Predicting Autonomy-Supportive Parenting and Associated Socio-Emotional Outcomes in Children: A High-Risk Longitudinal Study

Brenda Harvey

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Signed by the final examining committee:

_____	Dr. Nadia Chaudhri	Chair
_____	Dr. Erin Barker	Examiner
_____	Dr. Krista Byers-Heinlein	Examiner
_____	Dr. Dale Stack	Supervisor

Approved by _____

Chair of Department or Graduate Program Director

_____20___ _____

Dean of Faculty

ABSTRACT

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The present study was designed to examine the psychosocial antecedents (maternal childhood histories of risk, SES and psychosocial risk (comprised of maternal mental health, social support and parental stress)) of autonomy-supportive parenting during preschool and the associated socio-emotional outcomes in childhood (e.g. behavioural problems, social competence), in an at-risk community sample. At Time 1, participants were 100 mothers with their preschool aged children (1-6 years). At Time 2, 78 of the same mothers and children participated when the children were school aged (6-11 years). All participants were drawn from families who participated in the Concordia Longitudinal Risk Project (a longitudinal, intergenerational study of disadvantaged children screened on measures of aggression and social withdrawal). Autonomy support was coded in two contexts: 1) free play and 2) interference (i.e., mother completes a questionnaire while her child plays alone).

Results revealed that maternal childhood histories of both aggression and social withdrawal, low SES and high psychosocial risk predicted the use of less autonomy support, thus more control; however, only when in a challenging interference context. Conversely, within the free play context, only high SES was predictive of autonomy support. Furthermore, autonomy support during the challenging interference context at Time 1, predicted less problem behaviour, as well as more social competence at Time 2. Taken together, results indicate the importance of parenting behaviours at an early age for children's later socio-emotional outcomes. Ultimately,

results have implications for the design of preventive interventions addressing vulnerability, and fostering healthy relationships through informing parenting practices.

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Parenting practices are vital for child development, particularly during early childhood when parenting plays a critical role in almost every aspect of a child's physical, cognitive, social and emotional development (Baumrind, 1967; Landry, Smith & Swank, 2003; Moreau & Mageau, 2013; Stack, Serbin, Enns, Ruttle, & Barrieau, 2010). Various theories have been put forward regarding different parenting styles, all of which share certain caveats defining 'good parenting' and all of which have been consistently shown to be related to various child outcomes (Maccoby, 1992; Moreau & Mageau, 2013). The growing popularity of Self-Determination Theory (SDT; Deci & Ryan, 1987) has lead to an increase in the interest in one such parenting style, that of autonomy-supportive parenting.

SDT posits that all human beings have innate psychological needs which must be satisfied in order for a person to develop and function optimally (Deci & Ryan, 2000; Joussemet, Landry & Koestner, 2008). While other theories regarding innate psychological needs similarly recognize the need for relatedness and/or competence (e.g. Bandura, 1977; Maslow, 1943), what makes SDT unique is its focus on the need for autonomy (Joussemet et al., 2008). According to SDT, in order for a child to achieve optimal development, the environment must be conducive to the child's autonomy rather than controlling the child's behaviour. Autonomy should not be confused with a need for independence or selfishness. It is about the experience of freedom or volition in one's behaviors, in contrast to experiencing pressure, conflict or alienation (Deci & Ryan, 2000; Joussemet et al., 2008). As such, an individual could engage in any number of behaviors, be they selfish or selfless, and still satisfy the need for autonomy so long as these behaviors were voluntarily engaged in, as opposed to being pressured or coerced.

An autonomy-supportive environment is one where a child's sense of autonomy blossoms instead of being stifled as it would in a controlling environment. That is, an autonomy-

supportive environment provides choices, encourages self-initiation from the child, promotes full internalization of important values and behaviours and does not attempt to control the thoughts or actions of the child (Joussemet, Koestner, Lekes & Landry, 2005). Akin to Baumrind's (1967) concept of authoritative parenting, autonomy-supportive parents supply structure and expectations for their child, while employing autonomy-supportive techniques in order to encourage and motivate their child when engaging in non-autonomous tasks, in lieu of control techniques. Consequently, a parent can be said to be autonomy-supportive to the degree to which they encourage and support their child's values, interests and sense of volition, and do not engage in controlling behaviors (its opposite), whereby they pressure their child to think or behave in a specific manner (Joussemet et al., 2008).

The benefits of autonomy support are seen as universal (Savard, Joussemet, Pelletier & Mageau, 2013), with positive outcomes being observed at various ages, in various life domains (e.g. parent-child relationships, academic achievement, well-being, sports and work) and with various populations (see Moreau & Mageau, 2013). For instance, the benefits of autonomy support on well-being and academic performance in primary and secondary school children have been well established (Deci & Ryan, 2000; Grolnick & Ryan, 1989; Grolnick, Ryan & Deci, 1991; Joussemet et al., 2005), the benefits can be seen across cultures (Chirkov & Ryan, 2001) and even continue into university (Black & Deci, 2000; Powers, Koestner & Gorin, 2008). In addition, these benefits extend beyond academics to have a clinical significance (e.g. impacting internalization of a clinical workshop and well-being) among adolescents with severe emotional and behavioural problems (Savard et al., 2013).

Although autonomy support can come from any number of sources (e.g. friends, family, teachers, employers), the original, and arguably most important source developmentally, comes

from parents. The benefits of autonomy support begin early on, with the first benefits being reported for cognitive development during infancy (Bernier, Carlson & Whipple, 2010; Bernier, Carlson, Deschênes & Matte-Gagné, 2012; Matte-Gagné & Bernier, 2011; Whipple, Bernier & Mageau, 2010). For example, Bernier et al. (2010; 2012) showed that autonomy support at 15 months predicts superior executive functioning at 18, 26 and 36 months. It is clear that autonomy-supportive parenting is associated with positive child outcomes (e.g. well-being and academic performance). However, whereas the child outcomes associated with autonomy support have received much attention in the past, the factors that promote or hinder the use of specific parenting behaviours have seldom been explored. The primary objective of the present study was to address this limitation in the literature, specifically with regards to investigating the antecedents of autonomy-supportive parenting.

Predicting Autonomy Support

Autonomy support has been demonstrated to be important throughout the lifespan, but particularly during the formative years of early childhood. Yet little attention has been focused on determining why parents engage in autonomy-supportive versus controlling behaviours with their children in early childhood. Grolnick, Gurland, DeCourcey and Jacobs (2002) conducted a study in part to address this question. These researchers were able to show that autonomy-supportive or controlling parenting styles, as perceived by Grade 3 children, predicted parenting behaviour. Moreover, this relation was context dependent, such that mothers in the experimental condition who received more pressure for their children to succeed from the experimenters were more likely to engage in controlling behaviours, especially if they also had a controlling style. While Grolnick et al.'s (2002) study represents an important contribution to the field, they did not examine other variables beyond a pre-existing parenting style when predicting autonomy-

supportive versus controlling behaviours. As such, while the finding on the importance of context was valuable, the study did not contribute to our understanding of what pre-existing factors lead parents to develop a particular parenting style and thus behave in a specific way more generally.

According to Belsky's (1984) Social-Contextual Model of the Determinants of Parenting (see Belsky & Jaffee, 2006 and Bornstein, 2002 for a review), parenting behaviour is determined by their personality or psychological resources, child characteristics, and contextual sources of stress and support. A parent's psychological resources are directly shaped by the parent's developmental history, and are influenced by and reciprocally influence contextual sources of stress and support. As a result, it can reasonably be expected that childhood histories of risk and parents' mental health, social support, stress and living conditions would all impact parenting behaviour. In line with this theory, previous work conducted on related parenting dimensions has found economic hardship and stressful life events to be important factors, related to more harsh and punitive parenting (Conger, Patterson & Ge, 1995; Dodge, Pettit & Bates, 1994; Grolnick, Weiss, McKenzie & Wrightman, 1996). Moreover, studies specifically examining the relation of SES and parenting have consistently shown that parents from lower SES backgrounds are more harsh, reactive and punitive, and less nurturing, warm and responsive compared to parents from higher SES backgrounds (Belsky, Bell, Bradley, Stallard, & Stewart-Brown, 2007; Bradley & Corwyn, 2002; Gershoff, Aber, Raver, & Lennon, 2007; Hoff, Laursen, & Tardif, 2002; Pinderhughes, Dodge, Bates, Pettit, & Zelli, 2000). Although these studies did not measure autonomy-supportive parenting, the consistent findings from other parenting domains, coupled with a strong theoretical rational, suggest that SES would be an important factor when examining the antecedents of autonomy-supportive parenting.

In addition, as expected from Belsky's (1984; Belsky & Jaffee, 2006; Bornstein, 2002) model, evidence suggests that psychosocial risk factors may have a significant impact on parenting behaviours. For example, maternal mental health has been shown to impact parenting behaviour, such that maternal depressive symptoms are associated with more parental neglect, psychological aggression, physical assault and less engagement (Turney, 2011), greater negative and fewer positive mother-child interactions (Lovejoy, Graczyk, O'Hare, & Neuman, 2000), more hostility and less sensitivity and, most importantly for the present study, less respect for autonomy (Levey, 2012). While these findings are restricted to depressive symptoms, the theoretical rational suggests that parents' psychological resources are an important determinant of their parenting behaviour (Belsky, 1984; Belsky & Jaffee, 2006; Bornstein, 2002) and as a consequence, it is likely that the effects on parenting behaviour extend beyond depressive symptomatology to include other aspects of maternal mental health. Furthermore, social support and parental stress have been found to be strong predictors of parenting behaviour. In particular, social support has been related to more involvement (at home and with school), more emotional support, the use of less harsh discipline (Ji, 2008), higher levels of sensitivity and lower levels of hostility (Stack et al., 2012); as well as being related to more enjoyment of parent-child interactions, positive affect and less parental intrusiveness (Adams, 2006). Similarly, parental stress has been shown to be negatively related to maternal positive affect, dyadic pleasure (Crnic, Gaze & Hoffman, 2005), maternal sensitivity (Stack et al., 2012) and supportive responses (e.g. encouraging emotion expression), and positively related to non-supportive responses (e.g. minimizing emotional experience; Nelson, O'Brien, Blankson, Calkins & Keane, 2009) and maternal hostility (Stack et al., 2012).

With the exception of mental health, these findings do not directly pertain to autonomy support per se. Nevertheless, it is likely that given the range of parenting behaviours impacted by these three psychosocial risk factors (i.e. mental health, social support and parental stress), the effects are likely to extend beyond the dimensions of parenting behaviours previously investigated to include an impact on autonomy-supportive parenting. As a result, maternal SES and psychosocial risk (as determined by mental health, social support and parental stress) were included as potential predictors of autonomy-supportive parenting during preschool in the present study.

In addition to the concurrent factors previously reviewed, Belsky's (1984) model would suggest, and a body of evidence concurs, that risk factors from the mother's past can impact her present parenting behaviour. Specifically, past research has shown that parents with childhood histories of aggression and/or social withdrawal are more likely to have harshly punitive and neglectful parenting styles (Fagot, Pears, Capaldi, Crosby & Leve, 1998; Hops, Davis, Leve & Sheeber, 2003; Serbin, Moskowitz, Schwartzman, & Ledingham, 1991; Serbin et al., 1998), as well as higher levels of maternal hostility (Stack et al., 2012). Moreover, childhood histories of aggression and social withdrawal have been shown to have a negative impact on mothers' request strategies (Grunzeweig, Stack, Serbin, Ledingham & Schwartzman, 2009), mother-child social problem solving approaches (Martin, Stack, Serbin, Ledingham, & Schwartzman, 2012), and to indirectly predict self-reported violence towards children (Temcheff et al., 2008). In addition, histories of adolescent psychopathology have been associated with the use of less positive parenting techniques (Jaffee, Belsky, Harrington, Caspi & Moffitt, 2006). Taken together this suggests that histories of risk can influence the manner in which parents raise their own children, potentially creating unsafe environments for a child's development while also

adversely impacting parenting behaviour (Stack, Serbin, Matte-Gagné, Kingdon, Doiron, & Schwartzman, in press).

Investigating these risk factors from a parent's past necessitates the use of longitudinal, intergenerational designs. These research designs are extremely valuable as they allow researchers to collect data from childhood through adulthood and subsequently incorporate later generations, permitting the examination of the potential intergenerational transfer of childhood risk factors. In the present study we used a longitudinal, intergenerational design, integrating data from the Concordia Longitudinal Risk Project (henceforth referred to as the Concordia Project), an ongoing intergenerational investigation of mother-child dyads from disadvantaged communities in Montreal, Canada (Schwartzman, Ledingham, & Serbin, 1985; Serbin et al., 1998). Previous studies from the Concordia project have shown that high levels of both maternal childhood aggression and social withdrawal are consistently related to the most negative outcomes than either aggression or social withdrawal alone (Serbin & Karp, 2004; Stack et al, 2012). Consequently, in the present study the interaction between mothers' childhood aggression and social withdrawal was included as a predictor of parenting behaviour.

In addition to contributing to a deeper understanding of childhood histories of risk and subsequent parenting, the Concordia Project allows for the investigation of parenting behaviors in different contexts. The study by Grolnick et al. (2002) showed the importance of context, such that mothers who were under pressure were more likely to resort to controlling strategies. As such, the present study investigated autonomy-supportive parenting in two contexts: 1) a free play context without any pressure on the mother, and 2) an interference context in which the mother was asked to complete a questionnaire while her preschool aged child continued to play on the mat provided. The interference context was anticipated to be challenging for some

mothers, making it difficult for them to remain supportive of their children's volition and potentially providing additional pressure which may elicit more controlling behaviors in order to ensure the child's compliance with the task. These two interaction contexts allowed us to explore what predicts the use of autonomy-supportive strategies in a natural, relatively pressure-free context, and what predicts the use of these strategies in a more challenging context.

Socio-Emotional Childhood Outcomes in an at-risk Sample

While the primary objective was to examine the antecedents of autonomy support, it was not the sole purpose of the present study. Despite the fact that more research has been devoted to uncovering childhood outcomes associated with parenting behaviour, there remain a few areas, at least with regards to autonomy support, in which more research is needed in order to improve our understanding of the relation between parenting and child development. As such, the second objective of the present study was to address this issue by examining children's socio-emotional outcomes associated with autonomy support within an at-risk sample.

The majority of studies examining outcomes associated with autonomy support are conducted at a single time point using self-report measures (e.g. questionnaire or interview) of perceived autonomy support in middle to late childhood. The problem with self-report measures of parenting behaviour, in contrast to observational techniques, is the possibility of perceptual and retrospective bias. Therefore, in order to improve our understanding of the benefits of autonomy support, additional studies using observational techniques, thereby removing the perceptual and retrospective biases rampant throughout most of the literature to date (e.g. Chirkov & Ryan, 2001; Grolnick & Ryan, 1989; Grolnick et al., 1991; Joussemet et al., 2005; see Joussemet, Landry et al., 2008 for a review), are required. In addition, more studies using

prospective, longitudinal designs are essential in order to determine the lasting impact of early autonomy support on later child development.

In addition, while the literature for some outcome areas is substantive (e.g. academic achievement and cognitive development), more is needed on the socio-emotional outcomes associated with autonomy supportive parenting, particularly at an early age. Importantly, the childhood outcomes associated with autonomy support within a sample of children from disadvantaged backgrounds has yet to be examined. The secondary objective of the present study was to address all of these shortcomings in the literature by examining the socio-emotional outcomes in elementary school aged children that were associated with autonomy-supportive parenting during preschool in an observational study using a prospective, longitudinal design within a sub-sample of the Concordia project.

Socio-emotional development concerns aspects of both social and emotional growth (Thompson, 1988). Children with impaired socio-emotional development may have problems in many aspects of their social lives. For example, children who do not successfully learn how to regulate their emotions and appropriately behave in social settings may develop behavioural problems (Cole, Zahn-Waxler, Fox, Usher, & Welsh, 1996; Eisenberg et al., 2001). Behavioural problems are one important indicator of socio-emotional (mal)adjustment. Behavioural problems can be broadly classified into two categories: internalizing problems, which encompass internal emotional issues such as social withdrawal, anxiety and depression; and externalizing problems, which encompass more overt social behavioural problems such as delinquency and aggression (Achenbach, 1991; Eisenberg et al., 2001). Although behavioural problems in childhood and adolescence are problematic in their own right, research suggests that childhood problem behaviors, especially externalizing problems, are related to clinical diagnoses (using the DSM-

IV) in adulthood (Campbell, Shaw & Gilliom, 2000; Cole et al., 1996; Edelbrock & Costello, 1988; Hofstra, van der Ende & Verhulst, 2002).

There is some evidence to support a link between externalizing problems and autonomy support. An early study by Grolnick and Ryan (1989) showed that parental autonomy support when children were in Grades 3 to 6 was negatively related to teachers' ratings of aggressive, disruptive and impulsive behaviors (i.e. externalizing behaviours) in children. In addition, Joussemet, Vitaro, Barker, Côté, Nagin, Zoccolillo and Tremblay (2008) showed that mothers' controlling parenting, the opposite of autonomy-supportive parenting, during kindergarten resulted in increased odds of children engaging in physical aggression throughout grade school, beyond the effects of child sex and temperament, parental separation and early motherhood. Moreover, there is some evidence to suggest that autonomy supportive teachers are related to fewer externalizing problems with students both in and outside of the classroom (Vansteenkiste et al., 2012). The support for the relation between autonomy support and internalizing behaviors is not as strong; however a few older studies have shown that children's perceptions of psychological control, the opposite of autonomy support, are related to internalizing problems, such as depressed mood (Barber, Olsen & Shagle, 1994; Pettit, Laird, Dodge, Bates & Criss, 2001).

Although these studies generally relied on self-reports for their measure of autonomy support or control, and were always measured in school-aged children, together they suggest that there may be a link between autonomy support and childhood problem behaviours. Consequently, it was expected that in the present study autonomy-supportive parenting during preschool across contexts would be negatively related to school-aged children's externalizing and internalizing problems. Furthermore, due to the larger body of evidence, potentially stronger

relations were anticipated for externalizing problems, particularly when autonomy support was measured in a challenging context.

Another important indicator of socio-emotional development concerns children's social competence. Social competence can loosely be defined as one's ability to effectively interact with others (Denham et al., 2003; Rose-Krasnor, 1997). For young children, one of the most important developmental tasks is to successfully develop peer relationships (Denham et al., 2003). It is extremely important that children develop strong social competence, as these skills are not only important for their peer relationships, mental health and well-being across the lifespan (Denham et al, 2003; Gifford-Smith & Brownell, 2003), but are also strongly related to children's school readiness and academic success (Bulotsky-Shearer & Fantuzzo, 2011; Durlak, Weissberg, Dymnicki, Taylor & Schellinger, 2011; Han, 2014). According to Ryan and Deci (2000), autonomy support is important for a child's successful social development. Indeed, Joussemet et al. (2005) found that maternal autonomy support when children were five years old was related to social adjustment in Grade 3. Given that only one study has thus far examined social outcomes, more research is needed in order to augment our understanding of the relation between autonomy support, especially during the preschool period, and children's later social outcomes. Nevertheless, given Joussemet et al.'s (2005) findings, we expected that maternal autonomy support during the preschool period would be positively related to children's social competence in the first few years of schooling, especially when mothers were able to engage in autonomy-supportive behaviors when faced with a challenging situation.

Objectives and Hypotheses for the Present Study

Hypotheses for objective 1. The first objective of the present study was to investigate the factors that promote or hinder the use of autonomy-supportive parenting during preschool. It was

expected that higher SES would be related to more autonomy-supportive behaviours regardless of context. Psychosocial risk, represented by mothers' mental health, parental stress and satisfaction of social support, and mothers' childhood histories of risk, represented by the interaction of childhood aggression and social withdrawal, were both expected to be negatively related to the use of autonomy-supportive strategies, and thus more likely to be associated with the use of controlling strategies, especially when mothers were in a challenging situation where they might feel pressure.

Hypotheses for objective 2. The second objective was to examine children's later socio-emotional outcomes associated with autonomy support during preschool in an at-risk sample. It was expected that autonomy support across contexts during the preschool period would be negatively related to children's internalizing (e.g. social withdrawal, anxiety and depression) and externalizing problems (e.g. delinquency and aggression; as rated by their mothers; with a stronger relation expected for externalizing problems), as well as being positively related to social competence (i.e. the ability to effectively interact with others; as rated by their teachers), during early to mid-childhood (between 6 and 11 years). Moreover, it was anticipated that there would be stronger relations between these socio-emotional outcomes and autonomy support measured during the challenging interference context.

Method

Participants

Original sample from the Concordia Project. The present study's sample consisted of a sub-sample from the Concordia Project, an ongoing prospective, longitudinal, intergenerational study that began in 1976 (Schwartzman et al., 1985; Serbin et al., 1998). The original participants of the Concordia Project constituted a community-based sample of children in

Grades 1, 4 and 7 selected from low-income neighbourhoods in Montreal, Canada. Initially, 4,109 francophone children were screened on dimensions of aggression, social withdrawal and likeability using a French translation of the Pupil Evaluation Inventory (PEI; Pekarik, Prinze, Liebert, Weintraub & Neale, 1976). Percentile cut-offs were used to establish extreme scores, compared with age and sex matched peers, on both aggression and social withdrawal (Schwartzman et al., 1985). These percentile scores were used to create four dimensions: the aggressive dimension (*n*=198), the withdrawn dimension (*n*=220), the combined aggressive and socially withdrawn dimension (*n*=238) and the neither aggressive nor socially withdrawn (*n*=1,114) dimension. Of the 4,109 originally screened, 1,770 children (861 boys and 909 girls) met the inclusion criteria and agreed to participate in the study. For a more detailed description of the original participants of the Concordia Project see Schwartzman et al. (1985) and Serbin et al. (1998).

Preschool sample (Time 1). The participants constituted a sub-sample of the Concordia Project and their pre-school aged children. One-hundred and fifteen mothers with children between the ages of 1 and 6 agreed to take part. Of these, fifteen mothers were not included in the present analysis due to technical or language difficulties, resulting in a total sample of one hundred mothers and their preschool aged children (57 girls, 43 boys), who ranged from 1 to 6 years of age (*M*=3.56, *SD*= 1.58). The current sample of mother-child dyads is representative of the larger sample of 367 Concordia Project participants, in that the participants did not statistically differ based on years of education, annual family income, occupational prestige and dimensions of aggression and social withdrawal (see Table 1). In order to maximize the power of the analyses and in accordance with previous studies conducted with the Concordia Project (DeGenna, Stack, Serbin, Ledingham & Schwartzman, 2006; Stack et al., 2010; 2012), maternal

childhood aggression and social withdrawal scores were treated as dimensions rather than categorical predictors.

Elementary school sample (Time 2). The longitudinal objective of the present study was examined by using the follow-up of the preschool sample when children were between 6 and 11 years of age (*M*=7.72, *SD*=1.05). Of the one hundred mothers from the preschool sample, seventy-eight mothers agreed to participate in the questionnaire-based follow-up when their children were in elementary school between Grades 1 to 5 (*M*=1.71, *SD*=0.97). In addition, the elementary school sample included measures from sixty-nine of the children's teachers who agreed to participate in the study.

Procedure

Time 1: Preschool age. The present study was conducted as a part of a larger on-going study. Home visits when the child was between the age of 1 and 6 years were conducted by research staff trained in the administration of the testing protocol and blind to mothers' childhood histories. After describing the protocol, obtaining informed consent (see Appendix A), and ensuring that mothers were aware that they could discontinue their involvement in the study at any time, mother and child participated in a series of interactions while seated on a mat on the floor. All interactions were video-recorded using a Sony Video 8AF camera with a directional microphone that was fixed to a tripod placed in front of the dyad for later coding of maternal autonomy support. A stopwatch was used to indicate the start and stop times of each interaction.

Free play context. The first context of interest was a five-minute free play context which occurred on the second day of testing. Mothers were instructed to play with their child as they normally would, on the mat with the standardized toys provided. A standardized arrangement of

the available toys (age appropriate books, Lego blocks, a doll, a brush, a comb, a tea set and a toy telephone) was used.

Interference context. The second context of interest was a three-minute interference context that occurred after the free play context. Mothers were provided with a clipboard, a questionnaire and a magazine prior to commencing this task. They were instructed to remain with their child who was seated on the mat on the floor, and to complete the questionnaire while their child continued to play on the mat with the toys provided. Should the mother have completed the questionnaire prior to the end of the task, they were instructed to look through the magazine that was provided until the task was completed. No explicit instructions were provided for how mothers should explain to their child the transition from a joint interaction to individual play, or how mothers should handle their child's bids for attention during the interference context. The open-ended nature of the interference context parallels every-day situations during which caregivers are busy engaging in various tasks and children are expected to continue to play by themselves.

Time 2: Elementary school. The elementary school portion of the present study was conducted through self-report questionnaires completed by the child's mother (n=78) and teacher (n=69) who agreed to participate in the follow-up study. Information procured from the Child Behaviour Checklist (CBCL; Achenbach, 1991) and the Teacher Social Competence Scale (TSC; Conduct Problems Prevention Research Group, 1995) was the focus.

Observational Coding

Maternal Autonomy Support (Time 1). The Coding System for Maternal Autonomy Support (Matte-Gagné, Bernier, & Gagné, 2013; Whipple, Bernier, & Mageau 2011a, 2011b) is an observational measure of mothers' autonomy-supportive behaviours designed to be applied to

structured learning tasks, and has been used successfully in previous studies with toddlers and preschoolers (Bernier, Carlson, & Whipple, 2010; Matte-Gagné & Bernier, 2011; Whipple et al., 2011a, 2011b). For the purpose of the present study, the coding system was adapted in minor ways with the help of one of the original authors to be applicable in free play and interference contexts.

In the free play, the two scales of autonomy support and control were both rated on five Likert subscales ranging from 1 (non-representative) to 5 (very representative): scaffolding, verbalizations, flexibility and involvement, following the child's pace and providing choices, and motivation and perspective taking (see Table 2). Given the inter-correlations between the subscales (ranging from .46 to .90), they were averaged into a total autonomy support score and a total controlling behaviours score. As autonomy support refers to the use of autonomy supportive strategies while minimizing the use of controlling behaviours, the total controlling behaviours score was reverse coded and averaged with the total autonomy support score to create a composite score of autonomy support ($\alpha = .89$). This score represented the degree to which the mother engaged in autonomy supportive strategies (e.g. intervened according to the child's needs, encouraged her child, provided opportunities to make choices, and took her child's perspective), while also minimizing the use of controlling techniques (e.g. giving orders, criticizing the child, making all the choices, and inserting herself into her child's play).

Due to the nature of the interference context (i.e. non-interactive, not engaging in dyadic play), the autonomy support and control scales were measured with the only two subscales which could be applied within the specific context of the interference context: flexibility and involvement, and motivation and perspective taking (see Table 2). As in the free play context, the total controlling behaviours score was reverse coded and averaged with the total autonomy

support score to create a composite score of autonomy support (α = .89). A high score of autonomy support required that the mother was flexible in her attempts to keep the child on the mat, intervened according to the child's needs, provided the child with a rationale for why they needed to continue to play alone and tried to motivate the child to continue to play, while minimizing the use of controlling strategies in order to keep the child playing on the mat, such as giving orders, using threats of punishment or physically restraining the child. In order to estimate how autonomy-supportive a mother was in general, an overall autonomy support score was obtained by averaging the scores across contexts.

Reliability. Thirty percent of the sample was randomly selected and coded by a post-doctoral fellow who was blind to mothers' childhood histories of risk. Intra-class correlation coefficients (Koch, 2006) were calculated for each scale of each subscale (see Table 2) and for the total autonomy support score (ICC=.925; .974) and the total controlling behaviours score (ICC=.952; .952) for the free play and interference contexts respectively.

Questionnaire Measures

Concordia Project measures.

Pupil Evaluation Inventory (PEI). The PEI (Pekarik et al., 1976) was used to assess mothers' levels of aggression and social withdrawal, when they were children in Grades 1, 4 or 7. The PEI is a peer nomination instrument, containing 34 items which load onto three factors: Aggression (verbal or physical behaviours which attempt to injure others or property, e.g. starting a fight over nothing), Social Withdrawal (socially isolating behaviours associated with shyness, avoidance and fear, e.g. difficulty making friends due to shyness), and Likeability (not used in the present study). For each item on the PEI children nominated up to four girls and four boys who best matched the description. The number of nominations received by each child was

summed for the Aggression and Social Withdrawal factors. Scores were converted to z-scores for each gender within each classroom, enabling appropriate comparisons of each child against relevant norms for gender and age (see Serbin et al., 1998 for further detail). The PEI is considered a reliable and valid measure of childhood aggression and social withdrawal, with internal consistencies above 0.7 for all factors and concurrent validity ranging between .54 and .65.

Time 1: Preschool age measures.

Demographic Information Questionnaire (DIQ). The DIQ has been found to be an effective measure of participants' demographics (De Genna et al., 2006; Martin et al., 2012). The DIQ includes items pertaining to the child's age and sex, annual family income, and the mother's level of education and occupational status. A measure of socio-economic status (SES) was obtained by standardizing and averaging mothers' education level and the annual family income.

Symptom Checklist-90 (SCL-90). The SCL-90 (Derogatis, Lipman, & Covi, 1973) is a measure of mental and physical health and contains 90 items describing potential problems or complaints potentially experienced in the last month. Mothers were asked to indicate on a scale of 0 (not at all) to 4 (extremely) how much they were distressed by each item in the past month. Example items include *"Headaches"* and *"Feeling lonely"*. The SCL-90 contains nine subscales regarding various types of symptoms, from which a total score of symptomology across scales (the general symptom index or GSI) is calculated to give an index of general mental health. The SCL-90 has internal consistency values ranging from 0.77 to 0.90, has excellent discriminant and convergent validity (Holi, 2003) and has been used in numerous studies from the Concordia Project (Granger et al., 1998; Karp, Serbin, Stack & Schwartzman, 2004; Serbin et al., 1998).

Parenting Stress Index-Short Form (PSI-SF). The PSI-SF (Abidin, 1986) is a measure of psychological distress arising from parenting demands, comprised of 36 parent-focused and child-focused items. Mothers were asked to indicate on a scale of 1 (strongly agree) to 5 (strongly disagree) how much they agreed with each item. Examples items include *"I find myself giving up more of my life to meet my children's needs than I ever expected"* and *"I expected to have closer and warmer feelings for my child than I do and this bothers me"*. The PSI-SF is comprised of three subscales each containing 12 items: Parental Distress (i.e. perceived competence as a parent, social support, spousal conflict etc.), Parent-Child Dysfunctional Interaction (i.e. non-reinforcing interactions with the child, the child does not meet the parent's expectations), and Difficult Child (i.e. perceptions of the child's temperament, defiance and demandingness). Higher levels of stress are indicated by higher scores on each subscale and the total score, across subscales. Only the total score representing parental stress was included in the analyses for the present study. The PSI-SF has been previously found to have excellent concurrent validity and internal consistency (Abidin, 1995).

Social Support Scale-II (SSS-II). The SSS-II (Telleen, 1985) is a measure of social support that consists of 24 items from which three scores can be calculated: need for support, number of supporters, and satisfaction with social support. In accordance with previous Concordia project studies (Stack et al., 2012), only satisfaction with social support was used in the present analyses. Mothers were asked to rate how satisfied they were with the level of support they received in different areas (i.e. asking advice, discussing personal problems) ranging from very dissatisfied (1) to very satisfied (6). The SSS-II has been previously found to have good concurrent validity and internal consistency, with the satisfaction with social support subscale having an alpha of 0.86 (Telleen, Herzog & Kilbane, 1989).

Time 2: Early elementary school measures.

Child Behaviour Checklist (CBCL). The CBCL (Achenbach, 1991) is a measure of child behaviour comprised of 118 items that are scored in terms of how unlikely (0), to likely (3) it is for a child to exhibit certain behaviour problems. The CBCL includes items that can be divided into two categories: internalizing (e.g. "*unhappy, sad or depressed*") and externalizing problems (e.g. "*swearing or obscene language*"). A Total Problem score is obtained by combining the internalizing and externalizing subscales. For the purpose of our study all three scores (internalizing, externalizing and total problem behaviors) were used. The CBCL has previously been found to have strong convergent validity and to be a reliable measure of child behaviour, with alpha values ranging from 0.71 to 0.89 (Nakamura, Ebesutani, Bernstein & Chorpita, 2009).

Teacher Social Competence Scale (TSC). The TSC (Conduct Problems Prevention Research Group, 1995) is a measure of social competence, comprised of 25 items where teachers were asked to rate on a scale from "not at all" (0) to "very well" (4), how much each item describes the child. Example items include "*cooperates with peers without prompting*" and "*expresses needs and feelings appropriately*". The TSC is comprised of three subscales: pro-social, emotion regulation and academic behaviour. Scores across all three subscales are merged to form one measure of social competence. The TSC has been previously shown to be a very reliable measure, with internal consistency values ranging from 0.88 to 0.93 (Gifford-Smith, 2000).

Results

Data Screening

Data screening was performed in accordance with the guidelines described by Kline (2009). All variables were within the accepted ranges for skewness and kurtosis. The assumptions of multicollinearity and singularity were not violated.

Preliminary Analyses

Table 3 presents descriptive statistics for all continuous independent variables in this study. Bivariate correlations examining the interrelations between the independent variables of interest and autonomy support in both the free play and interference contexts were conducted (see Tables 4 and 5). The sociodemographic variables of mothers' education and annual family income were strongly correlated (r=.46); they were averaged to obtain a measure of SES. The independent variables of mental health, parental stress and satisfaction with social support were all highly correlated; these were entered into a Factor Analysis, using Principal Axis Factoring (PAF) in order to reduce the probability of Type-I errors and compute reliable aggregate estimates. This analysis yielded a single factor solution (*Eigenvalue* >1.0), which represented 43.44% of the total variance. Oblimin rotation revealed factor loadings for mental health (.50), parental stress (.91) and satisfaction with social support (-.47). The factor solution was used to create a composite variable, labeled psychosocial risk.

Objective 1: Predicting Autonomy-Supportive Parenting Behaviour

Although maternal childhood histories of aggression and social withdrawal were not significantly correlated with autonomy support in either the free play or the interference contexts, it was hypothesized that the interaction between the two would be. Past studies from the Concordia Project (Serbin & Karp, 2004; Stack et al, 2012) have demonstrated that the presence of both aggression and social withdrawal together may be more strongly predictive of negative outcomes than either alone. Therefore, in order to examine the interaction between aggression

and social withdrawal, a residualized interaction term was generated by regressing aggression and social withdrawal onto the general interaction term (aggression x social withdrawal) and subtracting the predicted scores from the original interaction term, allowing for the examination of the interaction effect independent of the original variables.

All subsequent regression analyses predicting autonomy support were conducted by entering the residualized interaction term alone in the first step, in order to maximize power, followed by SES and psychosocial risk (factor score combining mental health, parenting stress, and social support) in the second and third steps respectively. Only significant findings are discussed in the text.

***Hierarchical* regression predicting autonomy support in the free play context.** The relations of the three predictors to autonomy support in the free play was examined (see Table 6). The first step was not significant ($F(1,90)=2.110$, $p=.150$, $r^2=.023$). The second step was significant ($F(2,89)=5.016$, $p=.009$, $r^2=.101$), revealing that SES ($\beta=.282$, $p=.007$) was a significant predictor, accounting for 7.8% of the variance. The final step ($F(3,88)=3.322$, $p=.023$, $r^2=.102$) revealed SES ($\beta=.277$, $p=.009$) to be the only significant predictor of autonomy support in the free play.

Hierarchical regression predicting autonomy support in the interference context. The relations of the three predictors to autonomy support in the interference context was examined (see Table 7). The first step was significant ($F(1,90)=6.527$, $p=.012$, $r^2=.068$), revealing that the interaction of aggression and social withdrawal ($\beta=-.260$, $p=.012$) was a significant predictor accounting for 6.8% of the variance in autonomy support. The second step was also significant ($F(2,89)=6.707$, $p=.002$, $r^2=.131$), with both the interaction of aggression and social withdrawal ($\beta=-.233$, $p=.021$) and SES ($\beta=.253$, $p=.013$) being significant predictors, and SES accounting for

an additional 6.3% of the explained variance in autonomy support in the interference context. The final step was also significant ($F(3,88)=5.948$, $p=.001$, $r^2=.169$), with SES ($\beta=.209$, $p=.040$) remaining a significant predictor and revealing that psychosocial risk ($\beta=-.206$, $p=.049$) was a significant predictor accounting for an additional 3.8% of the variance. However, the interaction ($\beta=-.183$, $p=.073$) was only a trend after controlling for psychosocial risk.

Following the procedure of Dawson (2014), the interaction between aggression and social withdrawal, after controlling for SES and psychosocial risk, was illustrated in Figure 1. Only when mothers were high on both aggression and social withdrawal was it predictive of autonomy-supportive behaviour in the interference context: mothers were much less likely to engage in autonomy-supportive behaviours, and thus more likely to engage in controlling behaviours, in the interference context.

Hierarchical regression predicting overall autonomy support. The relations of the three predictors to overall autonomy support across contexts were then examined (see Table 8). The first step was significant ($F(1,90)=5.042$, $p=.027$, $r^2=.053$), revealing that the interaction of aggression and social withdrawal ($\beta=-.230$, $p=.027$) was a significant predictor accounting for 5.3% of the variance in overall autonomy support across contexts. The second step was also significant ($F(2,89)=7.864$, $p=.001$, $r^2=.150$), with both the interaction of aggression and social withdrawal ($\beta=-.196$, $p=.049$) and SES ($\beta=.313$, $p=.002$) being significant predictors, and SES accounting for an additional 9.7% of the explained variance. The final step was also significant ($F(3,88)=5.690$, $p=.001$, $r^2=.162$), but revealed SES ($\beta=.288$, $p=.005$) to be the only significant predictor of overall autonomy support across contexts.

Objective 2: Predicting Socio-emotional outcomes in Elementary School-aged Children

***Hierarchical* regression predicting later problem behaviour.** The relations of autonomy-supportive parenting during the preschool period in both the interference and free play contexts to school-aged children's internalizing problems, externalizing problems and total problem behaviours were first examined. As it was expected to be the strongest predictor of problem behaviour, autonomy support in the interference context was entered first in all three regression analyses, followed by autonomy support in the free play context. A separate set of regression analyses were conducted examining the overall effects of autonomy support across contexts on children's later problem behaviour.

The first step of the regression examining internalizing problems was significant ($F(1,77)=4.09$, $p=.047$, $r^2=.050$), indicating that autonomy support during the interference context ($\beta=-.225$, $p=.047$) significantly predicted later internalizing problems, accounting for 5% of the variance (see Table 9). The second step was not significant ($F(2,76)=2.353$, $p=.102$, $r^2=.058$). However, despite the model no longer being significant, autonomy support in the interference context ($\beta=-.272$, $p=.034$) was actually more strongly related to internalizing problems when controlling for autonomy support in the free play.

The first step of the regression examining externalizing problems was significant ($F(1,77)=6.881$, $p=.010$, $r^2=.082$), revealing that autonomy support in the interference ($\beta=-.286$, $p=.01$) was a significant predictor, accounting for 8.2% of the variance (see Table 10). The second step was also significant ($F(2,76)=3.650$, $p=.031$, $r^2=.088$), however only autonomy support in the interference context ($\beta=-.246$, $p=.05$) was a significant predictor.

The first step of the regression examining total problem behaviour was significant ($F(1,77)=7.095$, $p=.009$, $r^2=.084$), revealing autonomy support during the interference context ($\beta=-.290$, $p=.009$) to be a significant predictor, accounting for 8.4% of the variance (see Table

11). The second step was also significant ($F(2,76)=3.517$, $p=.035$, $r^2=.085$), however, once again, only autonomy support in the interference context ($\beta=-.281$, $p=.027$) was a significant predictor.

Finally, regression analyses predicting later problem behaviour from total autonomy support across contexts were examined. The regression predicting internalizing problems was not significant ($F(1,77)=1.389$, $p=.242$, $r^2=.018$). The regression predicting externalizing problems was significant ($F(1,77)=6.426$, $p=.013$, $r^2=.077$), indicating that overall autonomy support across contexts ($\beta=-.278$, $p=.013$) was a significant predictor, accounting for 7.7% of the variance. The final regression was significant ($F(1,77)=5.07$, $p=.027$, $r^2=.062$), indicating that overall autonomy-supportive behaviour across contexts ($\beta=-.249$, $p=.027$) significantly predicted total problem behaviours, accounting for 6.2% of the variance.

***Hierarchical* regression predicting later social competence.** Due to the smaller number of teachers ($n=69$) reporting social competence, and the subsequent reduced power of the analyses, and given the hypothesized and previously established importance of autonomy support in the interference context compared to the free play context in the prior analyses, only autonomy support during the interference context was included in the following analyses. The relation of autonomy-supportive parenting during the preschool period in only the interference context to school-aged children's social competence was examined. A second analysis was conducted examining the effects of overall autonomy support across contexts on children's later social competence.

The first regression was significant ($F(1,67)=4.014$, $p=.049$, $r^2=.057$), indicating that autonomy support during the interference context ($\beta=.238$, $p=.049$) was a significant predictor, accounting for 5.7% of the variance in children's later social competence. The second regression

was only a trend ($F(1,68)=3.209$, $p=.078$, $r^2=.045$), with overall autonomy support across contexts ($\beta=.212$, $p=.078$) accounting for 4.5% of the variance in later social competence.

Discussion

The first objective of the present study was to examine the antecedents of autonomy-supportive parenting during preschool, specifically investigating the predictive role of maternal childhood histories of aggression and social withdrawal, SES and mental health, parental stress, and social support (psychosocial risk). The second objective was to examine the socio-emotional outcomes in childhood, in particular problem behaviour and social competence, associated with autonomy support during the preschool period. These two objectives were achieved using a prospective, observational and longitudinal design within an at-risk community sample.

Predicting Autonomy Support

Maternal childhood histories of risk. The unique design of the Concordia Project allowed for the investigation of the influence of childhood histories of risk on parenting, years later. The interaction of maternal childhood histories of aggression and social withdrawal was predictive of autonomy support in both the challenging interference context and overall across contexts, but only until controlling for the effects of current psychosocial risk; thereafter they were only trends. Further investigation revealed that this relation existed only when mothers scored high on both aggression and social withdrawal in childhood. That is, in everyday situations and especially when a mother experiences pressure, mothers who had childhood histories of both aggression and social withdrawal were less likely to engage in autonomy-supportive behaviors, and thus more likely to engage in controlling ones. This finding is consistent with previous literature from the Concordia Project indicating that the most negative outcomes stem from childhood histories of both aggression and social withdrawal (Serbin &

Karp, 2004; Stack et al., 2012). The fact that the results showed that maternal childhood histories of both aggression and social withdrawal influence autonomy-supportive behaviors is beneficial to the literature on autonomy support as no previous studies have investigated the influence of childhood histories of risk on autonomy-supportive parenting behaviour years later. In addition, results from the present study highlight the value of using longitudinal, intergenerational designs when conducting research into parenting behaviour.

These findings also suggest that while childhood histories of both aggression and social withdrawal generally impact parenting behaviour (Fagot et al.,1998; Grunzeweig, et al., 2009; Hops et al., 2003; Martin, et al., 2012; Serbin et al., 1991; Serbin et al., 1998; Stack et al., 2012; Temcheff et al., 2008), with the exception of free play situations, whenever these mothers experience everyday stressful situations they may be more likely to resort to controlling behaviors with their preschoolers. Given that the present sample comes from high-risk low income neighbourhoods, stress can be expected to be an almost everyday occurrence for some families. The implication being that for those mothers with childhood histories of both aggression and social withdrawal, the stress provided by their high-risk living situation may result in them engaging in less autonomy support and thus more control with their preschool aged children. This may be highly problematic as controlling behaviors are associated with various negative childhood outcomes, including externalizing problem behaviors (Joussemet et al., 2005; Joussemet, Landry et al., 2008; Joussemet, Vitaro et al., 2008; Moreau & Mageau, 2013). However, it is important to note that this relation was only a trend after controlling for psychosocial risk. This could suggest that psychosocial risk is a stronger predictor of autonomy support in the interference context. Alternatively, it is possible that current psychosocial risk and

maternal childhood histories of aggression and social withdrawal are themselves related and thus there is an overlap of variance that is better captured and explained by current psychosocial risk.

Socio-economic status. SES was found to be consistently related to autonomy support, even within the free play context, such that a lower SES was predictive of less autonomy-supportive behaviours. This finding was in line with the SES literature, showing low SES to consistently be a strong predictor of poor parenting practices whereas high SES is consistently related to positive parenting practices (Belsky et al., 2007; Bradley & Corwyn, 2002; Gershoff et al., 2007; Hoff et al., 2002; Pinderhughes et al., 2000). The present finding strengthens both the autonomy support and SES literatures by extending the relation between SES and parenting practices to autonomy-supportive parenting and by showing that the results remain particularly true when examining an at-risk sample.

Furthermore, the present findings support the evidence suggesting that children from high-risk backgrounds (i.e. disadvantaged and lower SES) are less likely to experience autonomy-supportive parenting behaviors and thus more likely to experience controlling behaviours, even within a more relaxed free play setting. In combination with the findings regarding maternal childhood histories of risk, this finding suggests that while children of mothers who were high on both childhood aggression and social withdrawal may be more likely to experience controlling behaviors, especially when their mothers are under pressure or experiencing a challenging situation, even at-risk preschoolers whose mothers do not have the same childhood histories of risk are in jeopardy of experiencing more controlling parenting behaviors regardless of the situation, simply by virtue of living in a lower SES bracket. It is possible that SES impacts parenting behaviour through the particular values and beliefs which parents from different SES strata hold (see Hoff et al., 2002 for review). Hoff et al. (2002)

reviewed studies indicating that lower-SES mothers tend to value conformity and therefore tend to be more authoritarian and oriented towards maintaining order and obedience over their children, compared to higher-SES mothers who value self-direction. Perhaps it is these differences in values and beliefs which result in lower-SES mothers being more likely to resort to controlling behaviors in order to ensure obedience, even during a relatively stress-free free play interaction. Future studies should examine parental beliefs and values in order to identify the processes through which SES impacts autonomy-supportive parenting behaviour.

Psychosocial risk. Mothers who suffered from more mental health issues, expressed feeling more parental stress and less social support (i.e. high psychosocial risk), were less likely to use autonomy-supportive strategies, and consequently more likely to resort to controlling ones. However, this was only true when in a challenging interference context. This finding is consistent with Belsky's (1984; Belsky & Jaffee, 2006; Bornstein, 2002) process model for predicting parenting, showing that poor psychological resources coupled with a challenging and potentially stressful context is related to mothers engaging in less positive parenting (autonomy support) and more negative parenting behaviors (control). Moreover, the present findings strengthen Grolnick et al.'s (2002) conclusion that mothers are more likely to resort to controlling strategies when experiencing pressure for their children to perform in a certain manner (i.e. the interference task), showing the same to be true in an at-risk sample, and similarly highlighting the importance of context when examining the antecedents of parenting in general and autonomy support in particular. Interestingly, Grolnick et al. (2002) showed that this relation was especially true for mothers who had a pre-existing tendency towards controlling behaviour, which perhaps is the case for mothers at higher psychosocial risk.

Given the propensity for mental health issues, increased levels of parental stress and less satisfaction with social support found in high-risk samples, this once again suggests that at-risk children are less likely to experience autonomy-supportive strategies when their mothers are faced with a challenging situation. Coupled with the previous findings, the situation of the at-risk child may appear bleak, as by virtue of their lower SES alone they are less likely to have their autonomy supported by their mothers even within a relaxing free play setting. Moreover, for those children whose mothers either have childhood histories of risk and/or current psychosocial risk, they are much less likely to experience autonomy support when faced with a situation in which they are expected to engage in non-autonomous behaviors (i.e. remaining on the mat playing alone during the challenging interference context).

Consequently, consistent with Belsky's (1984; Belsky & Jaffee, 2006; Bornstein, 2002) theory, it appears that the more psychosocially disadvantaged a child's environment is in terms of parents' psychological resources and contextual sources of stress and support (i.e. maternal childhood histories of risk, current psychosocial risk and low SES), the less likely they are to be receiving the support they need in order for their autonomy to flourish and thus to achieve optimal development. However, the present findings cannot be generalized to other samples of mother-child dyads coming from different risk environments or "low risk" environments. Interestingly, research suggests that affluence can present various psychosocial risks for children generally thought of as "low risk", with comparative studies revealing many similarities with "high risk" children in terms of adjustment and socialization processes (Luthar & Latendresse, 2005). As such, in order to examine whether the findings are unique to a "high risk" sample or can generalize to other patterns and variations of psychosocial risk, it would be important to

investigate psychosocial risk in more affluent samples, as well as in different types of risk environments.

Socio-Emotional Childhood Outcomes in a High-Risk Sample

Only when considering parenting behaviour in a challenging interference context did autonomy support during preschool predict internalizing problems in early childhood. While autonomy-supportive parenting in a challenging interference context similarly predicted externalizing problems, total problems and social competence, these three socio-emotional outcomes were also predicted by overall autonomy supportive behaviors across contexts. Together, these findings suggest that the ability to use autonomy-supportive behaviors with preschoolers when faced with a challenging situation may be a protective factor against developing internalizing, externalizing and total problem behaviors, as well as promoting the development of social competence. Conversely, the inability of mothers to engage in autonomy-supportive behaviors in a challenging situation, or resorting to controlling behaviors with their preschooler when faced with a challenging situation, may be one path that leads children to be more likely to develop problem behaviors and to have poor social competence skills subsequently during childhood. However, it should be noted that the vast majority of the variance in these outcomes remains unexplained, thus there are other factors not measured in the present study which also likely contribute to these socio-emotional outcomes. For example, Holden (2010) posits that children play a role in the trajectories they embark upon, suggesting that there are child characteristics and behaviours that similarly impact child outcomes; thus future research should examine child characteristics and behaviour in conjunction with parenting behaviour when predicting socio-emotional outcomes. Furthermore, engaging in autonomy-

supportive behaviors in general with preschoolers, may also be protective against developing externalizing and total problem behaviors, while also leading to strong social competence skills.

Taken together, these findings suggest that autonomy support during preschool may play a role in the development of later problem behaviors and social competence within an at-risk sample. These results are consistent with past research investigating the link between autonomy support and social competence (Joussemet et al., 2005), autonomy support and problem behaviors (Barber et al., 1994; Grolnick & Ryan, 1989; Joussemet, Vitaro, et al., 2008; Pettit et al., 2001; Vansteenkiste et al., 2012), and with the prediction that a stronger relation would be present for externalizing problems than for internalizing problems. It is possible that engaging in controlling strategies (e.g. ordering children to behave in a certain way and/or resorting to physical interventions) in order to control a child, especially when in challenging situations where the child may not be motivated to behave in a specific way, leads a child to feel a need to overtly express their negative feelings, eventually culminating in externalizing problems later on. Conversely, perhaps engaging in autonomy supportive strategies (e.g. providing a rationale, taking a child's perspective and trying to motivate them) when they have to engage in non-autonomous behaviors provides preschoolers with the necessary foundation for successful social development. Further research should be conducted examining the mechanisms through which controlling behaviours and autonomy-supportive behaviours, hinder or facilitate the development of externalizing problems and social competence, especially during challenging situations.

In summary, maternal childhood histories (in part), coupled with a low SES and high psychosocial risk predicted the use of less autonomy support, and thus more control among preschoolers. Moreover, the use of less autonomy-supportive strategies in favour of controlling strategies during preschool predicted more internalizing, externalizing and total problem

behaviours, and lower social competence during the elementary school years in these same children.

Conclusion

The present investigation was among the first to examine the antecedents of autonomy-supportive parenting in different contexts, showing that, aside from parental style, there are other important demographic and psychosocial factors that predict parenting behaviour (i.e. autonomy support). The findings from this novel line of inquiry contribute towards advancing the literature on understanding the reasons behind autonomy-supportive parenting. This knowledge could ultimately be used to inform parenting practices for those at risk of using controlling strategies. In addition, results from the present study revealed the importance of autonomy support during preschool for at-risk children's later socio-emotional development, and highlighted the value of examining parenting behaviour in different contexts, regardless of whether the research question pertains to predicting parenting or predicting the associated childhood outcomes. Furthermore, employing observational methods was another strength. The unique longitudinal and intergenerational design allowed for the investigation of maternal childhood histories of risk predicting subsequent parenting behaviour; results suggest that problem behaviour in elementary school, in part predicts parenting years later, which in turn predicts problem behaviors in the subsequent offspring generation. Moreover, the results suggest that at-risk preschoolers, as defined in the present study, may be less likely to have autonomy-supportive mothers, and thus more likely to be subjected to controlling behaviors, and therefore potentially reap all the associated later negative childhood outcomes. Together, results speak to the importance of parenting behaviours at an early age for children's later socio-emotional outcomes. Understanding what predicts parenting behaviour is the first step towards informing parenting

practices and thus one path toward breaking the cycle of risk for the next generation. Ultimately, results have implications for the design of preventive interventions and for addressing vulnerability and fostering healthy relationships.

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Table 1

Mean Comparisons of Sample to all Participants

Comparison Variable	Population *M* (*N*=367)	Population *SD*	Sample *M* (*n*=100)	*SE*	Z-score
Aggression	0.344394207	1.0451162	0.3998724	0.105	0.531
Social Withdrawal	0.362655437	0.9648	0.4114333	0.096	0.506
Maternal Education	11.69381107	2.3159141	11.59	0.232	-0.448
Family Income	37535.69532	29986.143	38867.83389	2998.614	0.444
Job prestige	37.57694805	11.489889	37.6039604	1.149	0.024

Note. A Z-score of ±1.96 would indicate a statistically significant difference

Table 2

Brief Operational Definitions of Extreme Scores on the Coding System for Autonomy Support and Their Associated Coefficients of Inter-rater Reliability

Scales	Autonomy Support Scale	ICC FP/INT	Control Scale	ICC FP/INT
Scaffolding	Mother manages the play *to allow the child's autonomy to unfold*: she provides help and support when needed and she adapts the play according to the child's needs and abilities.	.88/NA	Mother *interferes with the child play* in order to control it: she intervenes before she is asked or needed, and her intervention is excessive given her child's needs and abilities.	.94/NA
Verbalization	Mother encourages her child in play, gives useful hints, praises her child and uses a positive tone of voice.	.87/NA	Mother gives unnecessary instructions or hints, uses a stern tone of voice and criticizes her child.	.93/NA
Flexibility and Involvement	Mother demonstrates flexibility by following her child's play and *changing as the play requires*, and mother is involved in the interaction by speaking to the child, playing with him/her when she is wanted or paying attention to him/her even when she is not wanted in the play.	.91/.96	Mother is rigid in her efforts to keep her child on task and she does not tolerate any departure from the current play, and mother tries to control the play, inserting herself into the play without being needed or invited.	.92/.92
Respecting Child's pace and Providing Choices	Mother respects her child's pace, promotes the child having an active role and provides the child with opportunities to make choices.	.87/NA	Mother imposes her own pace on her child resulting in the child acting as an observer; the mother interferes frequently and provides no opportunities to make choices.	.89/NA
Motivational Strategies and Perspective-Taking	Mother intervenes at an appropriate moment in using motivational strategies to encourage her child to continue playing (e.g. *gives a rational*, *suggesting an enjoyable game)* and takes her child's perspective by acknowledging his/her feelings.	.99/.97	Mother uses controlling strategies to force the child to cooperate or to comply (e.g. *punishing the child*, *providing an authoritarian rational*). The mother makes no attempts to take her child's perspective or she is frustrated by the child's bids for attention.	.97/.95

Note. FP represents the free play context; INT represents the interference context; NA indicates no ICC was available due to the scale not being used within the interference context

Table 3

Descriptive Statistics for all Variables

	M	(*SD*)	Range	Skewness	Kurtosis
Concordia Project Sample					
Aggression	0.38	(1.06)	-1.59-2.96	0.67	-0.75
Social Withdrawal	0.45	(0.98)	-0.96-2.69	0.72	-0.75
Preschool Sample (Time 1)					
Age of Child	3.56	(1.58)	1.09-6.12	0.101	-1.29
Maternal Education	11.64	(2.35)	5-17	0.073	0.151
Annual Income	38215.55	(24143.25)	8430.48-152885.20	1.25	3.37
Satisfaction of Social Support	1.41	(0.62)	0-2.24	-0.46	-0.43
Global Symptoms	55.12	(9.53)	37-79	0.291	-0.26
Parental Stress	70.62	(17.19)	40-142	0.86	1.75
Elementary School Sample (Time 2)					
Internalizing Problems	53.26	(10.41)	33-88	0.471	1.05
Externalizing Problems	53.42	(9.54)	32-81	0.376	0.522
Total Problems	53.67	(10.93)	24-93	0.461	1.621
Social Competence	62.84	(18.78)	25-108	-0.032	-0.689

Table 4

Inter-Correlations of Preschool Sample Predictors and Autonomy Support in the Free Play, Interference and Overall Across Contexts

	1	2	3	4	5	6	7	8	9	10
1. Autonomy Support in the Free Play	-	.47**	.90**	-.05	-.14	.26**	.20*	.01	-.10	.13
2. Autonomy Support in the Interference		-	.81**	-.05	-.18	.20*	.23*	-.08	-.29**	.22*
3. Autonomy Support Overall Across Contexts			-	-.05	-.18	.28**	.25**	-.03	-.21*	.20
4. T1 Aggression				-	-.09	-.24**	-.09	.10	.22*	-.14
5. T1 Social Withdrawal					-	-.17	-.24*	.09	.16	-.17
6. Maternal Education						-	.46**	-.16	-.11	.14
7. Annual Family Income							-	-.26**	-.23*	.31**
8. Mental Health								-	.48**	-.23*
9. Parental Stress									-	-.43**
10. Social Support										-

Note. *p<.05; **p<.01

Table 5

Inter-Correlations of Elementary School Sample Predictors and Autonomy Support in the Free Play, Interference and Overall Across Contexts

	1	2	3	4	5	6	7
1.Autonomy Support in the Free Play	-	.47**	.90**	-.20	-.03	-.15	.13
2. Autonomy Support in the Interference		-	.81**	-.29*	-.23*	-.29*	.24*
3. Autonomy Support overall Across Contexts			-	-.28*	-.13	-.25*	.21
4. Externalizing Problems				-	.63**	.89**	-.26*
5. Internalizing Problems					-	.86**	-.05
6. Total Problems						-	-.22*
7. Social Competence							-

Note. *p<.05; **p<.01

Table 6

Hierarchical Regression of the Residual Interaction of Aggression and Social Withdrawal, SES and Psychosocial Risk on Autonomy Support in the Free Play

Step	Predictors	β	*SE*	Unstandardized	R^2
1					2.3%
	Aggression X Social Withdrawal	-.151	0.103	-.150	
2					10.1%*
	Aggression X Social Withdrawal	-.121	0.100	-.120	
	SES	.282**	0.130	.363	
3					10.2%*
	Aggression X Social Withdrawal	-.116	0.104	-.114	
	SES	.277**	0.134	.357	
	Psychosocial Risk	-.022	0.131	-.027	

Note. *p<.05; **p<.01; β represents the standardized regression coefficients; Unstandardized represents the unstandardized regression coefficients

Table 7

Hierarchical Regression of the Residual Interaction of Aggression and Social Withdrawal, SES and Psychosocial Risk on Autonomy Support in the Interference

Step	Predictors	*β*	*SE*	Unstandardized	R^2
1					6.8%*
	Aggression X Social Withdrawal	-.260*	0.076	-.193	
2					13.1%**
	Aggression X Social Withdrawal	-.233*	0.074	-.173	
	SES	.253*	0.096	.245	
3					16.9%**
	Aggression X Social Withdrawal	-.183	0.075	-.136	
	SES	.209*	0.097	.202	
	Psychosocial Risk	-.206*	0.094	-.188	

Note. *p<.05; **p<.01; β represents the standardized regression coefficients; Unstandardized represents the unstandardized regression coefficients

Table 8

Hierarchical Regression of the Residual Interaction of Aggression and Social Withdrawal, SES and Psychosocial Risk on Total Autonomy Support Across Contexts

Step	Predictors	*β*	*SE*	Unstandardized	R^2
1					5.3%*
	Aggression X Social Withdrawal	-.230*	0.076	-.171	
2					15%**
	Aggression X Social Withdrawal	-.196*	0.073	-.146	
	SES	.313**	0.095	.245	
3					16.2%**
	Aggression X Social Withdrawal	-.168	0.075	-.125	
	SES	.288**	0.098	.279	
	Psychosocial Risk	-.118	0.095	-.108	

Note. *p<.05; **p<.01; β represents the standardized regression coefficients; Unstandardized represents the unstandardized regression coefficients

Table 9

Hierarchical Regression of Autonomy Support in the Interference and Free Play Contexts on Later Child Internalizing Problems

Step	Predictors	β	*SE*	Unstandardized	R^2
1					5%*
	Autonomy Support in the Interference	-.225*	1.158	-2.341	
2					5.8%
	Autonomy Support in the Interference	-.272*	1.318	-2.839	
	Autonomy Support in the Free Play	.101	1.033	.823	

Note. *p<.05; **p<.01; β represents the standardized regression coefficients; Unstandardized represents the unstandardized regression coefficients

Table 10

Hierarchical Regression of Autonomy Support in the Interference and Free Play Contexts on Later Child Externalizing Problems

Step	Predictors	β	*SE*	Unstandardized	R^2
1					8.2%*
	Autonomy Support in the Interference	-.286*	1.042	-2.734	
2					6.4%*
	Autonomy Support in the Interference	-.246*	1.188	-2.350	
	Autonomy Support in the Free Play	-.085	0.931	-.636	

Note. *p<.05; **p<.01; β represents the standardized regression coefficients; Unstandardized represents the unstandardized regression coefficients

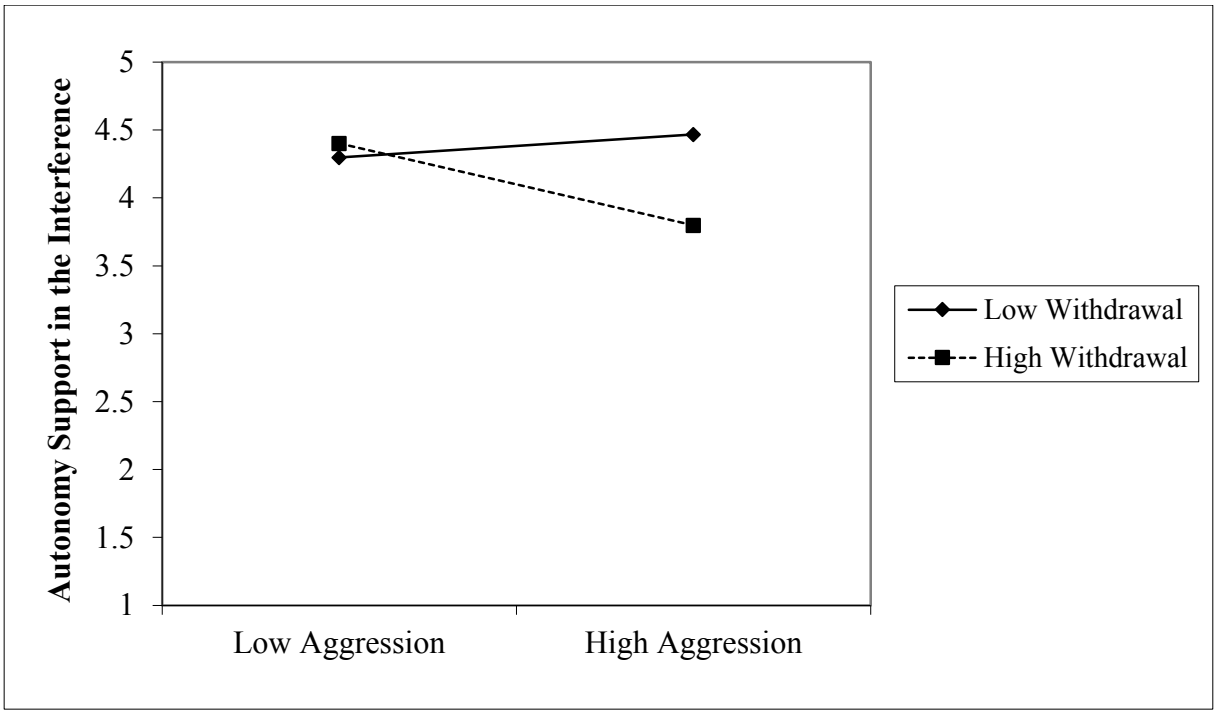
Table 11

Hierarchical Regression of Autonomy Support in the Interference and Free Play Contexts on Later Child Total Problem Behaviour

Step	Predictors	*β*	*SE*	Unstandardized	R^2
1					8.4%**
	Autonomy Support in the Interference	-.290**	1.145	-3.050	
2					8.5%*
	Autonomy Support in the Interference	-.281*	1.309	-2.946	
	Autonomy Support in the Free Play	-.021*	1.026	-.173	

Note. *p<.05; **p<.01; β represents the standardized regression coefficients; Unstandardized represents the unstandardized regression coefficients

Figure 1. Graphical representation of the interaction between aggression and social withdrawal, after controlling for SES and psychosocial risk, on autonomy support in the interference context.



Appendix A : 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