-threatening, and non-defensive style |
| Warmth/Support | Extent to which a participant expresses care, concern, support, affection, and/or encouragement towards the other participant |
| Withdrawal/Avoidance | Extent to which a participant physically, verbally, and nonverbally orients him/her self away from the other participant and/or the conflict discussion |
| Negativity | Extent to which a participant demonstrates negative behavior (e.g., over-controlling, disapproving, rejecting, contemptuous, critical, and/or hostile) |
| **Conflict Management Behaviors** | |
| Empathy | Expressing understanding, sympathy and/or concern towards another who may be negatively affected by problem or their actions |
| Interpersonal Flexibility | Modifying or expressing a willingness to modify one's opinions, needs, and/or goals in a way that facilitates shared understanding and/or the reaching of a common goal |
| Praise | Flattery, encouragement, approval, and/or kindness towards oneself or another |
| Denial | Rejecting the existence of or personal responsibility for a past or present situation for which one actually is responsible or shares responsibility |
| Yield | Bending to the other' participant's will; reluctantly agreeing; giving up under pressure |
| Criticize | Statements intended to harshly judge, blame, reject, ridicule, and/or belittle oneself or another |

Table 5

*Intercorrelations among the Variables Examined in the Regression Analyses for Part 2 (n =95)*

| Measure | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Maternal Education | - | | | | | | | | | | |
| 2. Occupational Prestige | .41** | - | | | | | | | | | |
| 3. Family Income | .40** | .32** | - | | | | | | | | |
| 4. Child Age | -.14 | -.11 | -.13 | - | | | | | | | |
| 5. Child Gender | .00 | -.06 | -.09 | -.18 | - | | | | | | |
| 6. Mother Positive Engagement | .27** | .07 | .16 | -.22* | .24* | - | | | | | |
| 7. Child Positive Engagement | .28** | .07 | .09 | -.24* | .40** | .51** | - | | | | |
| 8. Mother Disengagement | -.30** | -.10 | -.07 | .08 | -.12 | -.35** | -.32** | - | | | |
| 9. Child Negative Engagement | -.20 | .18 | -.25* | .22* | .01 | -.33** | -.28** | .09 | - | | |
| 10. Mother Interpersonal Flexibility | -.05 | .02 | -.04 | .13 | .10 | .01 | .08 | .27** | .01 | - | |
| 11. Child Interpersonal Flexibility | .08 | .04 | .07 | .00 | .11 | .20 | .34** | -.33** | -.15 | .42** | - |
| 12. Mother Empathy | .10 | .00 | -.06 | .29** | -.03 | .16 | .07 | -.31** | .08 | .04 | .07 |
| 13. Child Empathy | .00 | -.25* | .03 | .02 | .04 | .07 | .09 | -.10 | .04 | -.15 | .06 |
| 14. Mother Praise | .07 | .07 | -.05 | .22* | .03 | .15 | .01 | .17 | -.04 | -.17 | .04 |
| 15. Mother Criticise | .17 | -.14 | -.11 | .18 | -.28** | -.43** | -.24* | .05 | .22* | -.02 | -.17 |
| 16. Child Criticise | -.04 | -.06 | -.08 | .10 | .03 | .01 | -.04 | .14 | .38** | -.12 | -.15 |
| 17. Child Deny | .01 | .05 | .03 | .20* | .10 | -.06 | -.05 | -.13 | .33** | .14 | .08 |
| 18. Child Yield | .00 | .01 | .10 | .13 | .19 | -.11 | -.36** | -.08 | -.10 | .02 | .10 |

*$p$< .05, **$p$< .01.

| (Table 5 continued) | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
|---|---|---|---|---|---|---|---|
| 12. Mother Empathy | - | | | | | | |
| 13. Child Empathy | .29** | - | | | | | |
| 14. Mother Praise | .44 | .19 | - | | | | |
| 15. Mother Criticise | .31 | .02 | .05 | - | | | |
| 16. Child Criticise | .43 | .05 | .17 | .25* | - | | |
| 17. Child Deny | .25 | -.11 | .03 | .23* | .34** | - | |
| 18. Child Yield | .03 | -.02 | .11 | .09 | -.18 | -.15 | - |

*$p$< .05, **$p$< .01.

Table 6

*Intercorrelations among the Variables Examined in the Regressions for Part 3 (n = 64)*

| Measure | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Distress | - | | | | | | | | | | |
| 2. Withdrawal | .41** | - | | | | | | | | | |
| 3. Education | .40** | .32** | - | | | | | | | | |
| 4. Education x Distress | -.14 | -.11 | -.13 | - | | | | | | | |
| 5. Education x Withdrawal | .00 | -.06 | -.09 | -.18 | - | | | | | | |
| 6. Mother Positive Engagement | .27** | .07 | .16 | -.22* | .24* | - | | | | | |
| 7. Child Positive Engagement | .28** | .07 | .09 | -.24* | .40** | .51** | - | | | | |
| 8. Mother Disengagement | -.30** | -.10 | -.07 | .08 | -.12 | -.35** | -.32** | - | | | |
| 9. Child Negative Engagement | -.20 | .18 | -.25* | .22* | .01 | -.33** | -.28** | .09 | - | | |
| 10. Mother Interpersonal Flexibility | -.05 | .02 | -.04 | .13 | .10 | .01 | .08 | .27** | .01 | - | |
| 11. Child Interpersonal Flexibility | .08 | .04 | .07 | .00 | .11 | .20 | .34** | -.33** | -.15 | .42** | - |
| 12. Mother Empathy | .10 | .00 | -.06 | .29** | -.03 | .16 | .07 | -.31** | .08 | .04 | .07 |
| 13. Child Empathy | .00 | -.25* | .03 | .02 | .04 | .07 | .09 | -.10 | .04 | -.15 | .06 |
| 14. Mother Praise | .07 | .07 | -.05 | .22* | .03 | .15 | .01 | .17 | -.04 | -.17 | .04 |
| 15. Mother Criticise | .17 | -.14 | -.11 | .18 | -.28** | -.43** | -.24* | .05 | .22* | -.02 | -.17 |
| 16. Child Criticise | -.04 | -.06 | -.08 | .10 | .03 | .01 | -.04 | .14 | .38** | -.12 | -.15 |
| 17. Child Deny | .01 | .05 | .03 | .20* | .10 | -.06 | -.05 | -.13 | .33** | .14 | .08 |
| 18. Child Yield | .00 | .01 | .10 | .13 | .19 | -.11 | -.36** | -.08 | -.10 | .02 | .10 |

*$p$< .05, **$p$< .01.

| (Table 6 continued) | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
|---|---|---|---|---|---|---|---|
| 12. Mother Empathy | - | | | | | | |
| 13. Child Empathy | .36** | - | | | | | |
| 14. Mother Praise | .36** | .24 | - | | | | |
| 15. Mother Criticise | .33** | .12 | .09 | - | | | |
| 16. Child Criticise | .58** | .00 | .23 | .28* | - | | |
| 17. Child Deny | .36** | -.16 | .14 | .17 | .34** | - | |
| 18. Child Yield | -.19 | -.05 | .00 | .11 | .26* | -.16 | - |

*$p$< .05, **$p$< .01.

Table 7

*Summary of Results from Hierarchical Regression Analyses for Parts 2 and 3*

| Outcome measures | Significant predictors in the final model[a] | Statistics for the final equation |
|---|---|---|
| Part 2 (*n* =95) | | |
| Mother Positive Engagement | 2) Maternal education*<br>3) Child gender[b]* | $R^2_{Adj} = 10.9\%$, $F = 3.31$ |
| Mother Disengagement | 2) Maternal education** | $R^2_{Adj} = 5.9\%$, $F = 2.18$ |
| Child Positive Engagement | 2) Maternal education*<br>3) Child gender** | $R^2_{Adj} = 21.7\%$, $F = 6.22$ |
| Mother Empathy | 3) Child age** | $R^2_{Adj} = 5.8\%$, $F = 2.16$ |
| Mother Criticize Other | 3) Child gender* | $R^2_{Adj} = 7.9\%$, $F = 2.60$ |
| Child Empathy | 1) Occupational Prestige** | $R^2_{Adj} = 2.8\%$, $F = 1.55$ |
| Part 3a (*n* = 64) | | |
| Mother Positive Engagement | 3) Education x withdrawal[t] | $R^2_{Adj} = 7.6\%$ $F = 2.73$ |
| Mother Disengagement | 2) Education*<br>3) Education x withdrawal[t] | $R^2_{Adj} = 12\%$, $F = 3.86$ |
| Mother Assertiveness | 2) Maternal education[t]<br>3) Education x withdrawal* | $R^2_{Adj} = 12.5\%$, $F = 3.99$ |
| Mother Negativity | 3) Education x withdrawal* | $R^2_{Adj} = 11.8\%$, $F = 3.80$ |
| Part 3b (*n* =64) | | |
| Mother Positive Engagement | 1) Maternal Concurrent Distress* | $R^2_{Adj} = 10.6\%$, $F = 3.36$ |
| Child Positive Engagement | N/A | $R^2_{Adj} = 5.8\%$, $F = 2.23$ |

*Note*. [a]Bracketed numbers indicate the step at which the predictor was entered. [b]1 = male, 2 = female. [t]$p < .10$. *$p < .05$. **$p < .01$.

Table 8

*Descriptive Statistics for Interaction and Conflict Management Behaviors (n = 95)*

| | Mother | | | Child | | |
|---|---|---|---|---|---|---|
| | M | SD | % | M | SD | % |
| Interaction | | | | | | |
| Listening | 3.17 | 0.75 | n/a | 2.76 | 0.59 | n/a |
| Assertiveness | 3.28 | 0.71 | n/a | 2.28 | 0.53 | n/a |
| Warmth | 2.67 | 0.85 | n/a | 2.35 | 0.85 | n/a |
| Withdrawal | 1.69 | 0.69 | n/a | 3.04 | 0.85 | n/a |
| Negativity | 1.81 | 0.81 | n/a | 1.81 | 0.89 | n/a |
| Conflict Management | | | | | | |
| Empathy | 2.14 | 2.73 | 45.7 | 0.28 | 0.70 | 5.33 |
| Interpersonal Flexibility | 0.36 | 0.74 | 7.63 | 0.44 | 0.88 | 8.67 |
| Praise Self | 0.05 | 0.37 | 0.94 | 0.17 | 0.52 | 3.38 |
| Praise Other | 0.76 | 1.22 | 16.5 | 0.14 | 0.36 | 2.68 |
| Yield | 0.09 | 0.37 | 1.99 | 1.21 | 1.73 | 23.38 |
| Deny | 0.06 | 0.37 | 1.31 | 1.93 | 2.15 | 37.25 |
| Criticize Self | 0.00 | 0.00 | 0.00 | 0.12 | 0.29 | 2.27 |
| Criticize Other | 1.21 | 2.03 | 25.9 | 0.88 | 2.09 | 17.05 |

*Note*. Percentage scores for Conflict Management Behaviors reflect the sum of each variable relative to the total sum of all verbal statements, by topic. Interaction Behaviors were rated on a 5-point Likert scale and therefore percentage scores could not be calculated.

Table 9

*Factor Loadings for Interaction Behaviors (n = 95)*

| | Factor Loadings | | |
|---|---|---|---|
| | 1 | 2 | KMO |
| Mother | | | |
| Listen | **0.85** | -0.43 | 0.74 |
| Assert | **0.65** | **-0.86** | |
| Warmth | **0.89** | -0.21 | |
| Withdrawal | -0.23 | **0.95** | |
| Negativity | **-0.92** | 0.34 | |
| Child | | | |
| Listen | **0.79** | **-0.66** | 0.70 |
| Assert | **0.87** | -0.13 | |
| Warmth | **0.63** | **-0.54** | |
| Withdrawal | **-0.92** | 0.15 | |
| Negativity | -0.17 | **0.92** | |

Table 10

*Factor Loadings for Maternal Concurrent Distress Variables (n = 95)*

| | Factor Loadings | KMO |
|---|---|---|
| Factor 1: Maternal Concurrent Distress | | 0.55 |
| Parent Stress (PSI) | 0.82 | |
| SCL-90R (Global Symptom Index) | 0.78 | |
| Social Support | -0.68 | |
| HOME | -0.48 | |

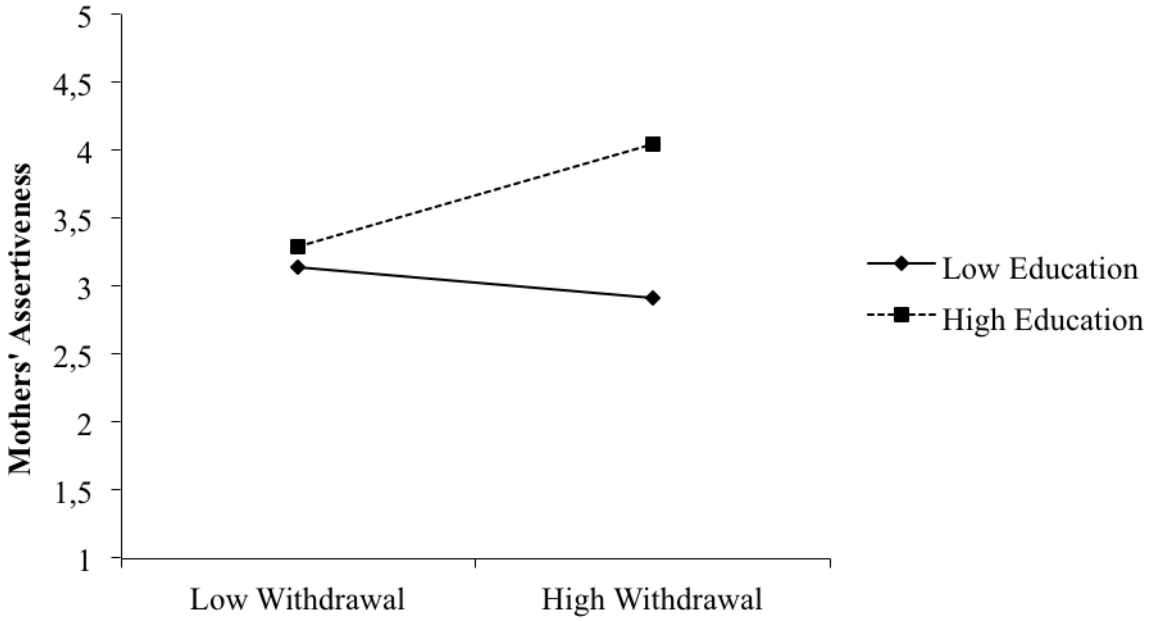


*Figure 1*. Associations between Mothers' Assertiveness and Childhood Histories of Social Withdrawal as a Function of Mothers' Education (in Years).

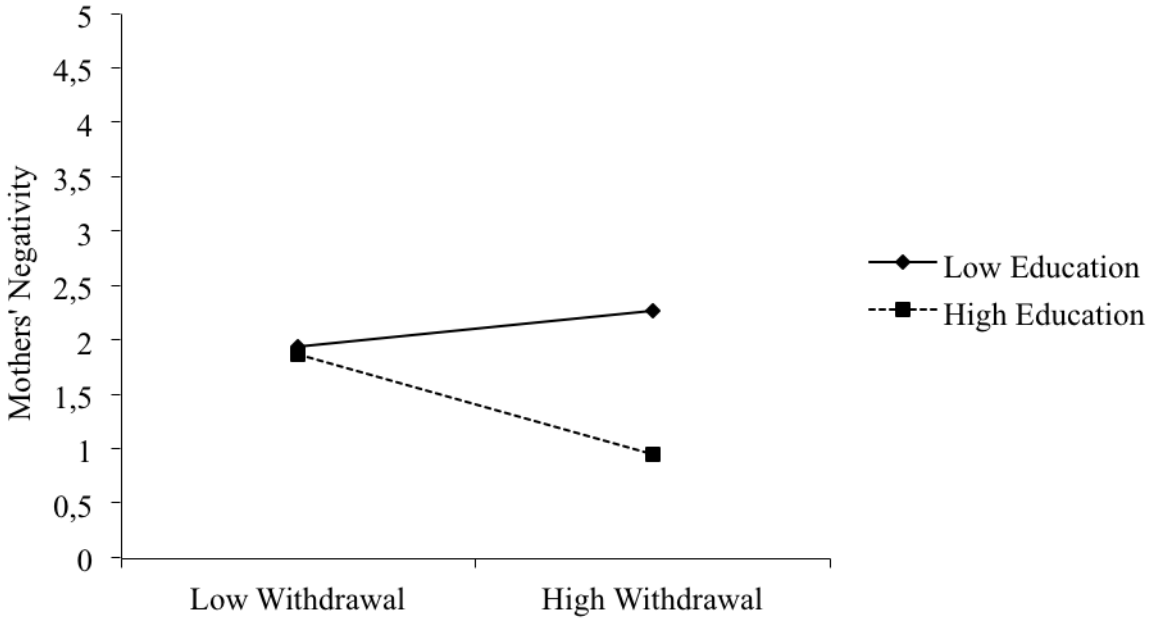


*Figure 2.* Associations between Mothers' Negativity and Childhood Histories of Social Withdrawal as a Function of Mothers' Education (in Years).

## Chapter 3: Transition Statement between Study 1 and Study 2

Results from Study 1 contributed to the current literature by broadening our understanding of several core features of mother-child conflict during middle childhood; a developmental period that has been largely overlooked to date. Framed within a longitudinal and ecological research design, findings also demonstrated how mother-child conflict behaviors are influenced by contextual variables related to mothers' past and current characteristics and experiences (i.e., childhood histories of social withdrawal, concurrent distress levels and education). By examining how risk and protective factors interact to contribute to pathways leading to adaptive and maladaptive outcomes in vulnerable families, results also provided evidence to support developmental psychopathology models. In particular, the importance of maternal education in predicting positive and constructive maternal conflict behaviors for women who were socially withdrawn in childhood was highlighted for the first time. Whereas Study 1 sought to examine distal factors and macro-level processes associated with mother-child conflict behaviors, the primary objective in Study 2 was to examine in greater depth how conflict behaviors during mother-child interactions matter in the 'here-and-now'; both in terms of shaping conflict resolution within the mother-child relationship and children's socio-emotional functioning. Consistent with Study 1's focus on mother-child conflict in middle childhood, Study 2 investigated associations between mother-child conflict behaviors and their problem-solving strategies, as well as the cross-context applicability of children's conflict behaviors towards mothers in other settings. To this end, the study was designed to address several gaps in the literature to expand current understanding of how mothers and preadolescents manage and resolve their personal disputes, as well as the implications of such interactions on children's development.

Findings from Study 1 supported the notion that mothers and children behave differently according to the hierarchical nature of their relationship and the distinct role mothers play as socializing agents. By examining how each member's conflict behaviors relate to their own and the others' problem-solving abilities, Study 2 was designed to provide greater detail on the bi-directional nature of mother-child interactions and what each is bringing to the conflict discussion. This avenue of research is important because much of the literature on family problem-solving focuses on the dyad and combines conflict behaviors with problem-solving

variables, thereby masking individual differences in problem-solving ability and the significance of conflict behaviors in predicting specific problem-solving strategies.

In keeping with Study 1's theme of contextual influences, in Study 2 there was continued recognition of the importance of context by investigating the relationship between children's behaviors towards their mothers during conflict discussions and their behaviors in settings outside the mother-child relationship. Cross-context comparisons are important given that socio-emotional functioning has been shown to vary according to the functions and characteristics of relationships (Adams & Laursen, 2001; Recchia et al., 2012). Using a mixed-method and multi-informant study design, Study 2 was designed to address whether children's conflict behaviors are indicative of relatively stable behavioral patterns or rather, whether behavioral responses are unique to conflicts between mothers and children. Study 2 also adds novelty to the literatures on family conflict and child development by examining, for the first time as far as can be determined, the potential link between children's conflict behaviors within the mother-child relationship and their test-taking behaviors during a one-on-one standardized cognitive assessment.

While findings from Study 1 demonstrated the negative influence of maternal risk variables such as childhood histories of social withdrawal and concurrent distress (i.e., high parenting stress, poor maternal psychological functioning, low social support and low quality home environment) on mother-child conflict behaviors, Study 2 was designed to investigate the impact of maternal histories of aggression and social withdrawal on children's socio-emotional functioning in settings outside the mother-child relationship. In doing so, Study 2 shed light on intergenerational continuities and discontinuities between mothers and offspring in at-risk populations, thereby deepening our understanding of the rich and contextualized nature of family dynamics.

## Chapter 4: Dissertation Study 2

# Communication and problem-solving during mother-child conflict in an at-risk sample: Links to children's socio-emotional functioning

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**ABSTRACT**

This study examined associations between conflict behaviors and problem-solving strategies in high-risk mother-child dyads during middle childhood, and links to children's socio-emotional functioning in other settings (i.e., perceived social competence, internalizing and externalizing problems, and test-taking behaviors). The contribution of mothers' childhood histories of risk to children's socio-emotional functioning was also investigated. Participants were mothers and their children (age 9-13) from a prospective, longitudinal intergenerational study of families from low socio-economic backgrounds. Observational coding was employed to measure conflict behaviors and problem-solving strategies while mother-child dyads discussed personal conflicts. Children's socio-emotional functioning was assessed via questionnaires and their behaviors during standardized cognitive testing. Results underscored the importance of interpersonally flexible and problem-focused behaviors for generating solutions and decision-making; differences in how mothers and children contribute to problem-solving were revealed. Children's positive conflict behaviors predicted greater perceived social competence, whereas negative conflict behaviors predicted externalizing behaviors as rated by mothers, teachers and the experimenter during test-taking. Results lend support to the continuity of risk whereby children of mothers who were aggressive or socially withdrawn in childhood had poorer outcomes in both social and academic domains of functioning. Together, results broaden current understanding of mother-child problem-solving abilities in middle childhood and demonstrate the cross-context applicability of children's conflict behaviors. The results also highlight potential pathways for the transfer of risk from mother to child.

**Communication and problem-solving during mother-child conflict in an at-risk sample: Links to children's socio-emotional functioning**

Learning how to effectively manage and resolve interpersonal conflicts is central to children's developing social competence (Maccoby, 1992; Rose-Krasnor, 1997). Adaptive conflict resolution in close relationships rests upon the capacity to balance self and other-oriented goals while engaging in social exchanges characterized by mutual behavioral opposition (Laursen & Pursell, 2009; Rose-Krasnor, 1997; Selman, 1980). Thus, rather than prioritize oneself by demanding change in others or to change oneself to accommodate others' goals, the most advanced form of conflict resolution is achieved by attending to personal needs while simultaneously integrating the interests of the other person with whom one is in dispute (Rose-Krasnor, 1997). These complex interpersonal interactions begin and develop through communication, the basis of which involves self-awareness, listening skills, perspective-taking, empathy, and a willingness to cooperate with others (Stack et al., 2010). Additional components include understanding that one's behaviors impact others, managing and regulating emotions, controlling impulses, negotiating, as well as learning the differences between social contexts (e.g., conventions that guide behavior; Dunn & Slomkowski, 1992; Stack et al., 2010, 2012).

Interpersonal problem-solving is another crucial aspect of conflict resolution that exemplifies the ability to integrate self and other perspectives. Described as a cognitive-interpersonal process, interpersonal problem-solving centers on the ability to generate and implement solutions deemed suitable to all parties involved (D'Zurilla, Chang, & Sanna, 2004). Dyads who engage in interpersonal problem-solving are more likely to successfully resolve their differences and have satisfying relationships (Christensen & Shenk, 1991; Stern, 1999). Early research on problem-solving has also demonstrated a positive relationship between the quantity and quality of solutions and social competence (Shure & Spivack, 1972; Mize & Cox, 2001), whereas solution generation deficits were linked to behavioral difficulties such as aggression (Greene & Bry, 1991; Guerra & Slaby, 1989; Kuperminc & Allen, 2001; Pakaslahti et al., 1996, 1998; Richard & Dodge, 1982; Youngstrom et al., 2000). Passive and avoidant problem-solving strategies have also been related to children's low self-esteem and internalizing problems (Arslan, 2010; Arslan et al., 2012; Londahl, Tverskoy, & D'Zurilla, 2005). Not only does understanding how children develop interpersonal problem-solving have important theoretical implications, but it also has direct applications to aiding the design and implementation of community-based

prevention and intervention programs given its link to personal adjustment and positive relationships.

It has long been theorized that children acquire the ability to problem-solve, not through innate characteristics or personality traits, but from experience interacting with others (D'Zurilla & Goldfried, 1971). Parents are the first to oppose children's behavior and, as powerful socializing agents, play a critical role in the development of children's problem-solving abilities by structuring discussions, as well as modeling communication and conflict resolution strategies (Fagot, 1998; Raikes & Thompson, 2008; Stein & Albro, 2001). Mothers may be particularly influential given their typical roles as primary caregivers. By encouraging children to engage actively, express differing viewpoints, and develop solutions, mothers help strengthen children's ability to reason, negotiate, compromise, and problem-solve in an interpersonally flexible manner (Ram & Ross, 2001; Stein & Albro, 2001). These constructive conflict behaviors are positively associated with maternal education (Neitzel & Stright, 2004; Nilholm & Saljo, 1996). In contrast, high levels of interpersonal negativity evoke defensive and/or angry reactions that hinder communication and shift attention away from the initial problem (Stern, 1999). Along similar lines, excessively permissive mothers model avoidant conflict resolution strategies that fail to successfully resolve parent-child disagreements and may inadvertently teach children to be equally passive and/or avoidant (Black, 2002; Fagot, 1997). Results from these studies suggest that how mothers behave during parent-child conflicts has a significant impact on the degree to which children learn to balance self- and other-oriented goals, with extreme maternal behaviors such as hostility and avoidance potentially contributing to similarly extreme viewpoints and behavioral tendencies in their children.

Surprisingly, only a handful of studies have directly examined how mother-child conflict behaviors are associated with problem-solving abilities, and most of these are decades old (Capaldi et al., 1994; Forgatch, 1989; Greene & Bry, 1991; Hughes et al., 2004; McColloch et al., 1990; Rueter & Conger, 1995; 1998; Vuchinich et al., 1996). Results from these available studies support the contention that high levels of interpersonal negativity hinder the ability to generate solutions and successfully resolve family disputes, whereas warm and supportive behaviors enhance these problem-solving skills. When examined longitudinally, there is also evidence that problem-solving behaviors may be indicative of characteristic styles of interaction among family members (Rueter & Conger, 1995). Consistent with this view, families with

aggressive adolescents have been distinguished from those with nonaggressive adolescents by the quality of their interaction behaviors and problem-solving efforts; those with aggressive adolescents tend to communicate in a more punitive, controlling, and unresponsive manner compared to families with nonaggressive adolescents who tend to listen responsively, define the problem with greater clarity and are more solution-focused (McColloch et al., 1990; Pakaslhati et al., 1996, 1998). Overall, findings from these studies suggest that interpersonal processes and problem-solving abilities are inextricably linked. Consequently, examining both simultaneously, as in the present study, offers a more comprehensive understanding of how parents and children manage and resolve their disputes rather than examining either conflict behaviors or problem-solving strategies separately as is more commonplace in the literature.

While studies to date examining the relationship between conflict behaviors and problem-solving strategies during family disputes are informative, their findings have at least five noteworthy limitations that the present study aims to address. First, several studies examining interpersonal processes and problem-solving outcomes in parent-child conflict have included only boys in their samples (Capaldi et al., 1994; McColloch et al., 1990; Forgatch, 1989), thereby limiting the generalizability of findings to girls' problem-solving in family situations. Second, conflict behaviors have tended to center around angry and hostile responses while passive and avoidant ones have been largely ignored (e.g., McColloch et al., 1990; Pakaslhati et al., 1196, 1998). Third, problem-solving outcome variables have been aggregated, either by combining conflict behaviors with solution generation abilities (e.g., Rueter & Conger, 1995; 1998) or combining solution generation with other problem-solving abilities such as problem definition and resolution status (e.g., Capaldi et al., 1994; Forgatch, 1989; McColloch et al., 1990). Given that the ability to generate solutions is considered a core problem-solving skill and is related to social competence and family functioning, examining how mother-child conflict behaviors are specifically associated with solution generating skills would be particularly valuable. Moreover, because there is evidence that the quality of solutions (as defined by their effectiveness, appropriateness, and reduced aggressiveness) may be more predictive of children's social competence than sheer quantity (Fischler & Kendall, 1988; Mott & Krane, 1994; Youngstrom et al., 2000), it is important to further assess whether conflict behaviors are differentially related to the quantity versus the quality of solutions. Similarly, it is also unclear whether certain conflict behaviors uniquely predict the degree of resolution.

The fourth and fifth limitations in the literature on mother-child conflict are that some studies have tended to emphasize positive rather than negative problem-solving outcomes (e.g., Capaldi et al., 1994; Forgatch, 1989; Rueter & Conger, 1995), as well as focus on the dyadic or family-level problem-solving instead of individual efforts (e.g., Capaldi et al., 1994; Vuchinich et al., 1996), thereby masking individual variations in problem-solving ability. These limitations are likely because interpersonal problem-solving has been conceptualized as a *collaborative* process that exemplifies *adaptive* efforts towards conflict resolution. However, problem-solving deficits at the individual level have been demonstrated (e.g., difficulty brainstorming a variety of solutions and/or thinking of ones that will result in successful resolutions), particularly in individuals with emotional and/or behavioral difficulties (Londahl et al., 2005; Frye & Goodman, 2000; Rudolph & Heller, 1997; Seçer & Ogelman, 2011). Children are also expected to be less proficient than their mothers by virtue of mothers' greater cognitive skills and wider social experiences. Moreover, interpersonal problem-solving is not necessarily collaborative in hierarchical relationships since mothers may occasionally take the lead without children's active participation. Differences in how mothers and children manage and resolve their disputes cannot be fully understood if their behaviors are examined in unison, nor the dynamic and bi-directional nature of their interactions. Consequently, the present study was designed to address these five gaps and extend the literature on mother-child conflict by (1) utilizing a sample of boys and girls, (2) measuring a wide range of conflict behaviors with the inclusion of those reflective of passivity/avoidance, (3) assessing the unique effects associated with the quantity and quality of solutions, and resolution status, (4) including both positive and negative problem-solving outcomes, and (5) examining individual contributions of mothers' and children's conflict behaviors to their problem-solving strategies.

**Cross-Context Applicability**

Another gap in the literature on mother-child conflict that the current study aimed to address is the cross-context applicability of children's conflict behaviors when interacting with mothers. In particular, it remains unclear whether the manner in which children behave during conflicts with their mothers 'carries over' into other interpersonal relationships as posited by social learning theory. The majority of studies to date that have addressed this important research question have either done so by investigating maternal influences on children's behaviors with others (namely siblings and peers; e.g., Aunola & Nurmi, 2005; Brophy & Dunn, 2002;

Crockenberg & Litman, 1990; Feldman, Masalha, & Derdikman-Eiron, 2010; McCombs, Forehand, & Smith, 1998) or by comparing conflict dynamics across family subsystems or peer relationships (Adams & Laursen, 2001; Dunn & Herrera, 1997; Tucker, McHale, & Crouter, 2003; Laursen & Collins, 1994; Siddiqui & Ross, 1999; Recchia et al., 2010). Together, these studies suggest that, while children differ in their use of conflict resolution strategies from one relationship to another, similarities exist in the form of broader behavioral tendencies such that responsive and nurturing parenting is associated with more positive interpersonal behaviors in children. Another method of determining the cross-context applicability of children's conflict behaviors is to investigate, as in the present study, associations between children's conflict behaviors towards their mothers and children's socio-emotional functioning in other contexts.

At least one study has thus far examined how children's conflict behaviors towards mothers are directly related to their behaviors in other interpersonal relationships. Specifically, Black (2002) found that adolescents who were withdrawn while discussing personal disputes with their mothers demonstrated less concern and less support with best friends. Conversely, adolescents who self-disclosed openly and communicated assertively with their mothers were less withdrawn and more supportive towards their best friends. These findings empirically support social learning and attachment theories, suggesting that children develop 'styles' of interacting within mother-child interactions and conflict that characterize the manner in which they generally behave with others.

If some of children's behaviors during mother-child conflicts are indicative of relatively stable behavioral patterns, then these behaviors should be observed across other types of settings that are potentially stressful but do not necessarily involve disagreement. One-on-one testing, such as in a standardized cognitive assessment, may fit this description well as it is an interactive task that is perceived as challenging and anxiety-provoking by some. Academic achievement is also a major domain of competency in middle childhood (Masten & Coatsworth, 1998), making test-taking a somewhat novel task for preadolescents and yet an integral aspect of their lives. In clinical practice, informal observations of children's focus, persistence, attention, cooperation, motivation to achieve, and demonstrated confidence are commonplace during standardized assessments (Glutting, Youngstrom, Oakland, & Watkins, 1996; Heinonen, Aro, Ahonen, & Poikkeus, 2011; Oakland & Harris, 2009). These test-taking behaviors reflect children's ability to establish rapport, and how they approach potentially stressful situations (Meyer et al., 2001;

Oakland & Glutting, 1998; Paget, 1983). Children's displays of collaboration, confidence, and the manner in which they answer test items are partly related to attention and test performance (i.e., IQ; Heinonen et al., 2011; Maller, Konold, & Glutting, 1998). Above and beyond cognitive ability, however, standardized testing may also tap into children's relational skills and coping abilities. Individual socio-cognitive processes, such as those outlined in the Social Problem Solving Model (e.g., attitudes and beliefs about stressful situations and their ability to deal with them effectively; D`Zurilla & Goldfried, 1971, D`Zurilla, Nezu, & Maydeu-Olivares, 2002; D'Zurilla & Nezu's, 1990), may also be activated. Thus far, empirical investigations of children's test-taking are limited, and none to our knowledge have examined associations between children's behaviors with mothers during conflict discussions and children's test-taking behaviors during standardized assessments. The present study was partially designed to address this gap.

In order to further investigate cross-context similarities in children's interpersonal behaviors, we also examined the relationship between children's conflict behaviors and global measures of their social competence and behavior problems. A multi-perspective view that maximizes the total number of variance explained was obtained by gathering information from several sources. Discrepancies across informants are common, with modest agreement between parents, teachers and children's self-reports (Achenbach, McConaughy, & Howell, 1987; Althoff, Rettwe, Ayer, & Hudziak, 2010; Barkmann & Schulte-Markwort 2005; Renk & Phares, 2004; Schneider & Byrne, 1989; Seiffge-Krenke & Kollmar 1998; Yeh & Weisz, 2001). Such discrepancies can be partly explained by the fact that each informant offers a subjective view based on their observations, interpretations, and unique situational factors (Richardson & Day, 2007). Moreover, children's abilities to introspect may be limited, particularly at younger ages (Canino, Bird, Rubio-Stipic, & Bravo, 1995).

**Maternal Histories of Aggression and Social Withdrawal**

It is important to consider that children's socio-emotional functioning is also likely to vary according to the broader socio-cultural context in which they are reared (Bronfenbrenner, 1979; Matte-Gagné, Harvey, Stack, & Serbin, 2015). Maternal risk factors such as poverty, low socio-economic status, and behavior problems have been shown to negatively affect parenting and child outcomes (e.g., Ingoldsby et al., 2006; Raver, Blair, & Garrett-Peters, 2015; Serbin et al., 2011; Vernon-Feagans & Cox, 2013). Mothers with childhood histories of behavior

problems such as aggression and social withdrawal may be particularly at-risk for engaging in negative parenting practices that can hinder children's socio-emotional functioning. Aggression and social withdrawal are stable dimensions with life-long consequences, such as poor academic achievement, adolescent delinquency, early sexual activity, substance use, criminal behavior, unstable occupational patterns, low income, marital problems, and harsh/insensitive parenting; e.g., Bailey et al., 2009; Caspi et al., 1987, 1988, 1989; Cohen, Kasen, Brook, & Hartmark, 1998; Ehrensaft et al., 2004; Englund et al., 2008; Harrist et al., 1997; Ramrakha et al., 2007; Smith & Farrington, 2004). Moreover, research indicates that cycles of risk occur across generations (e.g., Bailey et al., 2009; Cohen et al., 1998; Conger et al., 2003; Capaldi & Clark, 1998; Fagot et al., 1998; Kovan, Chung, & Sroufe, 2009; Scaramella & Conger, 2003; Smith & Farrington, 2004; Serbin & Stack, 1998). Given this negative cycle, the intergenerational transfer of risk from mother to offspring is a crucial area of study. To this aim, the present study was designed to investigate the influence of maternal childhood histories of aggression and social withdrawal on children's socio-emotional functioning across several contexts using a subsample of the Concordia Longitudinal Risk Project (i.e., Concordia Project).

The Concordia Project is a community-based, prospective, and intergenerational study that was launched in the mid 1970s to screen children from low socio-economic neighborhoods (Montreal, Canada) on dimensions of aggression and social withdrawal. Across their life course, women from the Concordia Project have experienced negative sequelae, including low self-esteem, school drop-out, delinquency, STDs, teen parenthood, adult stress, and mental illness (Moskowitz & Crawley, 1989; Moskowitz & Schwartzman, 1989; Schwarztman et al., 1985; Serbin et al., 1991; Serbin, Stack, & Schwartzman, 2000; Stack et al., accepted). Results from the Concordia Project indicate that women who were aggressive and/or socially withdrawn continue to exhibit behavioral problems in the family context and have problems meeting the multiple demands of parenting (as reflected, for example, in self-reported violence towards spouses and children, parental absence, as well as lowered family income; Serbin et al., 2002; Serbin et al., 2000; Temcheff et al., 2008). Notably, the combination of aggression and withdrawal has been associated with the worst outcomes. Women from the Concordia Project identified as having childhood histories of aggression and social withdrawal have been found to be more unresponsive and hostile as well as less positive in their interactions with their children than comparison mothers (Bentley, 2002; Enns, 2008; Perez, 2005; Serbin et al., 2004; Stack et

al., 2012; Enns et al., 2016). Moreover, maternal aggression and social withdrawal has been associated with poor scaffolding and suboptimal cognitive stimulation in the home environment, including fewer helpful teaching techniques and less warm guidance (Saltaris et al., 2004; Serbin et al., 2002). In turn, offspring of the original Concordia Project participants have been found to display poor social skills when observed at home interacting with their mothers (e.g., negative emotion expression, poor communication, poor problem-solving, low empathy, and noncompliance (Bentley, 2002; Enns, 2008; Grunzeweig et al., 2009; Martin et al., 2012; Perez, 2005; Stack et al., in press; Enns et al., 2016). Furthermore, cognitive, socio-emotional and behavioral problems have also been demonstrated outside the mother-child context in early childhood (DeGenna et al., 2007; Fisher et al., 2007; Serbin et al., 2000).

**Objectives and Hypotheses**

1. The first objective was to examine whether the manner in which mothers and children communicate and interact during conflict discussions are separately related to the quantity and quality of their solutions, as well as resolution outcomes.
    i. *Hypothesis 1*. Conflict behaviors characterized by patience, acceptance, understanding and/or problem-focused behavior (e.g., high levels of responsive listening, assertiveness, warmth, and compromise) were expected to be positively associated with solution generation and decision-making strategies. In contrast, conflict behaviors characterized by unresponsiveness, disengagement, impatience, and/or hostility (e.g., low levels of responsive listening, assertiveness, and warmth, as well as high levels of negativity and withdrawal) were expected to be negatively associated with solution generation and decision-making strategies.
2. The second objective was to examine how children's behaviors with their mothers were associated with children's behaviors in other settings in order to evaluate the degree of cross-context similarity. Cross-context comparisons were conducted using two methods. First, children's conflict behaviors with mothers were compared in relation to their test-taking behaviors during a one-on-one, standardized cognitive assessment. Second, children's conflict behaviors with mothers were examined in relation to global indices of children's socio-emotional functioning as evaluated by three informants: children, mothers and teachers.
    i. *Hypothesis 2*. On the basis of social learning and attachment theories (Bandura, 1977; Bowlby, 1988), cross-context similarities in children's communication and

interaction behaviors were anticipated. That is, children who behaved in a warm and engaging manner with mothers were expected to display prosocial, confident and cooperative behaviors in a one-on-one test-taking situation, as well as be perceived by themselves and others as socially competent. In contrast, children demonstrating poor listening skills, withdrawal, and/or aggression with mothers were expected to be less cooperative and self-assured in a one-on-one test-taking situation, as well as be perceived as less socially competent by themselves and others. At the same time, however, differences in the characteristics of each social context and informant were expected to limit the degree of similarity (e.g., power and affiliation differentials, interpersonal versus cognitive task). Given the paucity of research on cross-context comparisons in children's behaviors during mother-child conflict interactions, hypotheses were not further specified.

3. The third objective was to examine contributions of maternal childhood histories of aggression and social withdrawal to children's behaviors outside the mother-child context.
    1. *Hypothesis 3.* Given that offspring of the original Concordia Project participants have previously been found to be at risk for academic and behavioral difficulties (Fisher et al., 2007; Serbin et al., 1998; Stack et al., 2012; Stack et al., 2015), it was expected that children of mothers with childhood histories of aggression and/or social withdrawal would display more negative and fewer constructive test-taking behaviors with the experimenter. Similarly, maternal histories of aggression and withdrawal were expected to be negatively associated with child-perceived social competence, as well as positively related to behavior problems reported by mothers and teachers.

## Method

### Participants

Participants from the current study were drawn from a subsample of the Concordia Project that began in 1976 - 1978. During this time, 4,109 school-age children (grades one, four, and seven) attending French-speaking public schools were recruited from inner-city, low socio-economic neighborhoods of Montréal, Québec, Canada. A final sample of 1,774 students who met inclusion criteria were screened on dimensions of aggression and social withdrawal by means of a French version of the Pupil Evaluation Inventory (PEI; Pekarik, Prinz, Liebert, Weintraub, & Neale, 1976; see Appendix B for sample items). The PEI, which is a reliable and valid measure

for assessing children's social behavior, consists of a 34-item questionnaire yielding three factors: Aggression, Social Withdrawal and Likeability. Children nominated up to four boys and four girls who best matched each item on the PEI. Using percentile cut-offs, children were identified as being at high psychosocial risk if they had extreme scores on dimensions of aggression (above the 95$^{th}$ percentile), withdrawal (above the 95$^{th}$ percentile), or both (above the 75$^{th}$ percentile). A normative comparison group of children who were low on these dimensions from the same schools and neighborhoods was also selected at the same time. This sample of children was subsequently followed in smaller representative subsamples at 3- to 5-year intervals from childhood to adulthood, many of whom had children of their own. A more detailed description of the original methodology can be found in Schwartzman, Ledingham and Serbin (1985) and Serbin, Cooperman, Peters, Lehoux, Stack, and Schwartzman (1998).

Ninety-five mothers (mean age = 37.52 years) and their 9-to 13-year-old children (mean age = 10.79 years; 43% boys) participated in the present study. These dyads were drawn from a larger sub-sample of 175 mothers from the Concordia Project and their offspring who were longitudinally followed to the present day since children were preschoolers in different waves of testing at approximately 3-year intervals. Participants from the current study represent 119 of the 175 dyads in the original subsample that took part in testing when children were between the ages of 9 and 13. Of these 119, 24 were excluded: 17 completed questionnaires but chose not to participate in the videotaped mother-child interaction tasks, five had procedural errors during testing, and two were videotaped with the father and grandmother rather than the mother. The remaining 95 dyads who participated in the current study included 64 mothers who were recruited in the initial phase of the Concordia Project, as well as 31 spouses of male participants, the latter of whom were also recruited as children in the initial phase of the Concordia Project (see Appendix C for a visual illustration of the longitudinal and intergenerational nature of the current sample).

This study is divided into three parts. *Part 1* examined how interpersonal problem-solving during mother-child interactions in middle childhood was predicted by mothers and children's conflict behaviors. Because problem-solving variables were selected from a previous study (Martin et al., 2012) that focused exclusively on the same $n = 64$ subsample of original female participants, these mothers and their children (41% boys) were also the focus of this first objective. In contrast, both original female participants and spouses of original male participants

($n$ = 95) were included in *Part 2*, which examined whether children's conflict behaviors during mother-child interactions predicted their adaptive and maladaptive behaviors in other settings. Lastly, *Part 3* examined how children's adaptive and maladaptive behaviors in settings outside the mother-child relationship were predicted by mothers' childhood histories of aggression and social withdrawal in the $n$ = 64 sub-sample. Spouses of original male participants were excluded from these analyses because they were not the parents with childhood histories of behavior problems. As in previous studies of the Concordia Project (e.g., De Genna, et al., 2006; Grunzeweig et al., 2009), childhood aggression and social withdrawal scores were analyzed as dimensions rather than categorical predictors in order to maximize statistical power. These scores were normally distributed in the present sample.

Table 1 summarizes participants' demographic information, as well as childhood aggression and withdrawal scores, by subsamples. To verify the representativeness of these subsamples, it was important to compare these demographic data to: (1) the 175 families from the Concordia Project who participated in the original dataset, and (2) mothers from the Concordia Project who were contacted between 1995 and 1998 ($n$ = 419). Z-scores revealed that mothers in the current study had slightly more years of schooling than the mothers in the two larger samples. The 64 original female participants in the current study were also compared to: (1) original participant mothers who were contacted between 1995 and 1998 ($n$ = 298), and (2) original participant mothers who took part in testing when children were preschoolers ($n$ = 114). Z-scores revealed no significant differences along dimensions of aggression and social withdrawal ($p <$ .10), indicating that the present sub-sample of $n$ = 64 is considered representative along these two dimensions.

Although Aggression and Withdrawal scores were analyzed as dimensional variables, it was also important to ensure that, for each of the two subsamples, the families of parents with high aggression or withdrawal scores did not differ from the families with low scores on the same demographic variables. As shown in Table 2, only one difference was found for both subsamples: mothers low on dimensions of aggression and social withdrawal had acquired approximately 1 to 2 more years of education than those with high scores.

**Procedure**

Families were visited at home by an undergraduate research assistant who was trained in the administration of the testing protocol. Mothers provided informed written consent (see

Appendix D for consent form), completed interviews and a battery of questionnaires, and were videotaped interacting with their child across several tasks. Most mothers ($n$ = 86) also consented to a school visit allowing Ph.D.-level (Psychology) research associate individually administer a standardized intelligence test (i.e., Weschler Intelligence Scale for Children; WISC-III) to their child during school hours. Experimenters, including the WISC-III administrator, were blind to mothers' risk status. Questionnaire packages assessing development and adjustment were also administered to children and teachers.

The current study focuses on a conflict task. Mother-child dyads were asked to discuss for up to six minutes topics that they had *both* independently rated as problematic in their relationship on a conflict questionnaire that contained 18 issues (e.g., chores, homework, respecting parents, problems with siblings, etc.). The common highest ranked issue for each dyad was selected by the experimenter as the topic of discussion. Dyads were permitted to request the next highly ranked topic if less than 4 minutes had elapsed and they were no longer able to discuss the one previously given to them.

Due to experimenter procedural error, 28% of dyads had the conflict questionnaire in their possession, which allowed them to freely switch among a selection of highly-ranked topics (ordered and circled by the experimenter) rather than be provided one verbally by the experimenter. These dyads were also instructed to interact for the entire 6 minutes rather than having the option of stopping after 4 minutes. For those affected by these procedural errors, we elected to end observational coding if a new topic began after 4 minutes. Furthermore, topics that were discussed for 10 seconds or less were disregarded. In a few cases, dyads disregarded instructions and discussed several topics at once. These portions of the interaction were collapsed to represent 'one topic' in order to prevent excessive fragmenting of the interaction. Only one dyad did this for the entire interaction. Most of the dyads that this applied to did so following the 4-minute cut-off, thereby eliminating this irregularity from analyses. Given that all participants were instructed to focus on a limited number of highly ranked topics, and stringent coding rules were applied to those dyads where different procedures occurred, it was elected to include all dyads.

To examine if dyads with the list and those without the list matched on total number of topics, socio-demographic variables, as well as the study's main outcome variables (described below), one-way analyses of variances were conducted. Results revealed that, compared to dyads

without the list, those with the list discussed 0.95 more topics $F(1, 93) = 40.90$, $p < .01$, mothers' age at testing was 1.41 years greater $F(1, 93) = 4.77$, $p < .05$, mothers' age at the birth of their first child was 1.7 years greater $F(1, 93) = 5.89$, $p < .05$, and children were 0.69 years younger $F(1, 93) = 12.89$, $p < .01$. Dyads did not differ on any of the outcome variables.

**Measures**

**Demographics.** The Demographic Information Questionnaire (DIQ) was employed to obtain socio-demographic information on the families, including child age, number and birth order of children, mothers' age at testing, age at birth of first child, marital status, number of years of education, occupation, and family income.

**Problem Behaviors.** Mothers completed the Child Behavior Checklist (CBCL/6-18; Achenbach, 2001); a 114-item parent-report measure of emotional and behavioral problems in children. The Teacher Report Form (TRF; Achenbach, 2001), a 113-item counterpart to the CBCL that assesses emotional and behavioral functioning at school, was completed by the children's teachers. Items on both forms are scored on a 3-point scale ranging from 0 (*absent*), to 1 (*occurs sometimes*), to 2 (*occurs often*). The Internalizing and Externalizing Problem scales scores from both the CBCL and TRF were used for the statistical analyses. The internal consistency, validity, as well as test-retest and inter-rater reliability of both measures are satisfactory to excellent (see Achenbach & Rescorla, 2001).

**Social Competence.** Children completed the Social Skills Rating System-Student Form (SSRS-SF; Gresham & Elliott, 1990). The SSRS-SF**,** a 34-item self-report measure that assesses the frequency of prosocial behaviors, contains five subscales: Cooperation, Assertion, Empathy, and Self-Control. Only the Total score was used in the current study to obtain a general index of children's social competence, with higher scores indicative of greater perceived overall social skills. The SSRS-SF has demonstrated satisfactory internal consistency and test-retest reliability (DiPerna & Volpe, 2005).

**Test-Taking Behaviors.** The Ph.D.-level research associate who individually administered the standardized intelligence test (i.e., WISC-III) completed a 24-item questionnaire designed to assess children's socio-emotional and cognitive functioning during testing (e.g., degree of observed anxiety, impulsivity, attention, persistence, and cooperation). Items were rated on a 5-point Likert scale ranging from 1(*never*) to 5 (*always*). This questionnaire was

developed by the lead investigators of the Concordia Project, based in part on the behavioral observations section of the Stanford Binet-IV (Thorndike, Hagen, & Sattler, 1986).

**Observational Coding**

The behaviors of the mothers and their children during the conflict task were coded using the *Interactions and Conflict Management Behaviors Coding System* (ICMB; Martin, Stack, & Ng, 2011) and the *Mother-Child Social Problem-Solving Coding System* (MCSPCS; Martin, Stack, & Guay, 2007; Martin et al., 2012). Operational definitions of the codes can be found in Table 3.

**Conflict Behaviors.** Mother-child conflict behaviors were measured using the ICMB, an observational coding system developed by the authors designed to quantitatively capture the manner in which mothers and children discussed and managed their personal disputes. The ICMB was adapted from a pre-existing coding scheme, the Iowa Family Interaction Rating Scale (Melby et al., 1998). Two categories of behaviors were differentiated from videotaped mother-child interactions: Interaction and Conflict Management Behaviors. Using both verbal and nonverbal cues, Interaction Behaviors examined how mothers and children globally related to each other. Every 30 seconds, coders rated on a 5-point Likert scale the degree to which both participants evidenced the following five codes: Listening, Assertiveness, Warmth, Withdrawal, and Negativity. Anchor points and midpoints for the 5-point scale were 1 (*no evidence of the behavior*), 3 (*mixed evidence, moderate levels of the behavior*), and 5 (*much evidence, high levels of the behavior*). Ratings were guided by the frequency, duration and intensity of behaviors. Intensity was deemed low when behaviors were subtle (or covert) and brief (e.g., nod, smile, frown, or averted eye gaze). High intensity behaviors were more overt, likely having greater visible impact on the interaction (e.g., praising the others' opinion, emotionally charged statements or shifting body away from other participant). The more frequent, longer-lasting, and intense the behaviors were during 30-second intervals, the higher the rating.

Conflict Management Behaviors focused solely on speech content and were meant to assess behavioral exchanges at a more molecular level than Interaction Behaviors, as well as extract certain resolution strategies. Eight Conflict Management Behaviors were derived: Empathy, Interpersonal Flexibility, Yield, Denial, Praise (Self and Other), and Criticism (Self and Other). Verbal statements were sequentially coded in the order that they were delivered. These were coded as 'thought-units', each containing an idea/argument. Thus, if more than one

concept or thought was included in several statements, each would be coded separately. To reduce the number of analyses, only Interpersonal Flexibility and Criticize Other were analyzed, reflecting participants' willingness to achieve mutually-satisfying goals and their display of overt negativity, which are two theoretically and empirically relevant constructs in the literature on family conflict (D'Zurilla & Goldfried, 1971; Forgatch, 1989; Gondoli & Silverberg, 1997; Hastings & Grusec, 1998; Herrera & Dunn, 1997; Rueter & Conger, 1995).

**Problem-Solving Strategies.** The MCSPCS was used to code mothers and children's solution generation and decision-making abilities. The authors developed this observational measure for the purposes of an earlier study by the same authors (Martin et al., 2012), based in part on existing literature (D'Zurilla & Goldfried, 1971; Shure & Spivack, 1982). Although the MCSPS measures a broader variety of problem solving skills, only the quantity and sophistication of solutions, as well as the resolution status were examined in the current study to remain consistent with the central themes and objective of the study. Verbal statements aimed at solving the problem were identified as belonging to the solution generation stage and were coded as 'thought' units, each containing one idea/argument. Thus, if more than one concept or thought was included in several statements, each would be coded separately. Three levels of sophistication were used to rate each solution (i.e., Poor, Good, and Very Good). Only the Poor and Very Good ratings were selected for the purposes of the current study. Sophistication ratings were measured as a function of clarity, extent of detail/elaboration given, as well as extent to which solutions could be realistically implemented.

Whereas solution generation abilities were coded separately for mothers and children, decision-making was coded globally, beginning as soon as either participant selected a solution to implement or if either verbally stated that the conflict had been resolved. The coder would then examine the remaining interaction and determine which resolution status best fit. Four resolution statues were coded: Unresolved, Unresolved Conflict, Resolved Specified, and Resolved Unspecified. To reduce the number of analyses, only Resolved Specified and Unresolved Conflict were examined in the present study.

Inter-rater reliability for all conflict behaviors and problem-solving variables was achieved by having two undergraduate students (one for Interaction and Conflict Management Behaviors and another for Problem-Solving Strategies) code 30% of the interactions for each. Both were blind to the hypotheses of the study. Primary and secondary coders were also blind to

maternal risk status. Kappa coefficients revealed that reliability for each Interaction Behavior was satisfactory (i.e., 74% for Listening, 69% for Assertiveness, 74% for Warmth, 76% for Withdrawal, and 74% for Negativity). Reliability for determining whether mother-child verbal statements belonged to one of the eight categories of Conflict Management Behaviors was also satisfactory (71%). Accuracy in identifying which of the eight categories verbal statements belonged to was excellent (96%). For Problem-Solving Outcomes, reliability for Solution Generation was excellent (i.e., 90%) and for Resolution Status, it was good (i.e., 80%)

**Data Preparation and Reduction**

Average ratings of Interaction Behaviors were calculated by dividing the sum of behavioral ratings of each code by the total number of 30-second intervals. Conflict Management Behaviors and Problem-Solving Strategies were proportionalized by the total number of topics that each dyad discussed, thereby reflecting an average of what mothers and children talked about per issue or problem.

## Results

Prior to conducting analyses, descriptive statistics were used to assess the normality of the distribution, skewness for each variable, and to identify outliers. Outliers were systematically assigned a value two times the standard deviation to the mean. Conflict Management Behaviors and Problem-Solving Strategies remained somewhat skewed, despite bringing in extreme scores. However, because these variables represented naturally infrequent occurring behaviors, it was elected not to transform them. The means and standard deviations for all observational variables are reported in Table 4, in addition to percentage scores created for Conflict Management Behaviors and Problem-Solving Strategies to permit meaningful comparisons (i.e., reflecting the sum of each variable relative to the total sum of all verbal statements, by topic).

To reduce the number of analyses, two principal components factor analyses with oblique rotation (using Eigenvalues greater than 1 criterion) were conducted on mother and child Interaction Behaviors, separately. In both analyses, two factors were retained. For mothers, Factor 1 explained 62.10% of the variance and was labelled Positive Engagement (i.e., high Listening, Assertiveness, and Warmth, and low Negativity). For children, Factor 1 explained 56.66% of the variance and was also labelled Positive Engagement (i.e., high Listening, Assertiveness, and Warmth, and low Withdrawal). Factor 2 for mothers explained 21.67% of variance and was labelled Disengagement (i.e., low Assertiveness and high Withdrawal). Factor

2 for children accounted for 20.47% of variance and was labelled Negative Disengagement (i.e., low Listening, Warmth, and high Negativity). The factor loadings are presented in Table 5.

Hierarchical multiple regressions were employed to address the research questions. Across all analyses, a minimum of 10 subjects per predictor variable was maintained as recommended by Tabachnick and Fidell (1996). Depending on the research question, maternal and child control variables included: mothers' education in years, and child age, gender and total IQ score. In Parts 1 and 2, observational coding variables were entered into the regression analyses first, followed by maternal and child control variables. Interaction and Conflict Management Behavior variables were examined in separate regressions to limit the number of predictors. In Part 3, maternal childhood Aggression and Social Withdrawal were entered into the regression analyses first, followed by the selected control variables. Because previous studies from the Concordia Project have shown that the combination of both high levels of childhood Aggression and Withdrawal leads to more problematic outcomes, the interaction term (centered) was entered in the final step.

Significant results ($p < .05$) are presented in the sections below. Trends ($p < .10$) were reported only if the results were consistent with hypotheses and the literature. Results for mothers (when relevant) are presented before those for children. Findings related to Interaction Behaviors are presented before those for Conflict Management Behaviors. Inter-correlations among all variables are provided in Tables 6 (Part 1), 7 (Part 2), and 8 (Part 3). Summary tables for regression analyses are provided in Tables 9 (Part 1), 10 (Part 2), and 11 (Part 3). See Appendix C for summary tables of non-significant findings.

**Part 1. Conflict Behaviors and Problem-Solving Strategies during Mother-Child Interactions in Middle Childhood**

The overall objective of *Part 1* ($n = 64$; original female participants) was to examine the relationship between mothers' and children's Interaction and Conflict Management Behaviors and their Problem-Solving Strategies. Demographic control variables in this set of regression analyses included Maternal Education (step 2), as well as Child Age and Gender (step 3).

**Total Solutions**. Mothers' Interaction and Conflict Management Behaviors were examined as predictors of mothers' Total Solutions ($R^2_{adj}$=11% and $R^2_{adj}$=7.2%, respectively). At step 1 and throughout all steps, mothers' Disengagement was significant ($\beta = -.44$, $p = .001$, $r^2 = 0.16$). Mothers who were low on assertiveness and high on withdrawal generated fewer

solutions. At step 1 and throughout all steps, mothers' Interpersonal Flexibility was significant ($\beta$ = .33, $p$ =.01, $r^2$ = 0.11). Mothers who were willing to modify their expectations and demands to accommodate to their children's preferences were more likely to generate numerous solutions.

Mothers' Interaction Behaviors and children's Conflict Management Behaviors were examined as predictors of children's Total Solution ($R^2_{adj}$ =3.7% and $R^2_{adj}$ = 12.1%, respectively). At step 1 and throughout all steps, mothers' Disengagement was significant ($\beta$ = -.29, $p$ =.04, $r^2$ = 0.07). Mothers who were low on assertiveness and high on withdrawal had children who generated fewer solutions overall. At step 1 and throughout all steps, children's Interpersonal Flexibility was significant ($\beta$ = .44, $p$ =.001, $r^2$ = 0.17). Children who were willing to modify their opinions and demands generated a greater number of solutions.

**Quality of Solutions.** Mothers' Conflict Management Behaviors were examined as predictors of mothers' Poor Solutions ($R^2_{adj}$ =4.7%). At step 1 and throughout all steps, Criticize Other was ($\beta$ = .33, $p$ =.02, $r^2$ = 0.10). Highly critical mothers were more likely to propose solutions that were vague, lacking foresight, and/or difficult to implement.

Mothers' Conflict Management Behaviors were also examined as predictors of mothers' Sophisticated Solutions ($R^2_{adj}$ =6.8%). At step 1 and throughout all steps, Interpersonal Flexibility was ($\beta$ = .32, $p$ =.01, $r^2$ = 0.10). Mothers who were willing to modify their views and demands to accommodate to their children's preferences were more likely to generate solutions that were clear and well-defined, and could be realistically implemented.

Children's Conflict Management Behaviors were examined as predictors of mothers' Sophisticated Solutions ($R^2_{adj}$ = 10.1%). At step 1 and throughout all steps, children's Interpersonal Flexibility was significant ($\beta$ = .38, $p$ =.004, $r^2$ = 0.13). Mothers were more likely to generate sophisticated solutions when their children demonstrated a willingness to make concessions.

Children's Interaction and Conflict Management Behaviors were examined as predictors of children's Sophisticated Solutions ($R^2_{adj}$ = 4.6% and $R^2_{adj}$ = 26.4%, respectively). At steps 1 and 2, children's Positive Engagement was significant, becoming a trend in the final step ($\beta$ = .29, $p$ =.06, $r^2$ = 0.06). Children who were high on listening, assertiveness and warmth, as well as low on negativity when interacting with their mothers tended to be more likely to generate clear and well-thought solutions. At step 1 and throughout all steps, children's Interpersonal

Flexibility was a significant predictor ($\beta = .51$, $p = .00$, $r^2 = 0.23$), indicating that children who made concessions were more likely to generate higher quality solutions.

**Resolution Status**. Children's Conflict Management Behaviors were examined as predictors of Resolved Specified ($R^2_{adj} = 8.2\%$). At step 1 and throughout all steps, children's Interpersonal Flexibility was significant ($\beta = .28$, $p = .03$, $r^2 = 0.07$). Mother-child dyads were more likely to end discussions with a clear understanding of how they could resolve their problem when children demonstrated a willingness to integrate mothers' perspectives and make concessions.

Children's Interaction Behaviors were examined as predictors of Unresolved with Negativity ($R^2_{adj} = 4.5\%$). At steps 1 and across all steps, children's Negative Disengagement was significant ($\beta = .29$, $p = .05$, $r^2 = 0.07$). Mother-child dyads were more likely to end their discussion in a hostile climate without selecting a solution to resolve their problem when children were low on listening and warmth, and high on negativity.

**Part 2. Children's Conflict Behaviors during Mother-Child Interactions: Links to their Socio-Emotional Functioning**

The overall objective of *Part 2* ($n = 95$; original female participants and spouses of original male participants) was to examine the relationships between children's Interaction and Conflict Management Behaviors during mother-child interactions and their social competence and problem behaviors in other settings.

**Test-Taking Behaviors.** A principal components exploratory factor analysis (with oblique rotation and Eigenvalue greater than 1 criterion) was conducted on the 24-item WISC-III questionnaire that was used to assess children's test-taking behaviors. There were nine missing variables, thereby reducing the sample size to $N = 86$. These missing variables were not replaced by an imputed value given that test-taking behaviors were measured by observational means. Because several items loaded on more than one factor, a second analysis was conducted on the same 24 items with a fixed number of four factors. Two items were then removed from the factor analysis since their loading values were below the recommended of .500. Four factors were retained based on the 22 remaining items. Factor 1 explained 34.31% of the variance and was labelled Positive/Problem-Focused (e.g., 'appears to enjoy the tasks', 'responds well to praise', and 'demonstrates good concentration and persistence'). Factor 2 explained 15.32% of the variance and was labelled Anxious/Insecure (e.g., 'appears anxious during test', 'needs

encouragement to persist in solving problems', and 'does not appear confident in his or her abilities'). Factor 3 explained 9.56% of the variance and was labelled Disorganized (e.g., 'responds by trial-and-error', 'makes careless mistakes', and 'does not use experimenter's feedback for difficult problems'). Factor 4 explained 7.18% of the variance and was labelled Rule-Abiding (e.g., 'respects limits and boundaries', 'follows instructions' and 'examiner does not need to impose limits to correct negative behavior'). Factor loadings can be found in Table 12.

The Disorganized factor was normally distributed. However, Positive/Problem-Focused and Rule-Abiding were negatively skewed, whereas Anxious/Insecure was positively skewed. An inverse transformation on these three variables produced normal distributions and these transformed variables were used in regression analyses. Given that test-taking behaviors have been shown to affect cognitive test performance (Heinonen et al., 2011; Oakland et al., 2012), the effects of Child IQ were controlled for in this set of analyses. Consequently, Maternal Education was entered in the second step, followed by Child Age and IQ in the third step.

Children's Interaction Behaviors were examined as predictors of Anxious/Insecure test-taking behaviors ($R^2_{adj} = 15.2\%$). At step 1 and throughout all steps, children's Positive Engagement was significant ($\beta = -.24$, $p = .03$, $r^2 = 0.05$). Children who were high on listening, assertiveness, and warmth, and low on withdrawal during mother-child interactions were less likely to appear uneasy and self-doubting while test-taking, and were less likely to require prompting and encouragement from the experimenter to begin or persist in the tasks. At step 3, Child IQ was significant ($\beta = -.36$, $p = .002$, $r^2 = 0.10$), indicating that children with higher levels of intellectual functioning were less likely to display anxious and insecure test-taking behaviors.

Children's Conflict Management Behaviors were examined as predictors of children's Rule-Abiding test-taking behaviors ($R^2_{adj} = 10.2\%$). At step 1 and throughout all steps, children's Criticize Other was significant ($\beta = -.28$, $p = .009$, $r^2 = 0.08$). Children who expressed a lot of criticism discussing conflicts with their mothers were less likely to be cooperative and compliant with the experimenter during a one-on-one standardized assessment.

**Measures of Socio-Emotional Functioning.** The SSRS was used as a measure of children's social competence, and the CBCL and TRF were used as indices of children's problem behaviors (Internalizing and Externalizing). These three measures were normally distributed. There were missing variables in the CBCL and TRF that reduced the sample size to 93 and 79,

respectively. Multiple imputation techniques (Little & Rubin, 2002) based on previous scores at earlier time points were used to replace missing data. Results from the Little's Missing Completely At Random (MCAR) test confirmed that the data were not missing completely at random and consequently multiple imputation was appropriate for the data. Therefore, the Amelia II program (Honaker, King, & Blackwell, 2011) was used to impute mother and teacher-rated internalizing and externalizing problems (i.e., CBCL and TRF) for those who had missing data for these variables. Demographic control variables included in this set of regressions included Maternal Education (step 2), followed by Child Age and Gender (step 3).

Children's Interaction Behaviors were examined as predictors of their self-rated social competence ($R^2_{adj} = 7.2\%$). At steps 1 and 2, children's Positive Engagement was significant ($\beta = .24$, $p = .03$, $r^2 = 0.05$). Children who were high on listening, assertiveness, and warmth, and low on negativity during mother-child interactions perceived themselves as having stronger social skills (i.e., cooperation, empathy, assertiveness, and self-control). Positive Engagement was no longer significant in the third step when Child Age and Gender were included. In this final step, Child Gender was a trend ($\beta = .21$, $p = .057$, $r^2 = 0.04$), indicating that girls tended to perceive themselves as more socially skilled than boys.

Children's Interaction Behaviors were examined as predictors of their mother-rated Externalizing problems ($R^2_{adj} = 5.4\%$). At step 1, children's Negative Disengagement was significant ($\beta = .21$, $p = .03$, $r^2 = 0.04$). Children who were low on listening and warmth, and high on negativity during mother-child interactions were more likely to be perceived by mothers as having externalizing problems. At step 2, Negative Disengagement was a trend ($p = .06$) and was significant in step 3 ($\beta = .23$, $p = .03$, $r^2 = 0.05$).

Children's Interaction Behaviors were examined as predictors of their teacher-rated Externalizing problems ($R^2_{adj} = 19.5\%$). At steps 1 and 2, children's Positive Engagement was significant ($\beta = -.22$, $p = .04$, $r^2 = 0.04$). Children who were high on listening, assertiveness, warmth, and low on withdrawal were less likely to be perceived by teachers as having externalizing problems at school. However, this association became nonsignificant in the third step. At step 3, Child Gender was significant ($\beta = -.33$, $p = .002$, $r^2 = 0.09$) and children's Negative Disengagement was a trend ($\beta = .20$, $p = .05$, $r^2 = 0.03$). Teachers were more likely to rate children as having externalizing problems when they were boys, and they tended to do the

same when children were low on listening and warmth, and high on negativity during mother-child interactions.

Children's Conflict Management Behaviors were also examined as predictors of children's teacher-rated Externalizing problems ($R^2_{adj} = 22.8\%$). At step 1 and throughout all steps, children's Criticize Other was significant ($\beta = .26$, $p = .006$, $r^2 = 0.07$). Children who verbally expressed criticism during mother-child interactions were more likely to be perceived by teachers as having externalizing problems at school. At step 3, Child Age and Gender also were significant ($\beta = .20$, $p = .04$, $r^2 = 0.04$; $\beta = -.35$, $p < 001$, $r^2 = 0.12$ respectively). Teachers perceived older children and boys as having greater externalizing problems.

**Part 3. Children's Socio-Emotional Functioning: Links to Mothers' Histories of Aggression and Social Withdrawal**

*Part 3* ($n = 64$; original female participants) of this study was designed to examine how children's adaptive and maladaptive behaviors during middle childhood were predicted by maternal childhood histories of aggression and social withdrawal.

**Test-Taking Behaviors**. Due to missing variables, the sample size for these regression analyses was reduced from 64 to 58. To ensure a ratio of 10:1 with predictors, demographic control variables that were not found to be significantly correlated with test-taking behaviors were omitted (i.e., Maternal Education and Child Gender). Thus, Child Age and IQ were entered as control variables in the second step.

Maternal histories of childhood Aggression and Social Withdrawal were examined as predictors of children's Disorganized test-taking ($R^2_{adj} = 47.9\%$). At step 1, maternal histories of Aggression and Social Withdrawal were significant ($\beta = .30$, $p = .02$, $r^2 = 0.09$ and $\beta = .36$, $p = .005$, $r^2 = 0.13$, respectively). Children of mothers who were identified as either high on aggression or social withdrawal in childhood were more likely to demonstrate a careless, trial-and-error, and impulsive test-taking approach, as well as less likely to benefit from experimenters' feedback during challenging test items. Aggression and Social Withdrawal were no longer significant in the second step. At step 2, Child Age and IQ were significant ($\beta = -.31$, $p = .002$, $r^2 = 0.09$ and $\beta = -.57$, $p < .000$, $r^2 = 0.25$, respectively). Older children and those with greater cognitive test performance were less likely to exhibit these disorganized test-taking behaviors.

In order to better understand the relationship between maternal histories of behavior problems and children's Disorganized test-taking, mediation analyses (bootstrap method by Preacher and Hayes, 2008 which adjusts for the potential influence of covariates) were employed with Child IQ as a mediator. These analyses revealed that Child IQ mediated the relationship between maternal childhood histories of either Aggression or Withdrawal and children's disorganized test-taking behaviors. These findings suggest that mothers with childhood histories of Aggression ($\beta$ = .22, 95% CI[0.06, 0.41]) *or* Social Withdrawal ($\beta$ = .16, 95% CI[0.03, 0.37]) were more likely to have children with lower levels of cognitive functioning which, in turn, was associated with carelessness, impulsivity, and less effective test-taking strategies in a standardized assessment.

**Measures of Socio-Emotional Functioning**. As in previous analyses, the SSRS, CBCL, and TRF were used as indices of children's social competence and problem behaviors. Maternal Education, which was not found to be a significant predictor of children's concurrent indices of preadolescent socio-emotional functioning, was excluded in these analyses. Child Age and Gender were entered in the second step as control variables.

Maternal histories of childhood Aggression and Social Withdrawal were examined as predictors of children's social competence ($R^2_{adj}$ = 12.7%). At step 1, maternal histories of Social Withdrawal was a trend ($\beta$ = -.22, $p$ =.07, $r^2$ = 0.05). Mothers who were socially withdrawn in childhood tended to have children who perceived themselves as having difficulties across several dimensions of social competence, including empathy, cooperation, assertion and self-control. At step 2, Social Withdrawal was nonsignificant and was a trend ($\beta$ = -.21, $p$ =.087, $r^2$ = 0.05) in the third step. At steps 2 and 3, child Gender was significant ($\beta$ = .30, $p$ =.02, $r^2$ = 0.08). Girls rated themselves as more socially skilled than boys.

## Discussion

The primary aim of the current study was to extend the literature on family conflict and to address several gaps in the existing literature. To this end, we examined how both positive and negative mother-child conflict behaviors relate to specific problem-solving strategies separately (i.e., quantity and quality of solutions, and resolution status), using observational means. The results partially supported the hypothesis that conflict behaviors in mother-child dyads can be distinguished on the basis of whether they support or hinder problem-solving efforts. At the same time, the findings draw attention to differences between mothers and children, as well as

demonstrate that conflict behaviors do not necessarily influence solution and decision-making outcomes uniformly. For example, whereas the degree to which mothers positively engaged with their children did not predict problem-solving behaviors in either participant, these types of interaction behaviors (i.e., responsive listening, assertiveness, warmth, and low levels of behavioral withdrawal) in children were positively associated with the quality of their solutions as reflected by their clarity, appropriateness, and effectiveness. Results from other studies also suggest that children's interest and willingness to participate in discussions enhances their solution generation abilities (e.g., Erwin, Purves, & Johannes, 2005).

One conflict behavior that was found to be particularly constructive for both mothers and children in the current study was interpersonal flexibility; dyads' willingness to modify their opinions, goals, and/or behaviors for the sake of mutual understanding and agreement. As hypothesized, interpersonal flexibility predicted both mothers' and children's ability to brainstorm a variety of ideas, as well as propose clear and well thought-out solutions. Interestingly, the more children demonstrated interpersonal flexibility, the greater the quality of their mothers' solutions. Through their active participation, children may have encouraged mothers to remain solution-focused and further develop their ideas. Dyads were also more likely to end their discussion amicably and agree on a specific solution to implement when children made concessions; a finding that is consistent with the power hierarchy that underlies parent-child relationships (Adams & Laursen, 2007). Overall, these results demonstrate that mother-child exchanges characterized by joint effort, mutual respect, and compromise are related to successful problem-solving across both solution generation and decision-making stages. The findings also highlight the bidirectional and transactional nature of mother-child interactions (Serbin et al., 2015), emphasizing children's ability to enhance mothers' problem-solving efforts.

That mothers and children engaged in more productive problem-solving when they communicated in a responsive and flexible manner is consistent with the notion that these types of behaviors reduce opposition, as well as encourage perspective-taking, empathy and open dialogue; factors known to facilitate collaboration (Crockenberg & Litman, 1990; Hastings & Grusec, 1997; Herrera & Dunn, 1997; Lundell, Grusec, McShane, & Davidov, 2008). Consideration of children's preferences and compromising also provides children a sense of autonomy and power sharing (Dix & Branc, 2003) that promotes closeness, secure attachment, and adaptive socio-emotional development (Baumrind, 1989; Gondoli & Silverberg, 1997;

Hastings & Grusec, 1998; Herrera & Dunn, 1997; Leseman & Sijsling, 1996; McCombs, Forehand, & Smith, 1988; Nastasi & Clements, 1991). Dyads' ability to compromise may be especially important in middle childhood when children's perspective-taking skills strengthen and they become increasingly autonomous and engage in activities outside the home (Collins, 2005). However, it is important to note that too much flexibility, such as in excessively permissive families, may hinder children's ability to learn self-control and emotion regulation (Maccoby & Martin, 1983; Mandara, 2003). Parenting practices characterized by both flexibility and structure have been associated with the most adaptive child outcomes (Baumrind, 1989; Olson & Gorall, 2003).

Whereas mothers and children who discussed their conflicts in a collaborative and flexible manner worked productively at resolving their problem, other dyads exhibited conflict behaviors that hindered their problem-solving. In particular, mothers who behaved in a disengaged manner and lacked assertiveness generated fewer solutions, and so did their children. Thus, not only were these mothers less constructive, but it would appear that they also failed to provide the necessary structure and guidance needed in order to elicit their children's participation in the problem-solving process. Inadvertently, they may have also conveyed disinterest that discouraged children's involvement. In a study by McCombs, Forehand, and Smith (1988), mothers who handled disputes with their children in a reserved and avoidant manner also had children who exhibited poorer problem-solving abilities. Outside the context of mother-child interactions, research on social problem-solving indicates that passive and/or avoidant conflict resolution strategies are ineffective and linked to internalizing and externalizing problems (D'Zurilla & Nezu, 1982, 1999; Forgatch, 1989; McColloch et al., 1990). Together, findings from the present study suggest that mothers play a dominant role in initiating the solution generation process for themselves and their children.

In terms of more overt forms of negativity, mothers who expressed higher levels of verbal criticism, either towards their child or someone else involved in the conflict, were more likely to generate solutions that were vague, unrealistic, and/or lacking foresight. Although children's critical statements did not significantly hinder the quality of their solutions, dyads with children who were unresponsive, uncooperative, and/or antagonistic were more likely to end discussions angrily without successfully resolving their conflict. Similarly, results from previous studies have shown that behaviors that communicate anger, contempt, or impatience disrupt the problem-

solving process during family disputes (Capaldi, Forgatch, & Crosby, 1994; Forgatch, 1989; McColloch et al., 1990; Rueter & Conger, 1995; 1998). Negative behaviors may shift the focus away from the central problem and detract from family members' ability to share ideas constructively and develop workable solutions to their problems. Our findings extend the literature on family conflict by demonstrating the unique contributions of mothers' and children's interpersonal negativity across solution and decision-making outcomes separately.

**Cross-Context Applicability**

The results also lent support to the hypothesis that children's conflict behaviors during mother-child interactions 'carry over' to other settings. This hypothesis was tested in two ways, using observational ratings of children's behaviors during a standardized cognitive assessment and using global indices of socio-emotional functioning from multiple informants (i.e., child mother, and teacher). We identified four categories of factor-analytically derived dimensions of children's test-taking behaviors: Attentive/Problem-Focused, Anxious/Avoidant, Cooperative, and Disorganized. These dimensions are similar to those identified in the literature that have emphasized attentiveness, avoidance, and cooperation (Oakland, Calllueng, & Harris, 2012).

Our results indicated that the more children listened attentively, communicated assertively, exhibited warmth, and were actively engaged with their mothers while discussing personal conflicts, the less anxious and insecure they appeared in a test-taking situation (i.e., not taking pleasure in the activity, needing prompting or encouragement to begin, appearing nervous, and doubting their competence). In other words, they were more relaxed, confident, and self-motivated than children who displayed fewer positive interaction behaviors with their mothers. Although modest, this association remained significant even after controlling for test performance (i.e., IQ score), suggesting a direct relationship between children's conflict resolution abilities during interactions with their mothers and their test-taking behaviors. In addition, children who engaged positively during mother-child interactions rated themselves as more socially skilled, including more empathic, cooperative, assertive and capable of self-control. Together, these findings demonstrate that the degree to which preadolescents interact with their mothers in a cooperative, problem-focused, and friendly manner has implications for how they approach challenging cognitive tasks, as well as how they view themselves socially.

The extent to which children behave confidently in challenging situations and perceive their social skills favourably may be indicative of a positive self-concept and socio-cognitive

correlates of behavior such as self-efficacy evaluations and outcome expectancies (Cuddy & Frame, 1991; D'Zurilla & Maydeu-Olivares, 1995; Erdley & Asher, 1996). Research indicates that positive self-concept is linked to competent behaviors (Crick & Dodge, 1994). Moreover, individuals with positive self-concepts exhibit more adaptive academic habits (Ganjie & Soufi, 2015; Herbert & O'Mara, 2008), engage in more active coping strategies (Smedema, Catalano, & Ebener, 2010), as well as make decisions more confidently (Larson & Heppner, 1985). Those who perceive problems as surmountable are more likely to engage in constructive responses whereas individuals who are intimidated by problems and view them as threats have a greater tendency towards anger and anxiety, as well as passive coping strategies (Becker-Weidman et al., 2009; Londahl et al., 2005; D'Zurilla & Nezu, 1999; Spence, Sheffield, & Donovan, 2002). Although we did not directly assess children's social cognitions, the factor score relating to 'anxious/insecure' testing-taking behaviors parallels numerous features of a negative problem orientation (e.g., anxious affect, insecure behaviors, avoidance); a construct developed by D'Zurilla, Goldfried and colleagues' Social Problem-Solving Model (D'Zurilla & Goldfried, 1971; D'Zurilla & Maydeu-Olivares, 1995). Given that children who engaged positively with their mothers displayed *fewer* anxious/insecure test-taking behaviors and rated themselves more socially skilled, it is possible that they may be low on dimensions of negative orientation. More research is warranted to clarify such factors and to examine their relationships.

With regards to cross-context associations of children's negative behaviors, several findings emerged in the hypothesized direction. First, children who listened poorly, exhibited low warmth, and interacted with their mothers in an antagonistic and/or rejecting manner (i.e., Negative Engagement) were more likely to be rated by their mothers as having more externalizing problems. Second, children who were verbally critical during mother-child interactions were less likely to follow the test administrator's instructions and required more re-directing, even after controlling for child IQ. Third, children who were more verbally critical were also more likely to be identified by their teachers as exhibiting externalizing problems at school. That both test-administrators and teachers identified verbally critical children as having behavior problems further validates the association between children's critical tendencies with mothers and conduct problems outside the home. Indeed, both of these informants offer converging views on how children behave in highly structured environments that emphasize cognitive activities. In contrast, mothers provide a more unique perspective of children's

functioning at home. Therefore, the finding that children's negative interaction behaviors were positively associated with mother-rated externalizing problems may reflect difficulties within the parent-child relationship, relations between other family members, and/or mother's perception of her child as difficult or hard-to-manage. Overall, these results suggest that observations of children's verbal and nonverbal negativity during mother-child conflict discussions may be indicative of more serious behavioral problems, particularly at home and in the classroom.

**Maternal Histories of Aggression and Social Withdrawal**

Some children in the present sample were more likely to display poor outcomes. Results from the present study partially supported our hypotheses by demonstrating that children of mothers with childhood histories of aggression *or* social withdrawal were more likely to display carelessness, trial-and-error problem-solving, and a disorganized response style, particularly for challenging test-items. Furthermore, children's cognitive ability (i.e., total IQ score) was found to be a significant mediator whereby children of mothers with childhood histories of behavior problems were more likely to display ineffective test-taking behaviours due to their lower cognitive abilities. Notably, children's cognitive difficulties may be due to specific rather than general deficits such as attention problems, executive dysfunctions, or both (Huyder & Nilsen, 2012). In parallel, results from earlier studies from the Concordia Project found that maternal childhood histories of aggression and social withdrawal were negatively associated with child IQ during the preschool years (Saltaris et al., 2004; Serbin et al., 2000). Preschool IQ was then longitudinally associated with poor school adjustment in middle childhood, particularly low academic achievement and referral to special educational services (Saltaris et al., 2004). Findings from the present study indicate that children's intellectual difficulties persist into middle childhood, hindering their learning and work-related skills. By examining children's test-taking behaviors, results also provide greater insight into the potential mechanisms underlying the academic difficulties encountered by children of mothers with childhood histories of aggression or social withdrawal. Given the importance of work-related skills to academic achievement (McClelland, Morrison, & Holmes, 2000), these findings have clear implications for children`s school adjustment and occupational trajectories as they transition to high school.

Contrary to our hypotheses, neither aggression nor social withdrawal was associated with test-taking behaviors indicative of children's cooperation (e.g., 'respects limits', 'follows instructions', and 'does not require disciplinary tactics'), prosocial behaviors (e.g., 'appears to

take pleasure in the tasks' and 'sensitive to administrator's compliments'), or anxiety/insecurity (e.g., 'appears anxious' and 'needs encouragement to begin'). Thus, although children of aggressive and socially withdrawn mothers tended to be more careless and unsystematic when attempting to solve cognitive problems, it would appear that they were nevertheless compliant, cooperative, as well as seemingly comfortable with the assessment.

Equally unexpected was the finding that maternal childhood histories of aggression and social withdrawal did not predict mother or teacher-rated internalizing and externalizing symptoms. This finding is surprising given that, compared to population norms, children of parents from the Concordia Project have been found to have higher rates of emotional and behavioral problems (Fisher et al., 2007; Saltaris et al., 2004; Serbin et al., 1998; Serbin et al., 2000; Stack et al., 2012). Observational studies have also demonstrated that children of mothers who were aggressive and/or socially withdrawn in childhood exhibit poor interpersonal skills during mother-child interactions (e.g., noncompliance, negative emotion expression, less responsiveness, and low assertiveness; Bentley, 2002; Enns et al., 2009; Grunzeweig et al., 2009). Within the context of mother-child conflict, maternal childhood histories of aggression and social withdrawal have also been associated with poorly sophisticated solutions in both mothers and children, as well as antisocial solutions in children (Martin et al., 2012). Given the link that has been demonstrated between the quality of solutions generated, low social status, and aggression (Erdley & Asher, 1998; Evans & Short, 1991; Fischler & Kendall, 1988; Guerra & Slaby, 1989; Haskett, 1990; Mott & Krane, 1994; Youngstrom et al., 2000), one would expect that children of mothers with childhood histories of aggression and social withdrawal would display problem-solving deficits *and* behavior problems. That being said, nearly all studies examining children's social problem-solving abilities have been conducted with peers or using hypothetical scenarios. Our findings may therefore suggest that the connection between children's problem-solving and their behavior problems is not consistent across all relationships. On a broader level, mothers with histories of aggression and social withdrawal in this sample were found to be slightly more educated than those from the original sample, which may have resulted in insufficient variability to detect significant differences. Statistical power may also have been inadequate due to sample size. Nevertheless, results from the current study suggest that, at least with this subsample of mother-child dyads from the Concordia Project, aggression and social withdrawal do not significantly predict behavior problems in middle childhood.

With regards to social competence, on the other hand, a trend was found indicating that maternal histories of social withdrawal were negatively related to children`s ratings of their social competencies. Although this association did not reach statistical significance, the finding is consistent with other studies from the Concordia Project that have found that children of mothers who were socially withdrawn in childhood have lower scores on self-report measures of empathy and cooperation (Enns et al., 2009; Stack et al., 2012). Together, these results suggest that children of mothers with childhood histories of social withdrawal perceive themselves as less socially skilled, with perhaps the greatest difficulty in perspective-taking and working collaboratively with others. Difficulty with perspective-taking and collaboration may help explain why, in a previous study by the same authors (Martin et al., 2012), these same children were found to generate more autonomous solutions and to make decisions with their mothers in a vague and unstructured way.

It is interesting that, in the current study, lower perceived social competence among children with mothers with childhood histories of social withdrawal emerged in the absence of mother and teacher-rated behavior problems. Although social skills and behavior problems are separate constructs, research indicates that they are negatively correlated (Langeveld et al., 2012; Najaka, Gottfredson, & Wilson, 2001). Children who lack social skills such as empathy, assertiveness, cooperation, and self-control are more likely to experience peer rejection and/or victimization, which in turn, may lead to internalizing and/or externalizing symptoms (Gest, Sesma, Masten, & Tellegen, 2006; Qualter & Munn, 2002). It is possible that children of mothers with childhood histories of social withdrawal in the present study may have experienced interpersonal difficulties that were too subtle to be detected with the measures used herein. Alternatively, children's interpersonal difficulties may have manifested in contexts that are less apparent or visible to mothers and teachers, such as among peers. Given the subjective nature of children's ratings, it is also possible that their lower scores reflected a tendency to underestimate their social competencies due to either self-esteem issues or the influence of concurrent situational stressors (e.g., dispute with a friend). A more thorough investigation of the social competencies of children with mothers who were socially withdrawn in childhood involving multiple informants across several contexts is warranted.

**Conclusions**

Overall, findings from the current study advance our understanding of mother-child conflict resolution and call attention to the importance of examining mothers' and children's solution generation and decision-making strategies separately rather than in aggregated form. In addition, results provide empirical evidence for the cross-context applicability of children's conflict behaviors during mother-child interactions to other domains of socio-emotional functioning. Whereas the majority of previous studies have focused on the effects of parenting practices on child outcomes, our study was designed to examine associations between children's behaviors with mothers, their test-taking behaviors, as well as global measures of social competence and problem behaviors. Two sets of findings emerged, differentiating positive and negative patterns linked to children's conflict behaviors. First, children who exhibited positive interaction behaviors with their mothers (i.e., high on listening, assertiveness, and warmth as well as low on withdrawal) were more likely to generate sophisticated solutions, display fewer anxious and avoidant test-taking behaviors, and perceive themselves as more socially skilled. Second, children's negative engagement (i.e., low on listening and warmth, and high on negativity) predicted unresolved and emotionally charged mother-child conflicts, as well as mother-rated externalizing problems. Similarly, children's verbal criticism during mother-child conflicts was related to less cooperative test-taking behaviors, as well as teacher-rated externalizing problems. Together, these findings not only highlight the unique ways in which children behaviorally influence mother-child problem-solving and conflict resolution, but also add support to the contention that some of these more general conflict behaviors reflect characteristic styles of interacting (Ackerman, Kashy, Donnellan, & Conger, 2011; Conger & Donnellan, 2007; Forgatch, 1989; Rueter & Conger, 1995). Consistent with previous research (e.g., Recchia et al., 2012), results also suggest that certain conflict resolution strategies, such as compromise, may be context-specific. Importantly also, results demonstrate that maternal childhood histories of aggression and social withdrawal negatively impact children's social and cognitive development.

While informative, results from the current study should be interpreted in light of a few limitations. First, the relatively small sample size combined with the number of predictor and outcome variables likely reduced statistical power. Second, because data were correlational, causal effects could not be detected with certainty and the dynamic and bi-directional nature of mother-child exchanges could not be fully captured. Third, children's conflict behaviors were

only examined within the context of mother-child interactions, signifying that the present findings cannot shed light on the differences and similarities of how children manage and resolve conflicts across relationships, such as with peers.

Despite these limitations, there are a number of strengths that advance current knowledge on mother-child conflict resolution and children's socio-emotional development. In particular, behavioral processes and problem-solving outcome variables were examined simultaneously, providing a more comprehensive view of how mothers and children resolve their disagreements. Moreover, problem-solving skills were investigated separately which uncovered unique associations that had yet to be detected in the literature on mother-child conflict. Rather than rely solely on questionnaires, findings from the present study were strengthened by the use of a mixed-method study design that included a rich dataset of observational variables. Our dataset was particularly enriched by the fact that our sample derived from the Concordia Project which provided the unique opportunity to discover potential intergenerational continuities and discontinuities between mothers with childhood histories of aggression and social withdrawal and their preadolescent offspring. As family interactions are embedded within broader systems (Brofenbrenner, 1979) and are determined by multiple factors (Collins et al., 2001; Cox & Paley, 1997), findings further point to the importance of collecting information from numerous individuals across contexts and time in order to capture the rich and contextualized nature of family dynamics.

Table 1

*Mean (Standard Deviations) of Demographic Information by Subsample*

| | Original Participant Mothers and Spouses | | | Original Participant Mothers | | |
|---|---|---|---|---|---|---|
| | Parts 1 & 2 | Concordia Project | | Part 3 | Concordia Project | |
| | *n* = 95 | *n* = 175 | *n* = 419 | *n* = 64 | *n* =114 | *n* = 298 |
| Mothers' aggression (z-score) | 0.25 (1.03) | 0.39 (1.06) | 0.33 (1.04) | 0.28 (1.08) | 0.38 (1.06) | 0.33 (1.05) |
| Mothers' withdrawal (z-score) | 0.39 (0.99) | 0.30 (0.94) | 0.34 (0.96) | 0.57 (1.03) | 0.45 (0.98) | 0.38 (0.97) |
| Mothers' age at first child (years) | 25.03 (3.16) | 24.09 (3.66) | 24.54 (3.64) | 24.79 (3.00) | | |
| Mothers' education (years) | 12.59 (2.37) | 11.81 (2.29)* | 11.79 (2.33)* | 12.39 (2.47) | | |
| Occupational prestige[a] | 37.98 (11.73) | 38.42 (10.91) | 38.19 (11.16) | 38.33 (11.59) | | |
| Mothers' age at testing | 37.52 (2.89) | | | 37.57 (2.49) | | |
| Children's age at testing | 10.79 (0.89) | | | 10.88 (0.95) | | |

*Note*. The Standard International Occupational Prestige Scale was used to rate the occupational prestige (SIOPS; Treiman, 1977). [a]Mean occupational prestige ratings correspond to the following occupations: technician, cashier, clerical worker, superintendent. * Z scores were computed by comparing the subsample mean to the mean of the Concordia Project. Z scores above 1.96 indicate a significant difference.

Table 2

*Mean (Standard Deviation) of Demographic Information by Risk Status (n =64)*

| | Original Mothers | |
|---|---|---|
| | High Scores[a] N = 33 | Low Scores[b] N = 31 |
| Children's age at testing | 10.81 (0.84) | 10.96 (1.07) |
| Mothers' age at testing | 37.51 (2.61) | 37.62 (2.39) |
| Mothers' age at first child (years) | 24.66 (3.25) | 24.92 (2.77) |
| Mothers' education (years) | 11.61 (2.03) | 13.23 (2.64)* |
| Occupational prestige | 35.72 (9.04) | 41.09 (13.40) |

Table 3

*Operational Definitions for the Interactions and Conflict Management Behaviors Coding System (ICMB; Martin, Stack, & Ng, 2011) and the Mother-Child Social Problem-Solving Coding System (MCSPCS; Martin, Stack, & Guay, 2007)*

| Code | Description |
|---|---|
| Interaction Behaviors | |
| Listening | Extent to which a participant listens to the other in an engaging, responsive, and validating manner |
| Assertiveness | Extent to which a participant expresses him or herself through clear, appropriate, neutral, and/or positive avenues using an open, straightforward, self-confident, non-threatening, and non-defensive style |
| Warmth/Support | Extent to which a participant expresses care, concern, support, affection, and/or encouragement towards the other participant |
| Withdrawal/Avoidance | Extent to which a participant physically, verbally, and nonverbally orients him/her self away from the other participant and/or the conflict discussion |
| Negativity | Extent to which a participant demonstrates negative behavior (e.g., over-controlling, disapproving, rejecting, contemptuous, critical, and/or hostile) |
| Conflict Management Behaviors | |
| Empathy | Expressing understanding, sympathy and/or concern towards another who may be affected by the problem or their actions |
| Interpersonal Flexibility | Modifying or expressing a willingness to modify one's opinions, needs, and/or goals in a way that facilitates shared understanding and/or the reaching of a common goal |
| Praise | Flattery, encouragement, approval, and/or kindness towards oneself or another |
| Denial | Rejecting the existence of or personal responsibility for a past or present situation for which one actually is responsible or shares responsibility |
| Yield | Bending to the other' participant's will; reluctantly agreeing; giving up under pressure |
| Criticize | Statements intended to harshly judge, blame, reject, ridicule, and/or belittle oneself or another |
| Problem-Solving Variables | |
| Poor Solutions | Statements or solutions that are vague, unrealistic, and/or lack strategic thought processes (e.g., planning, foresight, causal and consequential thinking) |
| Very Good Solutions | Statements or solutions that are clear, sufficiently detailed, realistic, as well as reflect strategic thought processes (e.g., planning, foresight, causal and consequential thinking) |
| Unresolved Conflict | Elevated conflict between mother and child and the problem remains unresolved |
| Resolved Specified | A solution to be implemented has been selected by either or both participants |

Table 4

*Descriptive Statistics for Interaction and Conflict Management Behaviors, and Problem-Solving Variables*

| | Mother | | | Child | | | Dyad | | |
|---|---|---|---|---|---|---|---|---|---|
| | M | SD | % | M | SD | % | M | SD | % |
| Interaction (*n*= 95) | | | | | | | | | |
| Listening | 3.17 | 0.75 | n/a | 2.76 | 0.59 | n/a | | | |
| Assertiveness | 3.28 | 0.71 | n/a | 2.28 | 0.53 | n/a | | | |
| Warmth | 2.67 | 0.85 | n/a | 2.35 | 0.85 | n/a | | | |
| Withdrawal | 1.69 | 0.69 | n/a | 3.04 | 0.85 | n/a | | | |
| Negativity | 1.81 | 0.81 | n/a | 1.81 | 0.89 | n/a | | | |
| Conflict Management (*n* = 95) | | | | | | | | | |
| Interpersonal Flexibility | 0.36 | 0.74 | 7.63 | 0.44 | 0.88 | 8.67 | | | |
| Criticize Other | 1.21 | 2.03 | 25.90 | 0.88 | 2.09 | 17.05 | | | |
| Problem-Solving (*n* = 64) | | | | | | | | | |
| Total Solutions | 13.5 | 6.63 | 59.80 | 9.05 | 5.83 | 40.20 | | | |
| Poor Solutions | 0.49 | 0.93 | 16.60 | 0.30 | 0.63 | 19.80 | | | |
| Very Good Solutions | 1.40 | 1.90 | 47.30 | 0.58 | 1.40 | 38.40 | | | |
| Resolved Specified | | | | | | | 0.46 | 0.76 | 40.00 |
| Unresolved Conflict | | | | | | | 0.21 | 0.45 | 18.50 |

*Note*. Percentage scores for Conflict Management Behaviors and Problem-Solving Strategies based on number of verbal statements in each code divided by total number of statements.

Table 5

*Factor Loadings for Interaction Behaviors (n = 95)*

| | Factor Loadings | | |
|---|---|---|---|
| | 1 | 2 | KMO |
| Mother | | | |
| Listen | **0.85** | -0.43 | 0.74 |
| Assert | **0.65** | **-0.86** | |
| Warmth | **0.89** | -0.21 | |
| Withdrawal | -0.23 | **0.95** | |
| Negativity | **-0.92** | 0.34 | |
| Child | | | |
| Listen | **0.79** | **-0.66** | 0.70 |
| Assert | **0.87** | -0.13 | |
| Warmth | **0.63** | **-0.54** | |
| Withdrawal | **-0.92** | 0.15 | |
| Negativity | -0.17 | **0.92** | |

Table 6

*Intercorrelations among the Variables Examined in the Regression Analyses for Part 1 (n = 64)*

| Measure | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Mother Positive Engagement | - | | | | | | | | | | |
| 2. Child Positive Engagement | .56** | - | | | | | | | | | |
| 3. Mother Disengagement | -.34** | -.29* | - | | | | | | | | |
| 4. Child Negative Engagement | -.35** | -.29* | -.29* | - | | | | | | | |
| 5. Mother Interpersonal Flexibility | -.06 | -.01 | -.01 | -.09 | - | | | | | | |
| 6. Child Interpersonal Flexibility | .28* | .38** | .38** | -.17 | .33** | - | | | | | |
| 7. Mother Criticize | -.48** | -.31* | -.31* | .19 | .01 | -.18 | - | | | | |
| 8. Child Criticize | .05 | .00 | .00 | .32* | -.18 | -.18 | .28* | - | | | |
| 9. Child Age | -.31* | -.30* | .13 | .35** | .19 | -.02 | .18* | .10 | - | | |
| 10. Child Gender | .24 | .48** | -.11 | -.08 | .02 | .20 | -.25 | -.04 | -.27* | - | |
| 11. Maternal Education | .24 | .27* | -.34** | -.14 | -.07 | .17 | -.22 | .09 | -.23 | .07 | - |
| 12. Mother Total Solutions | -.09 | -.14 | -.34** | -.14 | .33** | .20 | .17 | -.01 | .11 | -.08 | .03 |
| 13. Child Total Solutions | .20 | .16 | -.30* | -.15 | .20 | .41** | -.03 | -.12 | -.04 | -.03 | .10 |
| 14. Mother Poor Solutions | -.14 | -.16 | -.15 | .03 | .08 | -.03 | .29* | .16 | .08 | .10 | -.05 |
| 15. Child Poor Solutions | -.17 | -.15 | -.06 | .13 | .17 | -.03 | .05 | -.20 | -.02 | .07 | -.03 |
| 16. Mother Sophisticated Solutions | -.06 | -.01 | -.23 | -.20 | .27* | .37** | .16 | -.16 | .01 | -.07 | .12 |
| 17. Child Sophisticated Solutions | .21 | .31* | -.24 | -.03 | .04 | .55** | .03 | -.14 | -.10 | .17 | .22 |
| 18. Resolved | -.08 | .10 | -.09 | -.09 | .01 | .32** | .07 | .20 | -.19 | .13 | .14 |
| 19. Unresolved with Conflict | -.21 | -.17 | .12 | .32* | -.01 | -.19 | .15 | .24 | .17 | -.13 | -.13 |

*$p$< .05, **$p$< .01.

| (Table 6 continued) | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |
|---|---|---|---|---|---|---|---|---|
| 12. Mother Total Solutions | - | | | | | | | |
| 13. Child Total Solutions | .28** | - | | | | | | |
| 14. Mother Poor Solutions | .62** | .21 | - | | | | | |
| 15. Child Poor Solutions | -.06 | .36** | .16 | - | | | | |
| 16. Mother Sophisticated Solutions | .65** | .30* | .26* | .00 | - | | | |
| 17. Child Sophisticated Solutions | .17 | .45** | .21 | .02 | .43** | - | | |
| 18. Resolved | .36** | .02 | .21 | .01 | .44** | .35** | - | |
| 19. Unresolved with Conflict | -.13 | -.10 | -.12 | -.14 | -.15 | -.19 | -.39** | - |

*$p$< .05, **$p$< .01.

Table 7

*Intercorrelations among the Variables Examined in the Regression Analyses for Part 2 (n = 95)*

| Measure | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Child Positive Engagement | - | | | | | | | | | | |
| 2. Child Negative Engagement | -.28** | - | | | | | | | | | |
| 3. Child Interpersonal Flexibility | .34** | -.15 | - | | | | | | | | |
| 4. Child Criticize | -.04 | .38** | -.15 | - | | | | | | | |
| 5. Child Age | -.24** | .22* | .00 | .10 | - | | | | | | |
| 6. Child Gender | .10 | -.09 | -.03 | -.12 | -.04 | - | | | | | |
| 7. Child IQ | .27** | -.06 | .02 | -.07 | -.06 | .15 | - | | | | |
| 8. Maternal Education | .28** | -.20 | .08 | -.04 | -.14 | .02 | .38** | - | | | |
| 9. Problem-Focused Test-Taking | .19 | -.11 | .02 | .09 | -.44** | -.06 | .26* | .01 | - | | |
| 10. Anxious/Insecure Test-Taking | .30** | -.06 | .03 | .09 | .01 | .11 | .37** | .03 | .16 | - | |
| 11. Disorganized Test-Taking | -.11 | -.14 | -.16 | -.15 | -.26* | -.14 | -.53** | -.07 | -.21* | -.16 | - |
| 12. Rule-Abiding Test-Taking | .02 | -.07 | .07 | -.29** | .04 | -.01 | .24* | .18 | -.20 | -.05 | -.03 |
| 13. Total SSRS | .26* | -.01 | .23* | -.02 | -.07 | .07 | .08 | .19 | .09 | .14 | -.11 |
| 14. CBCL Externalizing | -.21* | .27** | .03 | .03 | .10 | -.09 | -.10 | -.14 | -.06 | .08 | -.02 |
| 15. TRF Externalizing | -.20 | .20 | -.09 | .27* | .30** | -.10 | -.09 | -.03 | -.18 | -.09 | .01 |
| 16. CBCT Internalizing | -.14 | .06 | -.04 | .04 | .05 | -.16 | -.19 | .02 | -.02 | -.14 | .14 |
| 17. TRF Internalizing | -.16 | -.14 | -.02 | .09 | .00 | -.16 | -.41** | -.09 | -.18 | -.38** | .21 |

*$p$< .05, **$p$< .01.

| (Table 7 continued) | 12 | 13 | 14 | 15 | 16 | 17 |
|---|---|---|---|---|---|---|
| 12. Rule-Abiding Test-Taking | - | | | | | |
| 13. Total SSRS | -.10 | - | | | | |
| 14. CBCL Externalizing | .13 | -.13 | - | | | |
| 15. TRF Externalizing | .02 | -.17 | .35** | - | | |
| 16. CBCT Internalizing | .02 | .05 | .48** | .06 | - | |
| 17. TRF Internalizing | .00 | -.08 | .10 | .25* | .30** | - |

Table 8

*Intercorrelations among the Variables Examined in the Regression Analyses for Part 3 (n = 64)*

| Measure | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Aggression | - | | | | | | | | | | |
| 2. Withdrawal | -.10 | - | | | | | | | | | |
| 3. Aggression x Withdrawal | .53** | .09 | - | | | | | | | | |
| 4. Child Age | .07 | -.14 | .09 | - | | | | | | | |
| 5. Child Gender | -.01 | -.41** | -.12 | .05 | - | | | | | | |
| 6. Child IQ | -.31* | -.30* | -.23 | .01 | .21 | - | | | | | |
| 7. Maternal Education | -.17 | -.31* | -.05 | -.23 | .05 | .42** | - | | | | |
| 8. Problem-Focused Test-Taking | -.16 | -.16 | -.16 | -.50** | -.07 | .23 | .11 | - | | | |
| 9. Anxious/Insecure Test-Taking | .04 | -.09 | -.12 | -.05 | .07 | .31* | .07 | .16 | - | | |
| 10. Disorganized Test-Taking | .26* | .33* | .18 | -.28* | -.28* | -.63** | -.19 | -.16 | -.14 | - | |
| 11. Rule-Abiding Test-Taking | -.04 | .00 | -.15 | .06 | .03 | .32* | .23 | -.20 | -.02 | -.02 | - |
| 12. Total SSRS | .16 | -.23 | .07 | -.17 | .07 | .08 | .17 | .20 | .22 | -.15 | -.15 |
| 13. CBCL Externalizing | .20 | -.06 | .24 | .18 | -.04 | -.09 | -.10 | -.09 | .11 | -.04 | .14 |
| 14. TRF Externalizing | .04 | -.10 | .16 | .32* | -.03 | -.10 | -.05 | -.17 | -.02 | -.01 | .00 |
| 15. CBCT Internalizing | .02 | .15 | .17 | .09 | -.24 | -.23 | -.11 | .02 | -.21 | .11 | .06 |
| 16. TRF Internalizing | .06 | .16 | .23 | -.01 | -.09 | -.44** | -.05 | -.20 | -.40** | .23 | -.01 |

*$p$< .05, **$p$< .01.

| (Table 8 continued) | 12 | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|
| 12. Total SSRS | - | | | | |
| 13. CBCL Externalizing | -.13 | - | | | |
| 14. TRF Externalizing | -.16 | .38** | - | | |
| 15. CBCT Internalizing | -.02 | .49** | .19 | - | |
| 16. TRF Internalizing | -.16 | .13 | .26 | .42** | - |

Table 9

*Summary of Results from Hierarchical Regression Analyses for Part 1 (n = 64)*

| Outcome measures | Significant predictors in the final model[a] | Statistics for the final equation |
|---|---|---|
| Total Solutions | | |
| Mother | 1) Mother Disengagement** | $R^2_{Adj} = 11.0\%$, $F = 2.56$ |
| | 1) Mother Interpersonal Flexibility* | $R^2_{Adj} = 7.2\%$, $F = 1.98$ |
| Child | 1) Mother Disengagement* | $R^2_{Adj} = 3.7\%$, $F = 1.48$ |
| | 1) Child Interpersonal Flexibility** | $R^2_{Adj} = 12.1\%$, $F = 2.73$ |
| Quality of Solutions | | |
| Poor (mother) | 1) Mother Criticize Other* | $R^2_{Adj} = 4.7\%$, $F = 1.62$ |
| Sophisticated (mother) | 1) Mother Interpersonal Flexibility* | $R^2_{Adj} = 6.8\%$, $F = 1.76$ |
| | 1) Child Interpersonal Flexibility** | $R^2_{Adj} = 10.1\%$, $F = 2.42$ |
| Sophisticated (child) | 1) Child Positive Engagement[t] | $R^2_{Adj} = 4.6\%$, $F = 1.61$ |
| | 1) Child Interpersonal Flexibility** | $R^2_{Adj} = 26.4\%$, $F = 5.52$ |
| Resolution Status | | |
| Resolved Specified | 1) Child Interpersonal Flexibility* | $R^2_{Adj} = 8.2\%$, $F = 2.13$ |
| Unresolved with Conflict | 1) Child Negative Disengagement[t] | $R^2_{Adj} = 4.5\%$, $F = 1.60$ |

*Note:* [a]Bracketed numbers indicate the step at which the predictor was entered. [b]1 = male, 2 = female. [t]$p < .10$. *$p < .05$. **$p < .01$.

Table 10

*Summary of Significant Regression Findings in the Final Model for Part 2 (n = 95)*

| Outcome Measures | Significant Predictors in the Final Model[a] | Statistics for Final Equation |
|---|---|---|
| Part 2 | | |
| Test-Taking Behaviors[b] | | |
| Anxious/Insecure | 1) Child Positive Engagement*<br>3) Child IQ** | $R^2_{Adj} = 15.2\%$, $F = 4.05$ |
| Rule Abiding | 1) Child Criticize Other** | $R^2_{Adj} = 10.2\%$, $F = 2.92$ |
| Socio-Emotional Functioning | | |
| Prosocial Behavior (SSRS) | 3) Child Gender[c]* | $R^2_{Adj} = 7.2\%$, $F = 2.57$ |
| Externalizing Problems (CBCL) | 1) Child Negative Disengagement* | $R^2_{Adj} = 5.4\%$, $F = 2.07$ |
| Externalizing Problems (TRF) | 1) Child Negative Disengagement[t]<br>3) Child Gender** | $R^2_{Adj} = 19.5\%$, $F = 5.54$ |
| | 1) Child Criticize Other**<br>3) Child Age*<br>3) Child Gender** | $R^2_{Adj} = 22.8\%$, $F = 6.55$ |

*Note*. [a]Bracketed numbers indicate the step at which the predictor was entered. [b]$n = 86$ due to missing variables. [c]1 = male, 2 = female. SSRS = Social Skills Rating System. CBCL = Child Behavior Checklist completed by mother. TRF = Teacher Report Form. [t]$p < .10$. *$p < .05$. **$p < .01$.

Table 11

*Summary of Significant Regression Findings in the Final Model for Part 3 (n = 64)*

| Outcome Measures | Significant Predictors in the Final Model[a] | Statistics for Final Equation |
|---|---|---|
| Test-Taking Behaviors[b] | | |
| Disorganized | 2) Child Age** | $R^2_{Adj} = 47.9\%$, $F = 11.50$ |
| | 2) Child IQ** | |
| Socio-Emotional Functioning | | |
| Prosocial Behavior (SSRS) | 1) Withdrawal[t] | $R^2_{Adj} = 12.7\%$, $F = 2.84$ |
| | 2) Child Gender[c]* | |

*Note*. [a]Bracketed numbers indicate the step at which the predictor was entered. [b]$n = 58$ due to missing variables. [c]1 = male, 2 = female. SSRS = Social Skills Rating System. [t]$p < .10$. *$p < .05$. **$p < .01$.

Table 12

*Factor Loadings for WISC-III Test-Taking Behaviors (n = 86)*

| | Factor Loadings | | | | |
|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | KMO |
| 1. Needs encouragement to begin the exercises | 0.09 | **0.62** | 0.39 | -0.05 | 0.82 |
| 2. Appears to enjoy doing the exercises | **0.71** | **-0.62** | -0.25 | -0.03 | |
| 3. Needs encouragement during the exercises | 0.38 | **0.61** | 0.19 | 0.02 | |
| 4. Appears nervous or anxious during test | -0.17 | **0.82** | 0.07 | -0.11 | |
| 5. Appears confident while problem-solving | 0.46 | **-0.72** | -0.42 | 0.05 | |
| 6. Demonstrates flexibility and adaptability towards problems | **0.81** | -0.21 | -0.41 | 0.20 | |
| 7. Appears relaxed and calm during test | 0.28 | **-0.88** | -0.10 | 0.03 | |
| 8. Is sensitive to examiner's compliments | **0.95** | -0.10 | -0.17 | 0.20 | |
| 9. Respects limits that have been imposed | 0.19 | 0.04 | -0.03 | **0.74** | |
| 10. Follows instructions | 0.29 | -0.07 | -0.20 | **0.86** | |
| 11. Appears withdrawn/guarded | -0.30 | **0.76** | 0.12 | 0.23 | |
| 12. Examiner must repeat the questions | **-0.68** | 0.04 | 0.27 | -0.27 | |
| 13. Uses trial-and-error to solve problems | -0.30 | 0.18 | **0.70** | -0.17 | |
| 14. Makes use of instructions for difficult exercises | 0.26 | -0.24 | **-0.72** | -0.01 | |
| 15. Makes mistakes due to carelessness and inattention | -0.20 | -0.09 | **0.63** | -0.38 | |
| 16. Recognizes errors made | 0.31 | 0.03 | **-0.51** | -0.09 | |
| 17. Is willing to make compromises with examiner | **0.84** | -0.04 | -0.16 | 0.28 | |
| 18. Appears to have difficulty completing certain test items | -0.04 | 0.36 | **0.71** | -0.25 | |
| 19. Examiner must set limits in response to negative behavior | -0.39 | 0.03 | 0.30 | **-0.87** | |
| 20. Demonstrates good attention and concentration | **0.85** | -0.28 | -0.35 | 0.27 | |
| 21. Is persistent when solving problems | **0.72** | -0.33 | -0.38 | 0.19 | |
| 22. Is well-organized when solving problems | **0.86** | -0.17 | -0.40 | 0.38 | |

Note. Factor 1 was labelled Positive/Problem-Focused. Factor 2 was labelled Anxious/Insecure. Factor 3 was labelled Disorganized. Factor 4 was labelled Rule-Abiding.

## Chapter 5: General Discussion

Conflict between mothers and children has profound implications for family functioning and children's adjustment (Bradford et al., 2008; Ingoldsby et al., 2006; Klahr et al., 2011; Jaycox & Repetti, 1993; Rengasamy et al., 2013; Trentacosta et al., 2011). Yet it has received less research attention in middle childhood compared to conflict occurring in neighboring developmental periods, that of early childhood and adolescence. The overarching goal of the present dissertation was to address this gap in the literature by providing a more comprehensive understanding of how mothers and preadolescents from disadvantaged backgrounds manage and resolve their personal disputes. To this end, links to children's socio-emotional functioning and maternal risk (i.e., childhood histories, concurrent functioning, and education) were also investigated. The present series of two studies fill several important voids in the literature, including: the examination of more than one core component of conflict; the delineation of several problem-solving skills to uncover their unique associations with mothers' and children's conflict behaviors; the cross-context applicability of children's conflict behaviors in multiple settings (social, cognitive, academic); and the effects of maternal education above and beyond other markers of SES. While research has historically highlighted the destructive potential of mother-child conflict, some of the present findings demonstrated that conflict can be constructive and even promote children's socio-emotional development. Findings also draw attention to contextual variables that influence the characteristics of mother-child conflicts in vulnerable communities, as well as distinguish the effects of past and current maternal risk factors. Consistent with developmental psychopathology models (Cicchetti, 2006; 2013), the design of the studies surpassed the examination of single predictors to elucidate how interactive processes between risk and protective factors contribute to pathways leading to adaptive and maladaptive outcomes in socio-economically disadvantaged populations.

### Developmental Considerations: Middle Childhood

The fact that researchers have usually focused their efforts on mother-child conflict in early childhood and adolescence to the relative exclusion of studying this conflict in middle childhood is surprising given the tremendous growth in physical maturity, cognition, motivation, and social behavior associated with middle childhood (Del Giudice, 2014). Such growth undeniably affects the mother-child relationship, including how conflicts manifest, take shape, and unfold (Collins, Madsen et al., 2001; Van Doorn, Branje, & Meeus, 2011). The transition to

elementary school also gives rise to unprecedented demands and responsibilities (Collins & van Dulmen, 2006; Zembar & Blume, 2009). As self-regulation increases, parents usually require that children also undertake additional responsibilities at home (Collins et al., 2001). The impressive range of opportunities and tasks that emerge in middle childhood may inevitably cause undue stress in the mother-child relationship (Shanahan et al., 2007) and spark new topics of conflict as each may have differing goals and expectations about the types of activities children should engage in. Despite the fact that some of these new activities occur outside the home environment, results from the studies of the current dissertation suggest that household chores represent the greatest source of disagreement between mothers and preadolescents, followed by quarrels between siblings. The prevalence of these conflict topics reflect the importance that mothers place on socializing their children into internalizing values related to responsible and prosocial behavior. These socialization goals are in line with one of the major developmental tasks of middle childhood that is to develop rule-governed conduct, or follow the rules of larger social contexts, starting with those of the family (Masten & Coatsworth, 1998). In contrast, issues related to autonomy and identity appear to be more pronounced themes in the mother-adolescent conflict literature (Adams & Laursen, 2001).

To be effective socializing agents during mother-child conflict interactions, mothers must adjust their parenting strategies in accordance with children's growing language and cognitive abilities (Grusec & Davidov, 2007). Enhanced capacity for abstract reasoning, problem-solving and perspective-taking imply that children in middle childhood are capable of discussing conflicts with their mothers in a more mature, collaborative, and strategic manner than ever before (Collins et al., 2001; Zembar & Blume, 2009). Similarly, preadolescents have greater insight into their own internal thought processes, enabling them to be more successful at negotiation and argumentation (Stein & Albro, 2001). Whereas distraction and physical assertion are common parenting techniques in early childhood, mothers of children in middle childhood increasingly rely on removal of privileges and verbal communication to express disapproval, explain family rules, as well as provide moral reasoning (Collins et al., 2001). In the present dissertation, mothers' desire to verbally correct unwanted behavior and strengthen children's perspective-taking skills was demonstrated in the relative frequency in which they expressed criticism and empathy. It has been posited that mothers are more likely to believe that their children's misbehaviours are intentional during middle childhood due to their improved self-

regulatory abilities, and therefore warrant anger (Dix, Ruble, Grusec, & Nixon, 1986). Although children in the current dissertation studies rarely expressed empathy with their mothers, research indicates that they have more complex understanding of others' thoughts and feelings (Del Giudice, 2014; Selman, 2003) and thus it is valuable for mothers to model compassion and sensitivity. Indeed, the ability to integrate self and other perspectives into a collaborative strategy is essential to adaptive conflict resolution (Rose-Krasnor, 1997). Collaboration between mothers and children was indirectly captured herein by the behaviors that were exhibited by the majority of dyads, such as their willingness to modify their views and make concessions for the sake of mutual agreement, as well as their efforts generating solutions and expanding on each other's ideas to resolve their disagreements. Through these collaborative efforts, children were active participants practicing their conversational, negotiation, and problem-solving abilities in more complex ways than in early childhood years. By simultaneously examining conflict topics and behaviors, results from this dissertation highlight important socialization processes underlying mother-child conflict that may be particularly relevant during middle childhood. Findings also demonstrate some of the ways in which mothers promote effective conflict management and resolution strategies that are consistent with preadolescents' growing capabilities.

**Mother-Child Interpersonal Problem-Solving**

Given the maturation of preadolescents' socio-emotional and cognitive abilities, examining how mothers and children attempt to resolve their differences through interpersonal problem-solving is particularly critical during middle childhood; a developmental period recognized for its role in the consolidation, expansion and integration of competencies (Collins et al., 2001). Surprisingly, there is a paucity of research on mother-child *interpersonal* problem-solving at nearly all stages of child development and addressing this gap was a primary goal of this dissertation. By examining how mothers' and children's conflict behaviors are associated with specific problem-solving abilities, our findings highlighted several noteworthy patterns that had been generally undetected until now; this is due to the tendency of past research to aggregate problem-solving skills into a single variable (e.g., Capaldi et al., 1994; Forgatch, 1989; McColloch et al., 1990; Vuchinich et al., 1996) or combine them with conflict behaviors (e.g., Rueter & Conger, 1995; 1998), sometimes representing a dyad or family unit (e.g., Capaldi et al., 1994; Vuchinich et al., 1996). While positive and negative conflict behaviors facilitated or hindered mother-child problem-solving in the expected direction, results from the present

dissertation revealed that these associations varied primarily as a function of the individual (i.e., mother or child) and type of problem-solving outcome (i.e., quantity and quality of solution, and resolution status). For example, mothers seemed to play a critical role in initiating, guiding and structuring the solution generation stage as suggested by the finding that, without their active and problem-focused participation, both mothers and children generated a limited number of solutions. Furthermore, when mothers' attention shifted towards blaming others and being highly critical, the quality of their solutions diminished. Children's conflict behaviors, on the other hand, appeared to have greater influence on resolution outcomes compared to mothers. That is, whereas children's interpersonally flexible behaviors (i.e., willingness to adjust viewpoints, cooperate, and make concessions) enhanced the degree to which dyads amicably resolved their disagreements, their off-task and disruptive behaviors were associated with discussions that ended in a hostile climate without resolution. It is also interesting that the quality of children's solutions was not hindered by negative conflict behaviors such as verbal criticism as was found with their mothers, but rather augmented by their own positive interaction behaviors.

These differential effects between mothers and children underscore the unique role that each interacting partner plays in shaping and structuring conflict discussions through interpersonal problem-solving. In many ways, the findings reflect the hierarchical and bi-directional nature of mother-child relationships, suggesting that mothers may orchestrate the brainstorming of ideas while children's participation helps ensure that dyads successfully resolve disputes. This type of dynamic assistance on the part of mothers is consistent with theories on scaffolding (Wood, 1980; Vygotsky, 1978), which propose that more experienced members of society, in this case mothers, provide just enough support to ensure that children reach their next level of developmental ability. Through use of modeling and instruction, mothers thereby help children develop stronger solution generation skills (Carr & Pike, 2012). Moreover, mothers' ability to engage their children in problem-solving discussions is positively related to children's adjustment (Chisholm et al., 2011). The results from the present dissertation also draw attention to the importance of capturing different types of conflict behaviors; research that solely examines the frequency of verbalizations as an index of participation has found that children minimally affect resolution outcomes relative to mothers (Hughes et al., 2004).

By investigating problem-solving skills separately rather than in aggregated form, our findings also empirically supported a long-held view that problem-solving is a heterogeneous

construct composed of several distinct yet interrelated skills (D'Zurilla & Nezu, 1999). This position has been embraced by many researchers who study social problem-solving from an individualistic perspective (e.g., Mize & Cox, 2001; Ridout, Matharu, Sanders, & Wallis, 2015; Youngstrom et al., 2000), but has been largely overlooked by those interested in how problem-solving is interpersonally accomplished. Early problem-solving theorists defined problem-solving first and foremost as the ability to think of effective solutions to everyday problems, while recognizing the importance of other skills as precursors to successful problem-solving, such as: problem recognition and definition, goal setting, decision-making, solution implementation, and decision evaluation (D'Zurilla & Goldfried, 1971; D'Zurilla & Nezu, 1999). It has been argued that the set of skills that might be required for each of these broader problem-solving tasks are partially independent (D'Zurilla & Mayeu-Olivares, 1995; Shure, 1999), although more empirical research is needed to uncover what their unique underlying skill-sets may be. One way in which researchers have elaborated on this discussion has been to examine how different problem-solving skills, particularly solution generation, are associated with measures of behavior and adjustment (e.g., Nelson & Sim, 2014; Nezu, 2004; van Nieuwenhuijzen, Orobio de Castro, Wijnroks, & Vermeer, 2009). This line of work suggests that the process of thinking (e.g., information gathering, building on ideas and formulating alternative solutions to problems, consequential thinking) may be more predictive of social competence than the content of thoughts (e.g., quantity of solutions; Lansford et al., 2006; Mize & Cox, 2001; Shure, 1999; Warden & Mackinnon, 2003; Youngstrom et al., 2000). Despite some overlap, results from the present dissertation suggest that the quantity and quality of solutions could also be differentiated conceptually according to different types of behavioral processes. For example, the finding that mothers' critical statements and children's positive interaction behaviors predicted the quality (but not the quantity) of solutions may signal the importance of skills related to emotion inhibition and regulation, and prosocial communication. Results from this dissertation thus demonstrate the importance of distinguishing between problem-solving skills within the context of mother-child interactions, as well as calling for more research on the behavioral, emotional and cognitive correlates associated with each problem-solving skill. Beyond theoretical interest, the current results have applied implications for the types of skills clinicians should be most concerned about when delivering interventions, particularly for

problem-solving training as discussed in greater detail in the applied application section further in the discussion.

**Constructive and Destructive Potential of Mother-Child Conflict**

While a large number of studies conceptualize mother-child conflict as an aversive experience and center on its potential to predict internalizing and externalizing problems (e.g., Chung, Flook, & Fuligni, 2009; Georgiou & Fanti 2014; Klahr, McGue, Iacono, & Burt, 2011; Weaver, Shaw, Crossan, Dishion, & Wilson, 2015), the present findings lend support to the notion that conflict is not necessarily destructive. For example, average ratings of mother-child interaction behaviors indicated that dyads behaved in a relatively neutral manner and mothers generally expressed nearly twice as much empathy and praise as they did criticism. Many dyads also demonstrated responsive, collaborative, and problem-focused conflict behaviors, which as discussed earlier, predicted skillful problem-solving and successful resolutions. Furthermore, children who interacted with their mothers in a constructive and engaging manner were more likely to be well adjusted, as reflected by their perceptions of their social skills, teachers' low ratings of their externalizing behaviors at school, and their self-assured demeanor during a standardized cognitive assessment. These results are in line with a growing number of studies demonstrating that mother-child conflicts provide valuable opportunities for information exchange, learning and growth (Adams & Laursen, 2007; Garcia-Ruiz et al., 2013; Lundell, Grusec, McShane, & Davidov, 2008; Nelson, 2015).

At the same time, not all dyads took advantage of this opportunity. In the current dissertation studies, some dyads behaved in less constructive and productive ways by demonstrating negative conflict behaviors (e.g., passivity, avoidance, anger, and hostility) that were associated with fewer solution-focused interactions and unresolved conflicts. Children who were antagonistic towards their mothers during conflict discussions were also more likely to be perceived as aggressive, disruptive, and/or noncompliant in other contexts, both inside and outside the home environment (i.e., as indicated by mother and teacher ratings of externalizing problems, and behavioral observations of their test-taking behaviors). Extant research also demonstrates that unresolved parent-child conflicts that leave enduring resentment and negativity are associated with greater externalizing problems in children (Underwood, Beron, Gentsch, Galperin, & Risser, 2008; Yeh, 2011) and predict the development of conduct problems over time (Klahr et al., 2011). Invalidating mother-child conflict interactions have been found to be

particularly damaging to children's socio-emotional functioning (Brown, Fitzgerald, Shipman, & Schneider, 2007).

The quality of parent-child relationships can erode as a function of increasing levels of disputes with parents (Garcia et al., 2013). The significance of relationship quality is further evidenced by research indicating that mother-child conflicts are more likely to be handled in a constructive and adaptive manner when they occur within the context of supportive relationships and secure attachments (Branje, 2008; Garcia et al., 2013; Panfile, Laible, & Eye, 2012). Attachment security has also been found to longitudinally predict children's social problem-solving abilities (Raikes & Thompson, 2008). Drawing on these findings, it is likely that the types of conflict behaviors and problem-solving strategies that were demonstrated by the mother-child dyads in the current studies of the dissertation can be interpreted on the basis of their relationship qualities and children's attachment styles; constructs that develop over time with each mother-child interaction, starting the moment children are born. That children's conflict behaviors towards mothers were also linked to their socio-emotional functioning in both social and cognitive contexts can similarly be connected to their mother-child relationship qualities and attachment styles. Secure mother-child attachments have been positively associated with a wide range of child outcomes (Groh et al., 2014; Schneider, Atkinson, & Tardif, 2001), including cognitive and academic achievements in middle childhood (West, Mathews, & Kerns, 2013). From a Family Systems Theory perspective, disagreements are considered necessary to resolve problems and incur change, but if handled poorly, they can become counterproductive and corrode family dynamics (Thomas & Cook, 2013).

The inclusion of several different types of child outcome measures across informants and domains of functioning not only validated our observational measures, but also demonstrated just how widespread the cross-context applicability of children's conflict behaviors towards their mothers can be. Whereas the majority of studies on mother-child conflict investigate parental influences on child behavior, we employed a less common approach to explore what children actually 'take with them' from their interactions with their mothers. It was found that children's general styles of interacting with mothers had implications for how they behaved elsewhere, whereas more specific conflict resolution strategies (namely their willingness to make concessions) were context-specific. As far as can be determined, this dissertation is the first to show a link between children's conflict behaviors during mother-child interactions and their test-

taking behaviors during a one-on-one standardized cognitive assessment. The exciting results that emerged from this scientific inquiry substantiate the link that has been found between social competence and academic functioning (Arnold, Kupersmidt, Voegler-Lee, & Marshall, 2012; Oriana Linares et al., 2005), as well as support theories of socialization that highlight the tremendous value of parent-child conflicts and its destructive potential.

**Bi-directional and Dynamic Interactions**

Although mothers exert significant influence over their children, it is important to recognize that the behaviors and characteristics of children also shape how mothers behave (Lollis & Kuczynski, 1997). As indicated by transactional (Sameroff & Fiese, 2000; Sameroff, 2009) and dynamic systems models (Fogel & Garvey, 2007), interactions within the parent-child dyad are co-regulated and co-constructed. As such, the reciprocal relationship of mother-child dyads is circular, as well as changing and evolving over time. For example, Rueter and Conger (1998) found that, in families characterized by warm and supportive parenting practices, antagonistic adolescent behavior longitudinally predicted a relative decline in nurturing parenting behavior over a two-year period. In turn, parents' harsh, inconsistent parenting was subsequently related to children's behavior problems. Although the correlational nature of the data in the current dissertation cannot speak to the direction of effects, the same theoretical principles apply. As active participants involved in the construction of their social interactions (Granic, 2000; Kucynzski, 2003), children's conflict behaviors and problem-solving efforts undoubtedly influenced the quality of mothers' participation, perhaps to the same degree as mothers influenced the manner in which children behaved.

Certain results from the present dissertation may have highlighted these reciprocal exchanges more clearly. In particular, when mothers exhibited passive behaviors and were not solution-focused, neither were their children. Synchronicity was also reflected in dyads' compromising patterns given the similarity of their effects on the number and sophistication of solutions for both mothers and children. Children's influence on mothers was also suggested by the fact that mothers' solution quality increased when children made concessions. Overall, dynamic and transactional models suggest that the more warm, supportive, and interpersonally flexible an individual is, the more likely the other partner will respond in kind. The same can be said about negative conflict behaviors, although reciprocity was less evident by the pattern of findings herein. Nevertheless, it is possible that children may have reacted negatively to highly

critical mothers, either by withdrawing from the interaction or becoming overtly aggressive. Similarly, mothers may have continued to respond with hostility or became disengaged.

This type of negative interpersonal exchange between children and parents has been the focus of research conducted by Patterson and colleagues (e.g., Patterson, 2002; Snyder, Reid, & Patterson, 2003). This line of work has shown that negative responses in one participant in the dyad trigger like-minded aggressive or antagonistic responses in the other, resulting in an escalating cycle of coercive parent-child responses that contribute to the development of socio-emotional problems in children over time (Eddy, Leve, & Fagot, 2001; Smith et al., 2014). In support of this model, results from the present dissertation studies provided additional evidence for the association between negative mother-child interactions and children's externalizing problems across multiple settings, both within and outside the home environment. Conversely, the current findings also suggest that constructive and supportive mother-child interactions are linked to prosocial child behavior. Together, findings from the present dissertation support the notion that children's behavioral characteristics (e.g., those with externalizing problems versus those with prosocial tendencies) are important predictors in shaping the quality of mother-child conflict interactions. By the same token, children's behavioral characteristics are also shaped by the environment in which they develop, including mothers' past and current experiences.

**Historical and Concurrent Risk Factors**

Researchers interested in the factors that contribute to competent parenting, child outcomes, as well as the dynamic interchange that unfolds during mother-child interactions have recognized several key determinants within the social context (Belsky, 1984; Bronfenbrenner, 1979; Conger et al., 2010; Stack et al., 2012; 2015). Research has demonstrated the importance of examining maternal characteristics, as well as the context in which mother-child interactions are embedded. Results from the current study demonstrated how maternal risk factors known to hinder parenting and socialization processes interfere with mother-child conflict behaviors and children's socio-emotional functioning. In particular, maternal concurrent distress, conceptualized herein as an aggregated score reflecting high levels of parental stress, low levels of social support, greater symptoms of psychopathology, as well as low quality home environments, was found to diminish the nurturing quality of mothers *and* children's display of warm and engaged interaction behaviors. These exchanges, characterized by less attentiveness, assertiveness, and warmth, as well as greater hostility, had negative implications for the quality

of children's solutions during problem-solving. Moreover, children who were less positively engaged during mother-child interactions were less likely to perceive themselves as socially skilled and behave in a confident manner during standardized testing, as well as more likely to be perceived as having externalizing problems by their teachers. These results suggest that mothers with poor psychosocial functioning and low quality home environments model negative interaction behaviors, which may lessen children's constructive participation and, in turn, potentially hinder their developing social skills. According to social learning theory (Bandura, 1977), children may also mimic their mothers' negative interaction behaviors, integrating these behaviors into more stable patterns of interacting which generalize into other settings (Zisser & Eyberg, 2010). With these types of negative interaction patterns, children potentially learn that they cannot rely on their mothers to help regulate their internal states and inadvertently give children the impression that their opinions, concerns and ideas are not important or valid. As aforementioned, invalidating mother-child interacting can be particularly harmful to children's developing social skills as well as their self-esteem and self-efficacy beliefs (Fruzzetti, Shenk, & Hoffman, 2005; Yap, Allen, & Ladouceur, 2008). Results from the current dissertation studies not only support findings from extant literature on the link between maternal distress and children's externalizing and internalizing problems (Dubois-Comtois et al., 2013; Connell & Goodman, 2002), but also point to poor problem-solving and negative self-perception as possible mediators underlying this relationship.

Unlike maternal concurrent distress, maternal childhood histories of social withdrawal did not predict mother-child conflict behaviors. However, mothers who were high on dimensions of either aggression or social withdrawal in childhood were more likely to have children with lower intellectual functioning that in turn predicted disorganized, careless and impulsive test-taking behaviors during standardized testing. It may be that lower intelligence partially mediates the relationship that was found in a previous study by the same authors (Martin et al., 2012) between maternal histories of aggression and social withdrawal and children' poor problem-solving abilities. Other studies within the Concordia Project have also found that children of aggressive and socially withdrawn mothers are more likely to have cognitive and academic difficulties (Campisi et al., 2009; Serbin et al., 2002).

In the initial stages of the Concordia Project, when mothers were approximately the same age as their children were at the time of the present testing, aggression as well as the combination

of aggression and social withdrawal also predicted below-average scores on measures of intelligence and academic difficulties (e.g., high rates in school failure, special class placements, and school drop-out; Moskowitz & Schwartzman, 1989; Serbin et al., 1991). Together, findings suggest that the cognitive and academic difficulties of mothers with childhood histories of aggression and social withdrawal are linked to the academic and cognitive difficulties of their children at school age. Furthermore, results from the current study extend previous research by providing empirical evidence to suggest that poor test-taking abilities may be a significant contributing factor in predicting school failure from one generation to another, thereby highlighting a potential pathway for the transfer of risk.

While intellectual functioning is to some extent genetically determined (Trzaskowski et al., 2014), parenting and socialization processes also play an important role in shaping cognitive development. For example, parenting behaviors indicative of sensitivity, positive control, and effective scaffolding have been positively associated with children's intellectual functioning (Gustafsson, Coffman, & Cox, 2014; Pougnet et al., 2011; Saltaris et al., 2004). The provision of safe and cognitively stimulating home environments is also a significant predictor of children's IQ (Saltaris et al., 2004). In contrast, domestic violence has been linked to lower executive functioning in early childhood (Gustafsson et al., 2014). Moreover, mothers from low income families have been found to use less rich vocabulary and ask their children fewer questions about their experiences, which, over time, may impede their children's language and cognitive development (Hoff, 2003; Wiley et al., 1998). These studies suggest that intergenerational continuities in poor cognitive and academic functioning may be explained, at least in part, by maladaptive parenting behaviors and suboptimal home environments.

Evidence for intergenerational continuity may have also been found for children of mothers with childhood histories of social withdrawal. Consistent with hypotheses, these children were more likely to provide low ratings of their social skills, demonstrating a tendency to perceive themselves as less socially competent. Similarly, mothers with childhood histories of social withdrawal were also found to underestimate their academic abilities when they were children themselves (Moskowitz & Schwartzman, 1989; Serbin et al., 1991). Despite the subjective nature of these self-reports, the findings suggest a link between social withdrawal and negative self-perceptions that persists across generations from mother to child. Caspi and Elder's (1988) model of 'direct' transmission argues that children emulate their parents when interacting

with them. Accordingly, mothers with childhood histories of social withdrawal may display behaviors that convey poor self-confidence that children then internalize through observational learning. It would be worthwhile to investigate whether children of socially withdrawn mothers also underestimate their academic abilities as they appeared to do with their social competencies. Combined with their lower IQ scores and poor test-taking behaviors, results from the current dissertation studies suggest that children of mothers with childhood histories of social withdrawal are particularly at high risk for school failure and early school drop-out; as their mothers were when they were children (Serbin et al., 2011; Stack et al., 2015). Without education, children of mothers who were socially withdrawn in childhood place themselves at risk for low-income occupations and a life of socio-economic disadvantage similar to the one they were born into and one in which they are likely to transfer to the next generation.

**Maternal Education as a Protective Factor**

Given that the concept of risk is inherently probabilistic, even mothers with difficult backgrounds and past experiences are capable of overcoming their obstacles. Findings from the current studies underscore the importance of examining interactions between risk and protective factors to better understand how and why some individuals beat the odds. In the current dissertation studies, particular attention was given to maternal education and we drew upon statistical models of resiliency (Lansford et al., 2006; Rutter, 1985) to illustrate the potential relationship between mothers' education levels and historical and concurrent maternal risk factors. Two very important set of findings emerged from these scientific inquiries. First, the current results demonstrated that maternal education is uniquely associated with mother-child conflict behaviors within the context of socio-economic disadvantage in ways that are separate from the benefits incurred from mothers' occupation status and family income. Second, maternal education was found to have a protective-*enhancing* effect for mothers who were socially withdrawn in childhood; the more socially withdrawn mothers were as children, the greater the benefits of their education on their ability to communicate in an assertive manner with their children during mother-child conflicts. Conversely, maternal education had little-to-no effect on mothers' conflict behaviors when dimensions of childhood social withdrawal were low.

Assertiveness, or the ability to communicate in a clear, straightforward, and nonthreatening manner, is essential to adaptive conflict resolution, and is particularly important when communicating with children as children tend to 'tune out' when instructions or reprimands

are ambiguous (Grusec & Goodnow, 1994). Thus, children of more highly educated mothers who were withdrawn in childhood may be more successful at resolving their disputes. Although research on this topic is limited, evidence that maternal education acts as a protective factor by moderating the effects of adversity has been demonstrated among a sample of poorly educated young mothers (Magnuson, 2007). Findings from the current study further demonstrate the protective potential that the effects of maternal education may have on parenting and child outcomes, as well as implying that maternal education engages with adversity differently depending on the type of risk factor experienced. Consequently, the present results call for more investigations on the interplay between maternal education and risk variables pertinent to at-risk populations.

Research has pointed to two major pathways that may explain how some socially withdrawn girls from low socio-economically disadvantage backgrounds may be more inclined to pursue higher levels of education (Conger & Donnellan, 2007; Conger et al., 2010). Consistent with the social causation view, one possibility is that positive educational experiences have the potential to buffer or reduce feelings of low self-worth by providing a sense of accomplishment, thereby allowing children to handle life challenges better and acquire more fulfilling life experiences. Alternatively or in conjunction, attending school may have increased the number of quality peer relationships, thereby decreasing social isolation and allowing socially withdrawn girls develop better social skills. From the point of view of social selection, it is equally possible that socially withdrawn girls who pursued higher levels of education may have been advantaged by individual characteristics or dispositions related to intelligence or personality as posited by social selection theories (Conger et al., 2010). Undoubtedly, more research is warranted to clarify these processes operate and interact.

**Summary**

Overall, findings from the present dissertation advance our understanding of the characteristics and processes associated with mother-child conflict at middle childhood in high-risk dyads using a rich observational dataset developed by the authors. By examining mothers' and children's conflict behaviors and problem-solving strategies separately, it was possible to tease apart the unique contributions of each partner, highlighting important aspects related to the content and structure of these mother-child interactions. In so doing, results revealed unique differences in how solution generation and decision-making strategies are linked to conflict

behaviors, therefore demonstrating that these skills are not interchangeable; a concept that has been acknowledged within the literature on *individual* problem-solving (e.g., D'Zurilla & Maydeu-Olivares, 1995; Nezu, 2004; Youngstrom et al., 2000) but overlooked in the mother-child conflict literature. Researchers interested in understanding how conflict management and resolution are interpersonally accomplished should be mindful of these differences and avoid analyzing variables at the dyadic level, and combining different types of problem-solving strategies to create aggregated problem-solving variables. Moreover, results from the present dissertation suggest that there are two sides to mother-child conflicts. On the one hand, they have the potential to arouse even more opposition and reinforce disruptive and noncompliant behaviors in children that generalize to other settings. Alternatively, mother-child conflicts can be handled in a constructive and supportive manner that enables children to express themselves appropriately and develop positive self-efficacy beliefs. Results from the present dissertation contributed to better understanding how certain contextual factors either hinder or promote the quality of mother-child conflict interactions and children's adjustment in an at-risk community sample. While it is impossible to change mothers' past characteristics and experiences that may have negatively impacted their adult lives and parenting abilities, our findings underscore micro (i.e., behavioral exchanges during mother-child interactions) and macro-level (i.e., maternal concurrent distress, education) processes that can be targeted in the prevention and treatment of dysfunctional or maladaptive family dynamics.

**Applied Implications**

Helping clinically distressed families develop the necessary communication and problem-solving skills to resolve conflict is the focal point of many treatment programs (Stern, 1999) given the link between healthy parent-child interactions and children's adaptive socio-emotional development (Brown, 2007; Yoo et al., 2014). Prevention and intervention programs also offer vital opportunities to break cycles of risk for the benefit of subsequent generations (Serbin & Karp, 2004; Stack et al., 2012). Indeed, researchers and clinicians increasingly recommend that families who have children with behavioral and/or emotional difficulties recognize the relational context in which these problems manifest and are maintained (Best et al., 2014; Kindsvatter & Desmond, 2013). The results from the present series of two studies provide additional support for the use of parent-training programs and interventions aimed towards strengthening the parent-child relationship via communication and problem-solving training. Generally, the current

findings underscore the value of teaching mothers and children how to appropriately express anger and collaboratively work on developing and implementing solutions. More specifically, reducing strong negative emotions (aiming for neutral rather than positive affect), as well as increasing interpersonally flexible behaviors, including the use of compromise, were found to be particularly important predictors of constructive problem-solving and amicable resolutions. Along these lines, the current results demonstrate the importance of helping mothers become better at structuring discussions around solutions in order to promote their children's solution generation abilities; doing so, in turn, can further enhance mothers' participation. While brainstorming a variety of solutions was found to be linked to constructive mother-child conflict behaviors, focusing on the quality of solutions (e.g., degree to which they are well-developed and likely to result in effective resolutions) may be particularly valuable for predicting collaborative exchanges.

Findings from the present dissertation suggest that these interventions may be particularly beneficial to mothers who are distressed by psychological and psychosocial stressors, as well as their children. Helping highly distressed mothers become more aware of their children's developing autonomy in middle childhood by encouraging them to elicit their children's participation during conflict discussions has positive implications for the quality of their relationship and children's social competencies (Brown et al., 2007; Garcia-Ruiz et al., 2013). Unlike maternal histories and childhood risk factors, the quality of parenting is a modifiable factor that can offset a host of maladaptive outcomes in children, even in the most vulnerable populations (Oveisi et al., 2010; Stack et al., accepted).

While intervention programs aid individuals and families already showing signs of problems, prevention programs are essential to public health and a testament to our collective desire to prevent the onset of risk factors for future generations *before* problems emerge. Prevention programs come in different forms. Secondary prevention programs target individuals at risk of developing difficulties. In contrast, universal or primary prevention programs do not require selection procedures but rather target whole communities in order to minimize the onset of problems. Primary health care settings have successfully been used to engage and provide preventative parenting interventions to mothers of young children (e.g., Oveisi et al., 2010). Oveisi and colleagues demonstrated significant improvements from pre-to post testing on measures assessing parenting and parent-child conflict after eight weeks of parent training

sessions, suggesting that these types of universal programs may be beneficial across all health centers. Findings from the current dissertation studies have the potential of informing similar types of prevention programs in primary health care settings by educating parents on effective conflict management and resolution strategies with their school-age children.

Enhancing the potential for young girls from socio-economically disadvantaged backgrounds to complete their high school diploma and further pursue educational opportunities is another area of prevention supported by the findings from the current study. Such efforts require a 'secondary' approach to prevention. As a Canadian example, the Promoting Education and Community Health (PEACH) foundation in Toronto helps marginalized youth improve learning skills, stay in school and/or return to the education system in cases of early drop-out. Results from the present dissertation further demonstrate that educational opportunities may be particularly beneficial to socially withdrawn school-age girls for improving their parenting and communication skills later in adulthood, perhaps more so than girls presenting with externalizing problems. These findings are important because so much research attention has been given to the study of aggression, particularly in boys, that comparatively little is known about the trajectories of socially withdrawn girls who have few friendships and/or are rejected by their peers. Additional research is needed to clarify the processes underlying the protective role of education for socially withdrawn girls so that effective secondary prevention programs can be developed.

**Conclusions and Future Directions**

Through a series of two studies, the present dissertation addressed some of the gaps in the literature by extending our understanding of several core components of mother-child conflict in middle childhood, a developmental period that has been traditionally overlooked. As far as can be determined, this is the first set of studies to investigate how mothers and preadolescents individually contribute to *specific* problem-solving strategies by the manner in which each communicates and behaves during discussions about personal disputes. In so doing, findings highlighted salient relational characteristics underpinning mother-child conflict interactions (e.g., hierarchical, interdependency, bi-directionality), while simultaneously demonstrating the importance for both parties to occasionally make concessions, and the active role that children play in managing and resolving conflicts with their mothers. In addition, results from the present dissertation add to the mounting evidence linking social adjustment in children with conflict management and problem-solving abilities, and shed light into family processes that serve as

building blocks for the development of socio-emotional functioning and well-being. Given that middle childhood is recognized as a core developmental period for the consolidation, expansion, and integration of competencies acquired in infancy and early childhood (Collins et al., 2001), our findings provide a valuable glimpse into the future functioning of the at-risk children in the community-based sample of the Concordia Project. Researchers should continue to investigate the adaptive and constructive, and maladaptive and destructive potential of mother-child conflicts in order to better understand the implications that either has on the quality of family dynamics and children's development across contexts and over-time. Given the inevitable and ubiquitous nature of interpersonal conflicts throughout the lifespan, research that examines conflicts across *all* stages of development is critical for gaining greater insight into the building and maintenance of relationships that make up the very fabric of our societies.

It is important to recognize that individuals within society come from diverse socio-economic backgrounds and are exposed to a wide range of opportunities and disadvantages. Results from the present dissertation also add to the literatures on risk and resiliency by demonstrating that patterns of mother-child conflict are shaped by a complex array of interactive processes that stem from historical and concurrent factors embedded within the family context. The two studies herein drew particular attention to the effects of maternal childhood histories of behavior problems, levels of maternal distress at the time of testing, and mothers' educational attainment. Our findings indicate that completing high school can equip young girls from disadvantaged communities with the necessary skills to enhance their ability to parent in trying situations with their children, in ways that may be distinct from the benefits of earning a larger income or having a satisfying occupation. In particular, results from the present dissertation suggest that education may have even greater transformative potential for socially withdrawn girls, by way of improving their assertiveness skills during mother-child conflict interactions. Together, findings from the two studies that make up the dissertation highlight potential pathways to the direct and indirect transfer of risk and resiliency from mother to offspring.

While taking into consideration certain limitations (e.g., a fairly small sample size, the inclusion of only one time-point, the semi-naturalistic nature of the conflict task, the correlational nature of the data, and the fact that social withdrawal was measured as a one-dimensional construct, which prevented us from isolating specific facets of social withdrawal), the contributions of the present dissertation do much in the way of advancing current knowledge on

mother-child conflict at middle childhood in high-risk dyads. The focus on both positive and negative conflict behaviors and problem-solving strategies, linked to indices of children's social competence and behavior problems to determine the cross-context applicability of children's behaviors towards mothers, is among the most comprehensive analysis of mother-child conflict that has yet to be undertaken in middle childhood. The inclusion of an observational measure of children's test-taking behaviors during a standardized cognitive assessment is a novel approach, one that enabled us to bridge, for the first time, two contexts that were previously considered unrelated. Results from the present series of studies also add to the literatures on transactional models, dynamic systems, and developmental psychopathology by demonstrating how moment-to-moment responses between mothers and children during conflict discussions are the product of a multitude of environmental factors (adaptive and maladaptive) both within and outside the mother-child subsystem that develop over time, concurrently and historically. Overall, the significance and validity of our findings were strengthened by the use of an observational, mixed-method, and multi-informant approach.

Future research should continue to investigate mother-child conflict during middle childhood in order to understand better how some of the unique features associated with this developmental period shape the way mothers and preadolescents handle their disagreements, as well as the effects that these interactions have on children's developing competence and cognitive development. An important way in which to distinguish mother-child conflicts during middle childhood from other developmental periods is to compare conflict patterns between mothers and children in early childhood, middle childhood, and adolescence. Longitudinal designs would be particularly valuable for studying continuities and discontinuities that describe how these patterns develop, mature, and evolve over time. Developmental changes in parent-child conflict have been investigated, but primarily throughout the adolescent years (e.g., Hofer et al., 2013; Laursen, Coy, & Collins, 1998; Rueter & Conger, 1998).

In addition to elucidating changes in parent-child conflict across developmental periods, there are many other valuable directions for future research, including the kinds of constructs that warrant further study. Since interpersonal conflict has been described as a "time-distributed social episode" consisting of several distinct yet interrelated components (i.e., the topic, the intensity and frequency, behaviors that initiate conflicts, resolution strategies, and the outcome; Shantz, 1987, p. 285), it has been suggested that focusing on only one of these components

provides a poor account of the characteristics and functions of conflict (Laursen & Collins, 1994). In agreement with this view, a call is being made for more research on mother-child conflict examining several of these components at once. Along these lines, it is interesting to note that the majority of research to date on mother-child conflict has overlooked interpersonal problem-solving even though problem-solving can be an effective and mature approach to resolving conflicts that is strongly linked to children's socio-emotional development. As mentioned in a previous chapter of this dissertation, this gap can be partially explained by the fact that problem-solving has traditionally been studied from an individualistic cognitive-behavioral perspective (D'Zurilla & Nezu, 1990; 1999), and less so from social relations models (Kenny, Kashy, & Cook, 2006). However, it is imperative that researchers further investigate how problem-solving is interpersonally accomplished during mother-child conflicts, including factors that promote and hinder mothers' and children's problem-solving efforts. Doing so will help elucidate processes underlying the acquisition of children's problem-solving abilities. As an extension of findings from the present dissertation on the cross-context applicability of children's conflict behaviors (e.g., communication skills, interpersonal negativity, and positive engagement), future research should also examine associations between children's interpersonal problem-solving strategies with their mothers and their interpersonal problem-solving strategies in other relationships such as with peers. To our knowledge, no such study has yet to be conducted. Findings from the present dissertation provide empirical support for the contention that problem-solving strategies (i.e., the quantity and quality of solutions, and decision-making variables) are at least partially independent constructs that are differentially linked to conflict behaviors. Therefore, it may be important to examine them separately.

While the present dissertation attempted to go beyond understanding *what* happens during mother-child conflict interactions by examining *how* certain behaviors influence problem-solving and resolution outcomes, more research is needed to elucidate processes underlying the content, structure, and organization of moment-to-moment conflict exchanges between mothers and children. In addition to continuing to explore the relationship between different components of conflict, researchers should more frequently consider process variables targeting how interacting partners facilitate or impede each others' participation. For example, Rueter and Conger (1995) developed an observational code that measured how family members moved conflict discussions along towards resolution by helping other members remain on task, soliciting their views, and

making summaries of the progress made. Such interpersonal process variables can provide valuable insight into both the content and bi-directional nature of mother-child interactions, particularly if examining interacting effects at the individual level. Observational measures may provide greater insight into these dynamic exchanges than self-report methods.

Another way in which to explore the content, structure and organization of mother-child conflict interactions is to utilize statistical methodologies that surpass the measurement of correlational relationships to examine sequences of events. Dynamic systems methodology (state space grids, Lewis, Zimmerman, Hollenstein, & Lamey, 2004) may be particularly innovative in that behaviors from dyadic interactions are plotted in cell matrices in real time to create lines depicting trajectories of behavior changes. Data can be gathered on the content, temporal order, and duration of behaviors, as well as the intradyadic variability of the interactions (Granic & Hollenstein, 2003). Intradyadic variability is considered adaptive because it reflects interpersonal flexibility within the dyad, whereas lack of variability (i.e., rigidity) is conceptualized as a lack of responses to changes in the environment (Hollenstein, Granic, Stoolmiller, & Snyder, 2004). Evidence suggests that rigidity of the interactions between parents and children is predictive of antisocial behavior in children (Hollenstein et al., 2004). During mother-adolescent conflict interactions, intradyadic variability (or flexibility) has been associated with greater perceived relationship quality and is thought to be indicative of a natural shift towards a more egalitarian mother-child relationship (Branje, 2008). Within the Concordia Project, maternal childhood histories of aggression, as well as histories of both aggression and social withdrawal have been associated with less mother-child emotional flexibility during conflict discussions in middle childhood (Enns, 2013). Evidence also suggests that both individual and dyadic variables should be examined because of relative differences in the degree to which mothers and children demonstrate flexibility (Enns, 2013; Enns et al., 2009). Results from these studies offer promising avenues for future research on mother-child conflict that go beyond 'what' to investigate 'how'. Findings from the present dissertation also support the need to further investigate the influence of contextual variables on the content, structure and organization of mother-child exchanges in the here-and-now, preferably using statistical methodologies that can detect bi-directional and causal relationships.

While results from the two studies that make up the present dissertation underscored the importance of several contextual variables related to mothers' past and current experiences and

characteristics, there is still much to be learned about the underlying mechanisms that promote and hinder mother-child conflict patterns. One of the contextual variables examined herein that has received little attention to date in the literature on family conflict is maternal education, in part due to the common assumption that its benefits are similar to those pertaining to higher income and good occupation (as an example, Conger et al., 2010). Although there is some overlap between these three markers of SES (Callahan & Eyberg, 2010), the current findings suggest that there is more that has yet to be discovered on the relationships between maternal education, family processes, and human development. That maternal education was a protective factor for mothers with childhood histories of social withdrawal and not for those with concurrent levels of distress suggests that at least some of the underlying mechanisms stem from *early* childhood experiences that culminate in adulthood. Nevertheless, a more complete and accurate understanding of the mechanisms associated with the benefits of maternal education towards parenting should include factors that *pre*cede and *pro*ceed educational attainment. The interactionist model of human development (Conger & Donellan, 2007), and developmental psychopathology models (Cicchetti & Toth, 2009; Cicchetti, 2013) both draw on transactional perspectives whereby developmental outcomes are the product of continuous reciprocal relations between the child and the broader social, economic, and cultural environment in which he or she lives, concurrently and over time (Sameroff, 2009). Drawing on these theoretical frameworks and building on findings from the present dissertation, longitudinal and preferably intergenerational studies are needed to investigate: (1) how individual traits or dispositions (e.g., intelligence, personality) lead some socially withdrawn young girls from disadvantaged backgrounds to pursue higher levels of education relative to their peers and (2) how their higher levels of educational attainment enhance their personal characteristics and circumstances to predict more positive parenting and/or child outcomes. A more detailed analysis of social withdrawal in girls is also needed to isolate the different dimensions that make up this broad construct (e.g., social exclusion, fearful or self-conscious shyness, preference for seclusion, etc., Rubin & Barstead, 2014; Rubin et al., 2009) and how each of these forms of solitude interact with resiliency factors such as education. This line of research is critical for strengthening our understanding of the pathways towards intergenerational (dis)continuities in at-risk populations. From there, we can develop more effective resilience-promoting interventions that target

protective and vulnerability factors at multiple levels of influence, as recommended by Luthar and Cicchetti (2000).

Investigations on the processes underlying children's acquisition of conflict management and resolution abilities must take into consideration the context-specificity of behaviors, meaning that children's behaviors and the nature of their conflicts are likely to vary across relationships. Differences in conflict patterns across relationships have primarily been attributed to differences in the characteristics and functions of relationships (e.g., power dynamics, degree of interdependency), which shape individuals' expectations of what is permissible, desirable, and effective behavior (Adams & Laursen, 2001; Dunbar & Burgoon, 2005; Feldman, Masalha, & Derdikman-Eiron, 2010). Although findings from the present dissertation demonstrated a link between children's conflict behaviors with mothers and general indices of children's socio-emotional functioning in other settings (social and cognitive), it remains unclear whether children would behave differently if managing and resolving conflicts with peers, siblings, and fathers. Future research should continue to examine cross-context variability in children's conflict behaviors, including associations with children's adjustment, in order to broaden our understanding of the role of conflict processes in socialization and socio-emotional and cognitive development. Father-child conflict is a particularly exciting area of study that is beginning to attract more research interest (e.g., Adam & Laursen, 2007; Jenkins, Tucker, McHale, & Crouter, 2003; Pougnet et al., 2011; Recchia et al., 2010; Weaver et al., 2015), yet remains poorly understood and understudied. Extant research suggests that fathers differ somewhat in their parenting styles relative to mothers (Cabrera, Fitzgerald, Bradley, & Roggman, 2014), and conflicts between fathers and children may also have differential effects on children' adjustment (Weaver et al., 2015). Given that the modern-day father is becoming increasingly involved in caring for and overseeing children's day-to-day activities (APA Monitor, 2005, 2007), the importance of investigating father-child conflict across echelons of socio-economic status and psychosocial risk is critical to an accurate in-depth assessment of socio-emotional functioning throughout development. Examining how fathers with childhood histories of behaviour problems influence the mother-child subsystem is another worthwhile avenue for future research. To this end, the need for conflict theorists and empiricists to consider both the constructive and destructive potential of conflicts in all close relationships is essential, as well as increasing intergenerational studies to elucidate pathways in the transfer of risk and resiliency.

Overall, results from the present dissertation highlighted micro and macro-level processes associated with mother-child conflict in middle childhood and drew attention to contextual variables that influence how mother-child conflicts manifest, take shape, and unfold. Findings elucidate how risk and protective factors interact to contribute to pathways leading to adaptive and maladaptive outcomes in disadvantaged communities. Together, results have important implications for developing policies and programs that promote healthy relationships in vulnerable families and potentially disrupt cycles of intergenerational risk.

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# Appendix A

Thematic Conceptualization of Study 1 and 2

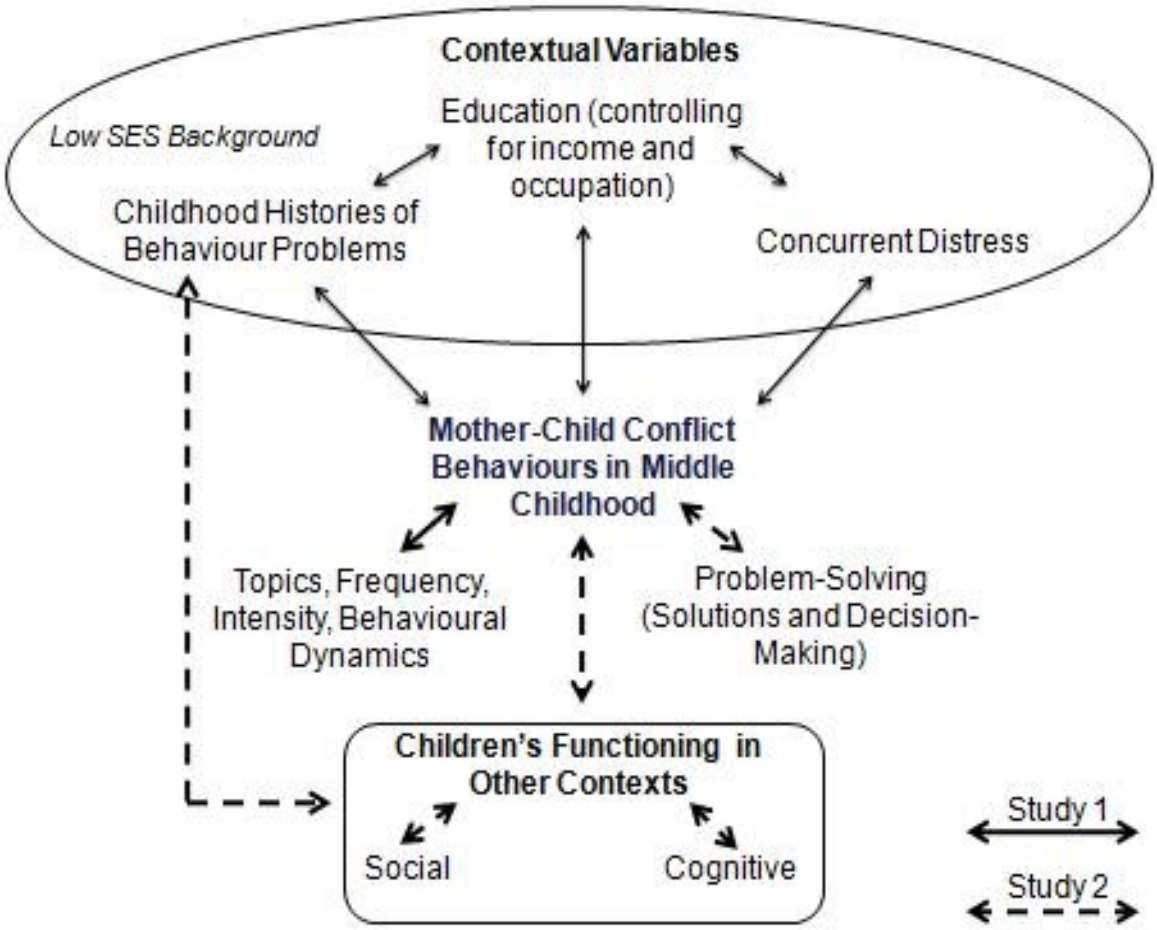


*Figure A.* Thematic Conceptualization of Study 1 and 2.

## Appendix B

Sample Items from the Pupil Evaluation Inventory (Pekarik et al., 1976)

*Aggression Items*

3. Those who can't sit still.

4. Those who try to get other people into trouble.

8. Those who play the clown and get others to laugh.

9. Those who start a fight over nothing.

20. Those who bother people when they're trying to work.

23. Those who are rude to the teacher.

24. Those who are mean and cruel to other children.

*Withdrawal Items*

5. Those who are too shy to make friends easily.

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.

28. Those who often don't want to play.

32. Those who aren't noticed much.

## Appendix C

Conceptualization of the Longitudinal and Intergenerational Nature of the Current Sample

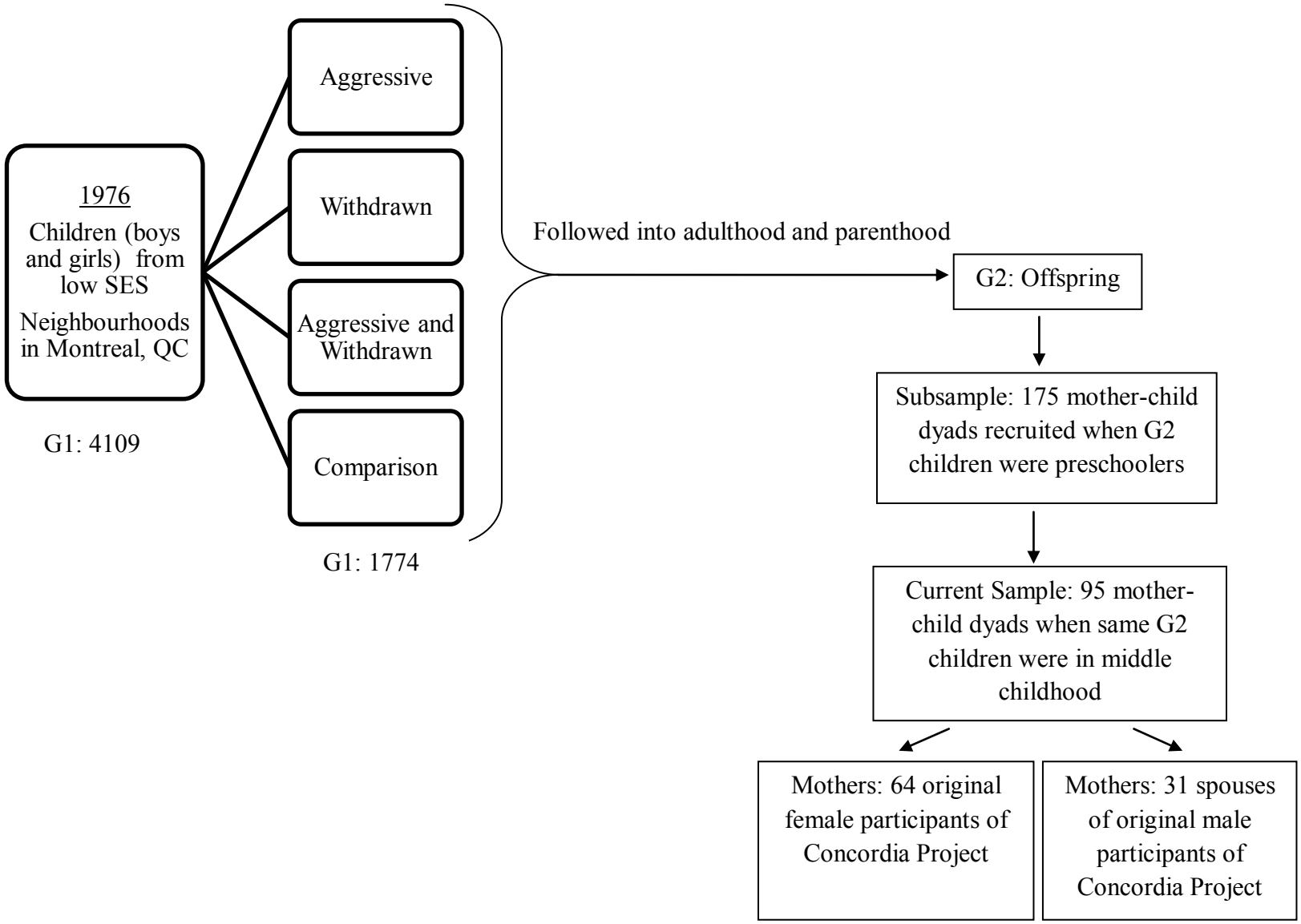


*Figure C.* Conceptualization of the Longitudinal and Intergenerational Nature of the Current Sample.

## Appendix D

Informed Consent Form

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

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

Numéro d'identification:

**Formulaire de consentement**

Je, soussigné(e), autorise les chercheurs du projet *L'individu dans son milieu* de l'université Concordia à rencontrer mon enfant _____ à l'école, en deux sessions, durant la période de classe. Je comprends que mon enfant remplira des tests de fonctionnement intellectuel et académique ainsi que des questionnaires sur son comportement et son tempérament. J'autorise également les chercheurs à recueillir des informations sur la vie scolaire de mon enfant de la part de son professeur et à avoir une copie du dernier bulletin de l'année en cours. Finalement, lors d'une troisième visite, je consens à rencontrer les chercheurs de l'université Concordia à la maison avec mon enfant afin de remplir des questionnaires additionnels portant sur notre vie familiale et de recueillir des échantillons de salive sur moi-même, lors de la rencontre, et sur mon enfant, lors de la rencontre et pendant deux jours de la semaine. J'accepte aussi d'être filmé(e) avec mon enfant lors d'une session incluant un jeu et des discussions portant sur des résolutions de problèmes.

Je comprends que toute l'information recueillie demeurera confidentielle et qu'elle ne servira qu'à des fins de recherche. Cependant, si après évaluation des examens votre enfant requérait une attention spéciale, les chercheurs de l'université Concordia s'engagent à faire le suivi de la rencontre afin de référer les services nécessaires.

Dans l'éventualité où j'aurais des questions concernant cette recherche, je pourrai m=adresser soit à Julie Aouad ou bien à Nadine Girouard au (514) 848-2424 extension 2254.

Nom: _____ Date:
EN LETTRES MOULÉES

Signature:

**********

Nom de l'enseignant/e:

Année:

Nom du directeur/de la directrice:

Nom de l'école:

Numéro de téléphone: (_____)
code régional

Adresse:
rue

_____

ville code postal

## Appendix E

Summary of Non-Significant Findings from Hierarchical Regressions in Study 1

Table E1

*Summary of Non-Significant Results from Hierarchical Regression Analyses for Part 2, Study 1 (n =95)*

| Outcome measures | Significant predictors in the final model | Statistics for the final equation |
|---|---|---|
| Mother Interpersonal Flexibility | N/A | $R^2_{Adj}$ = -2%, $F$ = 0.64 |
| Mother Praise Other | N/A | $R^2_{Adj}$ = 2%, $F$ = 1.38 |
| Child Interpersonal Flexibility | N/A | $R^2_{Adj}$ = -3%, $F$ = 0.43 |
| Child Yield | N/A | $R^2_{Adj}$ = 0%, $F$ = 1.03 |
| Child Deny | Child Age (β = .24, $r^2$ =5.5)* | $R^2_{Adj}$ = 2%, $F$ = 1.32 |
| Child Criticize Other | N/A | $R^2_{Adj}$ = -4%, $F$ = 0.32 |

*Note.* *$p$ <.05. Predictors were entered in the following order: Step 1 = Family Income and Occupational Prestige, Step 2 = Maternal Education (years), and Step 3 = Child Age and Gender.

Table E2

*Summary of Non-Significant Results from Hierarchical Regression Analyses for Part 3a, Study 1*

| Outcome measures | Significant predictors in the final model | Statistics for the final equation |
|---|---|---|
| Part 3a ($n$ = 64) | | |
| Mother Empathy | N/A | $R^2_{Adj}$ = -3%, $F$ = 0.50 |
| Mother Interpersonal Flexibility | N/A | $R^2_{Adj}$ = -4%, $F$ = 0.24 |
| Mother Praise Other | N/A | $R^2_{Adj}$ = 1%, $F$ = 1.29 |
| Mother Criticize Other | N/A | $R^2_{Adj}$ = 3%, $F$ = 1.72 |
| Child Negative Engagement | N/A | $R^2_{Adj}$ = -1%, $F$ = 0.74 |
| Child Empathy | N/A | $R^2_{Adj}$ = -1%, $F$ = 0.76 |
| Child Interpersonal Flexibility | N/A | $R^2_{Adj}$ = 5%, $F$ = 2.20 |
| Child Yield | N/A | $R^2_{Adj}$ = -3%, $F$ = 0.35 |
| Child Deny | N/A | $R^2_{Adj}$ = 3%, $F$ = 1.58 |
| Child Criticize Other | N/A | $R^2_{Adj}$ = -2%, $F$ = 0.68 |

*Note*. Predictors were entered in the following order: Step 1 = Maternal Childhood Histories of Social Withdrawal, Step 2 = Maternal Education (years), and Step 3 = Interaction between Maternal Social Withdrawal and Education.

Table E3

*Summary of Non-Significant Results from Hierarchical Regression Analyses for Part 3b, Study 1 (n = 64)*

| Outcome measures | Significant predictors in the final model | Statistics for the final equation |
|---|---|---|
| Mother Disengagement | Maternal Education (β = -.29, $r^2$ =7.8)* | $R^2_{Adj}$ = .1%, $F$ = 3.40 |
| Mother Empathy | N/A | $R^2_{Adj}$ = -3%, $F$ = 0.50 |
| Mother Interpersonal Flexibility | N/A | $R^2_{Adj}$ = 1%, $F$ = 1.20 |
| Mother Praise Other | N/A | $R^2_{Adj}$ = -2%, $F$ = 0.69 |
| Mother Criticize Other | N/A | $R^2_{Adj}$ = 1%, $F$ = 1.23 |
| Child Negative Engagement | N/A | $R^2_{Adj}$ = 3%, $F$ = 1.64 |
| Child Empathy | N/A | $R^2_{Adj}$ = 2%, $F$ = 1.36 |
| Child Interpersonal Flexibility | N/A | $R^2_{Adj}$ = -1%, $F$ = 0.76 |
| Child Yield | N/A | $R^2_{Adj}$ = 3%, $F$ = 1.52 |
| Child Deny | N/A | $R^2_{Adj}$ = 1%, $F$ = 1.26 |
| Child Criticize Other | N/A | $R^2_{Adj}$ = -3%, $F$ = 0.47 |

*Note*. *$p$ <.05. Predictors were entered in the following order: Step 1 = Maternal Concurrent Distress, Step 2 = Maternal Education, and Step 3 = Interaction between Maternal Distress and Education.

## Appendix F

Summary of Non-significant Findings from Hierarchical Regressions for Study 2

Table F1

*Summary of Non-Significant Results from Hierarchical Regression Analyses for Part 1, Study 2 (n = 64)*

| Outcome measures | Primary predictors | Statistics for the final equation |
|---|---|---|
| Mother Total Solutions | Children's Interaction Behaviors | $R^2_{Adj} = 0\%$, $F = 0.96$ |
| | Children's Conflict Management Behaviors | $R^2_{Adj} = -2\%$, $F = 0.76$ |
| Child Total Solutions | Mothers' Conflict Management Behaviors | $R^2_{Adj} = -3\%$, $F = 0.66$ |
| | Children's Interaction Behaviors | $R^2_{Adj} = -3\%$, $F = 0.59$ |
| Mother Poor Solutions | Mothers' Interaction Behaviors | $R^2_{Adj} = 3\%$, $F = 1.14$ |
| | Children's Interaction Behaviors | $R^2_{Adj} = -1\%$, $F = 0.87$ |
| | Children's Conflict Management Behaviors | $R^2_{Adj} = -3\%$, $F = 0.60$ |
| Mother Sophisticated Solutions | Mothers' Interaction Behaviors | $R^2_{Adj} = 0\%$, $F = 1.03$ |
| | Children's Interaction Behaviors | $R^2_{Adj} = -2\%$, $F = 0.76$ |
| Child Sophisticated Solutions | Mothers' Interaction Behaviors | $R^2_{Adj} = 3\%$, $F = 1.33$ |
| | Mothers' Conflict Management Behaviors | $R^2_{Adj} = 1\%$, $F = 1.07$ |
| Resolved Specified | Mothers' Interaction Behaviors | $R^2_{Adj} = 1\%$, $F = 1.09$ |
| | Mothers' Conflict Management Behaviors | $R^2_{Adj} = -3\%$, $F = 0.60$ |
| | Children's Interaction Behaviors | $R^2_{Adj} = -4\%$, $F = 0.58$ |
| Unresolved with Conflict | Mothers' Interaction Behaviors | $R^2_{Adj} = -2\%$, $F = 0.81$ |
| | Mothers' Conflict Management Behaviors | $R^2_{Adj} = -3\%$, $F = 0.69$ |
| | Children's Conflict Management Behaviors | $R^2_{Adj} = 4\%$, $F = 1.52$ |

Table F2

*Summary of Non-Significant Results from Hierarchical Regression Analyses for Part 2, Study 2*

| Outcome measures | Non-significant primary predictors | Significant control variables[a] | Statistics for the final equation |
|---|---|---|---|
| Test-Taking Behaviors ($n$ = 86) | | | |
| Positive/Problem-Focused WISC-III | Children's Interaction Behaviors | 3) Child Age ($\beta$ = -.41, $r^2$ =15.5)** | $R^2_{Adj}$ = 21%, $F$ = 5.55 |
| | | 3) Child IQ ($\beta$ = .25, $r^2$ =4.9)* | |
| | Children's Conflict Management Behaviors | 3) Child Age ($\beta$ = -.44, $r^2$ =18.7)** | $R^2_{Adj}$ = 23%, $F$ = 6.20 |
| | | 3) Child IQ ($\beta$ = .27, $r^2$ =6.3)* | |
| Rule-Abiding WISC-III | Children's Interaction Behaviors | N/A | $R^2_{Adj}$ = 3%, $F$ = 1.53 |
| Anxious/Insecure WISC-III | Children's Conflict Management Behaviors | 3) Child IQ ($\beta$ = -.42, $r^2$ =15.4)** | $R^2_{Adj}$ = 11%, $F$ = 3.18 |
| Disorganized | Children's Interaction Behaviors | 3) Child Age ($\beta$ = -.33, $r^2$ =9.7)** | $R^2_{Adj}$ = 38%, $F$ = 11.52 |
| | | 3) Child IQ ($\beta$ = -.60, $r^2$ =29.2)** | |
| | Children's Conflict Management Behaviors | 3) Child Age ($\beta$ = -32, $r^2$ =9.5)** | $R^2_{Adj}$ = 44%, $F$ = 14.32 |
| | | 3) Child IQ ($\beta$ = -63, $r^2$ =34)** | |
| Self-Report Measures ($n$ = 95) | | | |
| SSRS | Children's Conflict Management Behaviors | 3) Child Gender[b] ($\beta$ = .26, $r^2$ =6.3)* | $R^2_{Adj}$ = 9.6%, $F$ = 3.01 |
| Mother CBCL | Children's Conflict Management Behaviors | N/A | $R^2_{Adj}$ = 0.1%, $F$ = 1.10 |
| TRF | Children's Interaction Behaviors | 3) Child Gender ($\beta$ = -.33, $r^2$ =8.8)** | $R^2_{Adj}$ = 19.5%, $F$ = 5.54 |

*Note.* [a]Bracketed numbers indicate the step at which the predictor was entered. *$p$ <.05. **$p$ <.01. [b]1 = male, 2 = female.

Table F3

*Summary of Non-Significant Results from Hierarchical Regression Analyses for Part 3, Study 2*

| Outcome measures | Significant control variables in the final model[a] | Statistics for the final equation |
|---|---|---|
| <u>Test-Taking Behaviors ($n$ = 58)</u> | | |
| Positive/Problem-Focused WISC-III | 2) Child Age ($\beta$ = -.50, $r^2$ =24.8)** | $R^2_{Adj}$ = 25.9%, $F$ = 4.99 |
| Rule-Abiding WISC-III | 2) Child IQ ($\beta$ = .40, $r^2$ =12.0)** | $R^2_{Adj}$ = 7.2%, $F$ = 1.88 |
| Anxious/Insecure WISC-III | 2) Child IQ ($\beta$ = -.38, $r^2$ =11.2)* | $R^2_{Adj}$ = 6.5%, $F$ = 1.79 |
| <u>Self-Report Measures ($n$ = 64)</u> | | |
| CBCL | 2) Child Gender[b] ($\beta$ = -.30, $r^2$ =7.4)* | $R^2_{Adj}$ = 7.9%, $F$ = 2.08 |
| TRF | 2) Child Gender[b] ($\beta$ = -.38, $r^2$ =12.3)** | $R^2_{Adj}$ = 19.3%, $F$ = 4.01 |

*Note.* [a]Bracketed numbers indicate the step at which the predictor was entered. *$p$ <.05. **$p$ <.01. [b]1 = male, 2 = female.