Emotion Self-Regulation Behaviour during Mother-Child Interactions in High-Risk Preschoolers: Influences of Context, Maternal Risk, and Longitudinal Relations

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ABSTRACT

Emotion self-regulation behaviour during mother-child interactions in high-risk preschoolers: Influences of context, maternal risk, and longitudinal relations

Elana G. August

Emotion self-regulation refers to an individual's abilities to modulate emotional responses without external assistance, and has been described as one of the key challenges of early childhood. The present study examined how context and maternal histories of aggression and social withdrawal are related to preschoolers' emotion self-regulatory behaviours. The longitudinal associations between infants' and preschoolers' emotion self-regulatory behaviours, and the predictive relations of preschoolers' self-regulation to early elementary school problem behaviours were also investigated.

Mothers with childhood histories of aggression and/or social withdrawal from the Concordia Longitudinal Risk Project, a prospective, longitudinal, intergenerational study, participated with their preschool children. Dyads (N=45) engaged in a puzzle, interference, free play, and clean up task. Children's emotion self-regulation was coded throughout all tasks using the Preschooler Self-Regulatory Scheme (August & Stack, 2010). Mothers' use of constructive and non-constructive verbalizations were observed specifically during the interference task. Children's emotion self-regulatory behaviour during interactions with their mothers when they were 5 ½ months of age was available. Mother and teacher ratings of children's problem behaviours in early elementary school were also considered.

Results supported hypotheses regarding contextual differences and children employed more self-regulatory strategies during the interference task than in any other

context. Findings also supported hypotheses that maternal childhood histories of risk, specifically social withdrawal, contributed to the prediction of children's attention seeking. Longitudinal findings demonstrated continuity in children's use of emotion self-regulation from infancy to preschool, and preschool self-regulatory behaviours predicted children's problem behaviours in early elementary school.

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Table of Contents

List of Tables viii

List of Appendices xi

Introduction 1

Method 10

- Sample 10
- Procedure 13
- Observational Coding 15
- Measures 20

Results 22

Discussion 48

References 61

Appendices 73

List of Tables

Table 1.	Coding criteria for the Preschool Self-Regulatory Scheme	17
Table 2.	Infant categories as they relate to the PSRS	18
Table 3.	Coding criteria for the Maternal Constructive and Non-Constructive Behaviour Scheme	19
Table 4.	Percent Agreement and Kappa Coefficients for Child and Mother Behaviours	21
Table 5.	Maternal Childhood Levels of Aggression and/or Social Withdrawal Predicting Preschoolers' Negative Attention Seeking in the Interference Task	28
Table 6.	Maternal Childhood Levels of Aggression and/or Social Withdrawal Predicting Preschoolers' Prosocial Attention Seeking in the Interference Task	29
Table 7.	Maternal Childhood Levels of Aggression and/or Social Withdrawal Predicting Preschoolers' Negative Attention Seeking in the Free Play Task	31
Table 8.	Maternal Childhood Levels of Aggression and/or Social Withdrawal Predicting Preschoolers' Prosocial Attention Seeking in the Free Play Task	32
Table 9.	Maternal Childhood Levels of Aggression and/or Social Withdrawal Predicting Preschoolers' Fretting in the Clean Up Task	33

Table 10.	Maternal Childhood Levels of Aggression and/or Social Withdrawal Predicting Preschoolers' Prosocial Behaviour in the Clean Up Task	34
Table 11.	Maternal Childhood Levels of Aggression, Social Withdrawal, and Non-Constructive Verbalizations in the Puzzle Task Predicting Preschoolers' Fretting	36
Table 12.	Maternal Childhood Levels of Aggression, Social Withdrawal, and Non-Constructive Verbalizations in the Puzzle Task Predicting Preschoolers' Overactivity	37
Table 13.	Maternal Childhood Levels of Aggression, Social Withdrawal, and Non-Constructive Verbalizations in the Puzzle Task Predicting Preschoolers' Negative Attention Seeking	38
Table 14.	Maternal Childhood Levels of Aggression, Social Withdrawal, and Constructive Verbalizations in the Puzzle Task Predicting Preschoolers' Self-Comfort	40
Table 15.	Maternal Childhood Levels of Aggression, Social Withdrawal, and Non-Constructive Verbalizations in the Puzzle Task Predicting Preschoolers' Prosocial Behaviour	41
Table 16.	Factor Loadings for Exploratory Factor Analysis with Oblique Rotation of Preschoolers' Behaviours	43
Table 17.	Maternal Childhood Levels Aggression and Withdrawal and Infants' Self-Comfort during the Still Face Period Predicting Preschoolers' Negativity	45

Table 18.	Maternal Childhood Levels Aggression and Withdrawal and Infants' Attention Seeking during the Still Face Period Predicting Preschoolers' Negativity	46
Table 19.	Maternal Childhood Levels Aggression and Withdrawal and Infants' Attention Seeking during the Still Face Period Predicting Preschoolers' Negativity	47
Table 20.	Maternal Childhood Levels Aggression and Withdrawal and Preschoolers' Other-Oriented Regulation Predicting Mother's Ratings of Internalizing Behaviours on the CBCL	49
Table 21.	Maternal Childhood Levels Aggression and Withdrawal and Preschoolers' Other-Oriented Regulation Predicting Teacher's Ratings of Internalizing Behaviours on the CBCL	50
Table 22.	Maternal Childhood Levels Aggression and Withdrawal and Preschoolers' Other-Oriented Regulation Predicting Teacher's Ratings of Total Problem Behaviours on the CBCL	51

List of Appendices

Appendix A.	Sample Items from the Pupil Evaluation Inventory	73
Appendix B.	Consent Form	75
Appendix C.	Preschooler Self-Regulatory Scheme	77
Appendix D.	Maternal Constructive and Non-Constructive Behaviour Scheme	82
Appendix E.	Demographic Information Questionnaire	86

Over the past two decades, the concept of emotion regulation has become increasingly popular in developmental literature (Cole, Martin, & Dennis, 2004; Cole, Michel, & Teti, 1994; Eisenberg & Fabes, 1992; Eisenberg & Moore, 1997; Garber & Dodge, 1991; Vohs & Baumeister, 2011). The ability to regulate a wide range of emotions is indispensable in everyday life, and developing appropriate coping methods to deal with routine situations constitutes a major developmental task. Poor abilities to regulate one's emotions have been linked to the development and manifestation of problematic behaviour from childhood through adolescence (Gardner, Dishion, & Connell, 2008). Studies of emotion regulation spanning from infancy to adulthood, point to the importance of examining emotion regulation from an early age, since it is considered an essential component of a child's social development (Dodge & Garber, 1991; Tronick, 1989). In view of this literature, the current study investigated emotion self-regulation in young children during interactions with their mothers. In addition, preschoolers' affect regulation in multiple contexts was examined, as well as the development of self-regulation over time and its related behavioural outcomes.

Emotion self-regulation refers to an individual's abilities to modulate his or her own emotional responses, without external assistance. The attainment of emotion self-regulation, a core component of emotion regulation, has been described as one of the key challenges of early childhood (Cole et al., 2004; Kopp, 1989; Denham et al., 2003). Although there is no "gold standard" definition of emotion regulation, the construct is relevant to many facets of socioemotional development (Bridges, Denham, & Ganiban, 2004). Cole and colleagues (2004) have cited the failure to distinguish between "emotion" and "emotion regulation" as one of the primary shortcomings in research

addressing emotion regulation. This issue is not reflective of an oversight by emotion regulation researchers, but rather the difficulty that arises in trying to differentiate the two concepts. Understanding how emotion and emotion regulation differ, as well as how they are fundamentally related is an essential prerequisite to comprehending the importance of emotion self-regulation strategies, such as the ones explored in the current study.

At their basic level, emotions are considered to be an evolutionarily adaptive set of biologically based capabilities that lend to human survival (Cole et al., 2004). Their biological basis provides individuals with the ability to quickly assess situations and to be prepared to escape or avoid unfavorable conditions. This type of situational assessment was coined "appraisal" by Arnold (1960). There is no consensus as to whether appraisals cause emotions, emotions cause appraisals, or the two co-occur; however, it is largely agreed upon that appraisals are a key element in the emotional experience. Emotions include specific thoughts, feelings, behaviours, and physiological responses (Frijda, 2006). Once specific emotions have been activated, they have different effects on individual, inter-personal, or environmental factors depending on how they are regulated.

Emotion regulation can be broadly conceptualized as the changes that follow the activation of specific emotions. These changes deal with the valence, intensity, or time course of emotional content. Because emotion regulation relates to people's abilities to cope with an emotional response, intentions and goals are critical (Eisenberg & Spinrad, 2004). Coping behaviours include, but are not limited to, self-soothing, avoidance, and self-distraction (Mangelsdorf, Shapiro, & Marzolf, 1995). In addition, regulation is largely accepted as a voluntary activity, as opposed to one that is unconsciously applied. In a given situation, one's attempt to modulate emotions is often at least in part based on

an attempt to achieve a goal. Goal setting, planning, focusing, as well as modulating one's behaviours, emotions, and attention are core elements of emotion self-regulation (Rueda, Rothbart, & Posner, 2005). These behaviours were included in the operationalization of observations in the current study. Over time, individuals adopt styles of emotion regulation that emerge as a result of repeated interactions between biological factors and the social environment. If individuals are not flexible in responding to environmental change, emotion regulation styles can become maladaptive (Bridges, et al., 2004). Consequently, emotion regulation is perceived as a dynamic concept, necessitating change over time.

While examining the constructs of emotion and emotion regulation is important, bridging the two concepts is also necessary. This can be accomplished by taking Lazarus' (1991) observations regarding emotion regulation relative to emotion processing into consideration. This work stipulates that individuals' primary emotional response to a situation is qualitatively different from their secondary emotional response. The primary response deals with the instantaneous and raw response to emotionally relevant events that emerges from neural activity. This makes reference to the innate biological characteristic of the ability to express emotions. Conversely, the secondary emotional response relates to an individual's ability to cope with the primary reaction (Baumann, Kaschel, & Kuhl, 2007), while taking into consideration factors such as the environmental and interpersonal contexts. The design of the present study was ideal for the observation of emotion regulation since the various tasks presented elicited primary responses that children subsequently sought to regulate.

Children's emotion regulation can be accomplished through the efforts of others, as well as by themselves. In infancy, the regulation of emotion is often facilitated by mothers (external agents) who interpret emotional signals, provide stimulation, modulate infants' levels of arousal, and reinforce their actions. As such, the present study examined children's emotion regulation in mother-child dyads. Maternal parenting strategies and behaviours are used to socialize adaptive emotional development in their children (Denham et al., 2003). The importance of maternal regulation of infants' emotion can be reliably observed in examining the effects of a disruption in the expected course of a social interaction, such as in the Still Face paradigm (Tronick, Als, Adamson, Wise, & Brazelton, 1978). Since the Still Face period (during which mothers assume a neutral facial expression while gazing at their infant) is typically distressing for infants, it allows for the investigation of their abilities to regulate affect (Weinberg & Tronick, 1996).

While the Still Face period represents a relatively rare scenario in which infants are left to modulate their own emotions, by the time children approach preschool age, caregivers begin to expect the child to do more regulation on his or her own. By the second through fifth years of life, children develop cognitive, motor, and language skills that afford them increased abilities to regulate their own emotions. These self-regulatory advances, which fall under the larger rubric of emotion regulation, primarily involve intra-organismic processes and behaviours (Eisenberg & Spinrad, 2004). Self-regulation behaviours acquired early in the lifespan are thought to translate into behavioural strategies used in later childhood (Gardner et al., 2008; Kopp, 1989). Failure to acquire these skills may result in difficulties in behavioural control, social competence, and school adjustment (Keane & Calkins, 2004). Past research has found that deficits in

emotion regulation among children scoring high in negative emotionality were related to greater externalizing behaviour and increased tendencies to use aggressive behaviours (Calkins & Johnson, 1998). The presentation of these problem behaviours may vary based on the situations in which children find themselves.

In studying emotion regulation, it is imperative that the context in which children's behaviours emerge be considered. Many studies of emotion regulation differ in terms of the various tasks presented to children, rendering certain regulatory strategies less warranted in some cases. Because differences in methodology can influence how much children use particular emotion-regulation behaviours, as well as the appropriateness and effectiveness of these behaviours, understanding the contextual demands of tasks is an important consideration (Bridges et al., 2004). A strength of the present study was the inclusion of four separate tasks (puzzle, interference, free play, and clean up) in which preschoolers were observed while interacting with their mothers. Because all four tasks incorporated distinct elements that posed unique challenges to preschoolers, they were conceptualized as separate contexts in the present study. The consideration of how situational elements affect preschoolers' use of emotion self-regulation was a central tenet of this study. Depending on the goals or obstacles in a given context, the need to self-regulate may increase or decrease.

In addition to differences in contextual demands evidenced by the four tasks in the preschool portion of the current study, contextual differences were also relevant in examining outcomes related to early elementary school children who were part of the sample. Mothers and teachers provided reports concerning the same sets of behaviours observed in the same child in two dissimilar contexts (home and school). The role of

context in differentially shaping children's behaviour has been suggested as a source of variance between observers (Grietens et al., 2004). Individuals who observe a child in similar contexts (e.g. mothers and fathers or teachers and peers) tend to show higher agreement regarding her or his behaviours (Achenbach, McConaughy, & Howell, 1987). Differences in parent and teacher reports of childhood behaviour have been linked to differences in observations of children's behaviour across different contexts (De Los Reyes, Henry, Tolan, & Wakschlag, 2009). While parent and teacher reports are typically obtained through the completion of questionnaires, researchers aiming to assess children's emotion regulation from a neutral perspective rely on observational methods.

The measurement of children's emotion regulation largely relies on observational methods, since young children have considerable difficulties reporting their emotional states (Cole et al., 2004). In the observation of emotion regulation, it is essential to recall the previously discussed difference between emotional valence and emotion regulation. Observers must pay heed to the regulatory qualities within the context that they occur. In addition, Cole and colleagues (2004) proposed that observations made in naturalistic or quasi-naturalistic settings are valuable since they increase the likelihood of activating particular emotions and observing how children regulate them in everyday life. Given these recommendations, observations of emotion regulation in the current study were completed in the child's home, a naturalistic setting. While tasks were presented in a standardized manner, they were designed to mirror naturalistic interactions that take place between mothers and children on a routine basis.

Intergenerational designs examining patterns of parent-child interaction allow further steps to be taken in the study of children's emotion regulation. Intergenerational

research has demonstrated that parental histories of negative behaviours influence their children's development (e.g. Caspi & Elder, 1988). These studies take experiences and characteristics of the parent generation and use them to identify processes that affect the well-being of their children. It has been found that parenting practices (e.g. hostility, harsh punishment, parental modeling), parent-child interactions, and children's observations of parental behaviours, can be transferred across generations (Stack, Serbin, Enns, Ruttle, Barrieau, & Schwartzman, 2010). The Concordia Longitudinal Risk Project (Concordia Project) is a prospective longitudinal study of a disadvantaged community sample of boys and girls with histories of aggression and/or social withdrawal who have been followed into parenthood and the next generation. Findings regarding the cycle of poverty (Chase-Lansdale & Brooks-Gunn, 1995), crime (Furstenberg, Levine, & Brooks-Gunn, 1990), and psychosocial distress (Wilson, 1987) lend support to the argument that behavioural and environmental variables continue from one generation to the next.

Aggression is a construct defined by the manifestation of intentionally hurtful behaviours such as bullying, fighting, or teasing (Moskowitz & Schwartzman, 1989). Aggressive behaviours are intended to cause harm to others, either directly or indirectly. Studies have shown that aggressive girls are particularly at-risk for a host of negative adolescent and adult outcomes such as antisocial behaviour, high-risk sexual activity, and school dropout (Serbin et al., 1998). There is evidence that aggressive response styles remain fairly stable over time (Elder, Caspi, & Downey, 1986), suggesting that when aggressive girls become mothers, they may be more likely to be aggressive in the home, thus increasing potential for negative outcomes in their children (Serbin & Karp, 2003).

Similarly, social withdrawal may be particularly problematic for girls in terms of social, academic, and economic well-being throughout the lifespan (Serbin et al., 1998). Social withdrawal is characterized by anxious and withdrawn patterns of behaviour that serve to isolate oneself from others (Moskowitz & Schwartzman, 1989). This includes shy, sad, and socially reserved conduct, a cluster of behaviours referred to as 'anxiety-withdrawal-dysphoria' (Quay, 1986). Social withdrawal becomes increasingly associated with peer rejection as children transition from early to later childhood (Rubin & Coplan, 2004). Specific outcomes regarding the mothering abilities of socially withdrawn girls have not been a major focus in the literature. While the longterm stability of social withdrawal is less pronounced than that of aggression, it appears to be moderately stable across the lifespan (Moskowitz, Schwartzman, & Ledingham, 1985) for girls, suggesting that it may affect later psychosocial adjustment and mothering abilities.

Observing the self-regulation of emotion in children of mothers with histories of aggression or social withdrawal is vital to the improved understanding of the role of young children's emotion regulation and parenting characteristics in perpetuating risk or promoting adaptive social functioning across generations. This is because these types of behavioural histories may indicate poor emotion regulation on the part of these mothers in their childhoods. Research has found that as children develop, caregivers begin to expect the child to regulate themselves more frequently. Parents transfer this responsibility to their children by encouraging them to adopt new motives to fit with cultural norms, apply labels to the emotions being regulated and to express them verbally, and consider the meaning of emotions that arise and think of ways that they can be altered or reduced (Holodynski & Friedlmeier, 2005).

The present study examined preschoolers' emotion self-regulation in multiple contexts, as well as the development of self-regulation over time and its related behavioural outcomes. Two sets of objectives were addressed: The first pertained to the examination of emotion self-regulation in preschoolers, and the second to the longitudinal examination of precursors and successors of emotion self-regulatory behaviours at the preschool age. Hypotheses were directly related to the objectives and based on an integration of findings from the emotion regulation and risk literatures.

The first objective for the preschool period of the study was to determine how preschoolers' self-regulation of emotion differed across four contexts (puzzle, interference, free play, and clean up tasks). It was hypothesized that preschoolers would employ self-regulatory behaviours more frequently than prosocial behaviours during more emotionally eliciting tasks (e.g. interference and clean up). It was also expected that preschoolers would employ more negative coping strategies (e.g. fretting, overactivity, negative attention-seeking, and escape) during the interference task. Non-compliance was anticipated to be employed most frequently during the clean up task. Within this objective, one aim was to assess whether or not there were sex differences in self-regulatory behaviours employed across contexts. It was hypothesized that boys would exhibit more externally oriented self-regulatory behaviours (e.g. fretting, overactivity, negative attention seeking) than girls, who were expected to employ more internally oriented self-regulatory behaviours (e.g. self-comfort). The second main objective of the study was to examine how maternal childhood histories of aggression or social withdrawal were associated with preschoolers' use of self-regulatory behaviours. It was expected that mothers' histories of aggression and social withdrawal would be

predictive of preschoolers' negative coping strategies. The final objective for the preschool period was to determine whether mothers' use of constructive or non-constructive behaviours during the interference task influenced emotion self-regulation strategies employed by their child. It was hypothesized that mothers who displayed non-constructive verbal behaviour during the interference task would have children who displayed more negative coping strategies during this task.

The processes whereby children develop the abilities to regulate their own emotions have long been a concern of those who conduct longitudinal research (e.g. Eisenberg, Cumberland, & Spinrad, 1998). Consequently, objectives for the longitudinal portion of the study were to: (1) determine if the use of emotion self-regulation behaviours at 5 ½ months was predictive of the use of similar types of behaviours in the same children as preschoolers (e.g. to determine if infants' fretting was predictive of more fretting in preschoolers); (2) examine whether emotion self-regulation strategies used by preschoolers were predictive of problem behaviours in the same children in their early elementary school years (e.g. to examine whether preschoolers' non-compliance was predictive of externalizing problems in early elementary school children).

Method

Identification of the original sample

The participants in the present study constitute a sub-sample of the Concordia Longitudinal Risk Project (Concordia Project), a prospective, longitudinal, intergenerational study that began in 1976-1978 (Schwartzman, Ledingham, & Serbin, 1985). The sample is a large, community-based sample of children who attended inner-city French schools in low socioeconomic neighbourhoods of Montréal, Québec.

Initially, 4,109 francophone boys and girls in first-, fourth-, and seventh-grade were screened along dimensions of aggression, social withdrawal, and likeability using a French translation of the Pupil Evaluation Inventory (PEI: Pekarik, Prinze, Liebert, Weintraub, & Neale, 1976). This inventory, designed to assess childhood adjustment, is a peer nomination technique in which children were asked to nominate their peers on 34 items related to aggression, withdrawal, and likeability (see Appendix A). The PEI is both a reliable (internal consistency above .70 for all factors) and valid (concurrent validity between .54 and .65) measure for the assessment of children's social behaviour. Following the administration of the PEI, a total of 1,770 children (861 boys; 909 girls) met the inclusion criteria to make up the Concordia Project sample. Percentile cutoffs were used to establish which children had received extreme scores on aggression and withdrawal, compared with age- and sex-matched peers, allowing for each child to be scored according to relative norms for his or her own age and sex (Schwartzman, Ledingham, & Serbin, 1985). The aggressive group (n = 198) consisted of children who scored above the 95th percentile on Aggression and below the 75th percentile on Withdrawal in the PEI. Those scoring above the 95th percentile on Withdrawal and below the 75th percentile on Aggression made up the socially withdrawn (n = 220) group. The combined aggressive and socially withdrawn group (n = 238) included children with z-scores equal to or above the 75th percentile on nominations of both Aggression and Withdrawal on the PEI. Lastly, children whose scores on Aggression and Withdrawal fell between the 25th and 75th percentile were characterized as neither aggressive or socially withdrawn (control; n = 1,114) and were included in the study as a comparison group. For a detailed description, see Schwartzman, Ledingham, and Serbin (1985).

Preschool sample

The primary focus of the present study was the investigation of preschoolers' emotion self-regulation in interactions with their mothers in four different contexts. Secondary objectives were concerned with the prediction of child behaviours from infancy to preschool and from preschool to early elementary school. The focal sample included mothers from the original Concordia Project sample and their preschool-aged children. Fifty-six mothers, who participated with their infants in an earlier phase of the study, were contacted and asked to take part in the study. Eleven mothers did not continue to participate because of the amount of time it required. Participation in longitudinal studies can be very demanding for parents, especially when they have one or more young children. Forty-five mothers agreed to participate in the project with their children (28 girls, 17 boys), who ranged in age from 3 to 5 years ($M = 4.64$, $SD = 0.48$). As with previous studies conducted within the Concordia Project (DeGenna, Stack, Serbin, Ledingham, Schwartzman, 2006; Grunzeweig et al., 2009), maternal childhood aggression and withdrawal scores were treated as dimensions rather than categorical predictors in order to maximize the power of the analyses. Approximately one third of mothers were considered at-risk due to high scores on aggression and/or social withdrawal in childhood, and all had histories of disadvantage.

Infant sample

The longitudinal objectives of this study were examined through an infant and an early elementary school sample. The first of these predictive time points included mothers and their 5 ½-month-old infants. Mothers associated with the Concordia Project who were pregnant or who had recently given birth in 1997 were contacted to participate

in the study. Fifty-six mothers participated in this phase of the project, and questionnaire data were available for these dyads. However, observational measures were only available for thirty-four of these dyads. All infants were normal, healthy full-term infants (23 girls, 11 boys), having gestational ages ranging from 37 to 41 weeks. The mean age of the mothers was 29.16 years (range = 20-36 years, SD = 3.35), with a mean level of education of 12.88 years (SD = 2.14).

Early elementary school sample

The second set of longitudinal objectives was concerned with early elementary school-aged children (mean grade = 1.51, SD = 0.73). Questionnaire measures were available for thirty-six (23 girls, 13 boys) of the forty-five children studied at the preschool age. The children ranged in age from 6 to 9 years (M = 7.52 ; SD = 0.64). The mean age of the mothers was 36.28 years (range = 28-42 years, SD = 3.43), with a mean level of education of 12.72 years (SD = 2.11).

Procedure

Preschool Age. The present study was conducted as part of a larger project in which interviews, questionnaires, and naturalistic observations were obtained at five time points from parents, their children, and their children's teachers. Home visits when the child was at preschool age were conducted by a PhD-level experimenter and one research assistant, both trained in the administration of the testing protocol and blind to mothers' childhood histories. Following an explanation of the protocol and acquiring informed consent (Appendix B), mothers and their children participated in a series of interactions (puzzle, interference, free play, and clean up tasks). Throughout these interactions, mother-child dyads were seated on the floor or carpet in a living room or play area. The

interactions were videotaped using a Sony Video 8AF camera with a directional microphone that was fixed to a tripod placed in front of the dyad. The experimenter explained each task prior to its start and then left the room, using a stopwatch to time the duration of the interaction that was recorded.

Since a main focus of the current study was contextual differences in children's self-regulatory behaviours, all four tasks in the series of mother-child interactions were pertinent. The first task was an eight minute cooperative task, in which mother-child dyads were provided with four different puzzles, ranging in levels of difficulty. Mothers were instructed to work on the puzzles with their children for the duration of the task, while staying within the designated play area.

The second task was a three minute interference task. Prior to beginning this task, mothers were provided with a clipboard and questionnaires. Mothers were instructed to remain seated on the floor near their children, and to complete the questionnaires while their child was free to play with the puzzles and games provided. It was not explicitly specified how mothers should react to their child's bids for attention during the interference task. The open-ended nature of the task made it ecologically valid, in that it paralleled every-day situations in which caregivers are occupied with various tasks, while their preschoolers are expected to continue to play on their own.

The third task was a three minute free play task. Regardless of the state of completion of their questionnaires, mothers were instructed to return to playing with their child. During this task, available toys were: two books, Lego blocks, a doll, a brush, a comb, a tea set, a toy telephone, and five puzzles (the same puzzles from the first task).

These toys were consistently set up in a standardized arrangement prior to the beginning of the task. Dyads were instructed to play as they wished for the duration of the task.

The final task was a two minute clean up task. Mothers were instructed to have their children help them return all toys and puzzles to the bags that the experimenter brought them in. Mothers were asked to assure that puzzles went in one bag while toys went in a separate one. At the end of this task, mother and child were thanked and compensated $20 for their participation, and the home visit was concluded.

Infancy. Mothers and their 5 ½ month infants were tested at their homes. These dyads were videotaped during a face-to-face SF procedure (Tronick et al., 1978). The SF procedure consisted of three 2-minute interaction periods: Normal, Still Face, and Reunion Normal periods. Each of these periods was separated by a transition period of 20 to 30 seconds. For the first and last periods, mothers were asked to play with their infants as they would normally. For the second period, the SF period, mothers were asked to gaze at their infants while maintaining a neutral face, remaining silent, and refraining from touching their infant (Tronick et al., 1978). Infants were seated in an infant seat, while mothers sat approximately 70 centimeters away, facing their children. For a more detailed description of the SF procedure, see Jean and Stack (2009).

Early Elementary School. Testing at the early elementary school age was conducted through self-report questionnaires completed by the child's parents and teachers. For this study, only information obtained from the Child Behaviour Checklist (Achenbach, 1991) and the Demographic Information Questionnaire were of interest.

Observational Coding

Preschooler Self-Regulatory Scheme (PSRS). The PSRS (August & Stack, 2010b) is an observational measure of preschoolers' emotion self-regulation behaviours that can be applied across various contexts (for a brief description, see Table 1). The PSRS was developed for the purposes of the present study and is based in part on existing literature (Dennis, 2006; Grolnick, Bridges, & Connell, 1996; Martin-Storey, Serbin, Stack, & Schwartzman, 2009) and in part on the Infant Self-Regulatory Scheme (ISRS; Millman, Jean, & Stack, 2007; adapted from Tronick & Weinberg, 1996). In addition, infant's affect (smiling and fretting) were coded frame-by-frame in a manner that has been reliably used and coded in a number of studies (e.g. Arnold, 2002; Stack & Arnold, 1998; Stack & Muir, 1992). Elements of the PSRS were adapted from these coding schemes in order to be developmentally appropriate for preschool children. Examples of such behaviours include fretting, overactivity, and negative attention seeking. Codes were assigned during 10-second intervals of each task (i.e. 48 intervals for puzzle task; 18 intervals for interference task; 18 intervals for free play task; 12 intervals for clean up task). Detailed operational definitions of all codes for the PSRS can be found in Appendix C. In addition, Table 2 illustrates the target infant categories that were chosen to correspond to preschool categories based on similarities in operational definitions and developmental considerations.

Maternal Constructive and Non-Constructive Behaviour Scheme. This scheme (August & Stack, 2010) is an observational measure of mothers' use of constructive and non-constructive verbalizations observed specifically during the interference task (for a brief description, see Table 3). Codes were again assigned for 10-

Table 1

Coding criteria for the Preschool Self-Regulatory Scheme (August & Stack, 2010)

Self-regulatory category	Brief description
Fretting	Child anger, frustration, irritability, crying
Non-compliance	Active resistance or passive non-compliance
Overactivity	Child is more active than required by the task
Negative attention seeking	Touching or increasing proximity to mother Exaggerated motor movements or vocalizations
Prosocial attention seeking	Seeking mother's attention in a calm manner
Self-comfort	Self-talk, self-singing, self-soothing behaviours
Escape	Child increases distance between self and mother
Prosocial behaviour	Smile, laugh, prosocial exclamation, cooperation

Table 2

Infant categories as they relate to the PSRS

Infant categories	Preschool Self-Regulation Scheme
Self-comfort – Regulatory Self-comfort - Exploratory	Self-comfort
Escape Gaze aversion	Escape
Attention-seeking	Attention-seeking negative Attention-seeking prosocial
Fret	Fretting Non-compliance Overactivity
Smile	Prosocial behaviour

Table 3

Coding criteria for the Maternal Constructive and Non-Constructive Behaviour Scheme (August & Stack, 2010)

Mothers' behaviour	Brief description
Constructive verbal	Positive verbal expressions
	Support, reassurance, encouragement
	Constructive redirection
Non-constructive verbal	Negative verbal expressions
	Non-constructive redirection

second intervals but only coded during the interference task, making for a total of 18 intervals. Detailed operational definitions of all codes can be found in Appendix D.

Data Reduction. Following the completion of coding, scores of individual sub-codes (i.e. self-talk, self-sing, self-soothe) were combined to make up overall self-regulatory categories in which they belong (i.e. self-comfort). Scores were summed per task and then divided by the number of 10-second intervals comprising each task to obtain a separate proportion frequency score for each category in each task. This proportion frequency score was multiplied by one hundred to obtain a percentage. This method controlled for differences in length of each task.

Reliability. Thirty-one percent of the sample was randomly selected and coded using both schemes by an undergraduate student who was blind to the study's hypotheses and to maternal risk status. Percentage agreement reliability (PA; agreements divided by the sum of total agreements and disagreements) and Cohen's kappa coefficients (r_k; Cohen,1960) were calculated to assess the reliability of coded self-regulatory behaviours. Cohen's kappa calculates the inter-observer agreement as a proportion of potential agreement following a correction made for chance agreements (Kaplan & Saccuzzo, 2001). The overall Cohen's kappa value obtained for codes on the PSRS was r_k= 0.86. The percentage agreement between raters for PSRS codes was 90.5%. The overall Cohen's kappa value obtained for codes on the MCNCS was r_k= 0.84. The percentage agreement between raters for MCNCS codes was 89%. These coefficients are considered to be very good levels of agreement above chance (Fleiss, 1981). Table 4 provides percent agreements and individual kappa coefficients for each child and mother behaviour categories that were coded.

Table 4

Percent Agreement and Kappa Coefficients for Child and Mother Behaviours

CATEGORY	PERCENT AGREEMENT (%)	KAPPA COEFFICIENT (r_k)
Child Codes	90.5	.86
Fretting	95.9	.96
Non-Compliance	92.7	.93
Overactivity	72.4	.71
Negative Attention Seeking	63.0	.61
Prosocial Attention Seeking	89.5	.89
Self-Comfort	93.4	.93
Escape	96.2	.96
Prosocial Behaviour	91.7	.82
Mother Codes	89.0	.84
Constructive - Verbal	85.2	.85
Non-Constructive - Verbal	62.5	.62

Measures

Demographic Information Questionnaire (DIQ). The DIQ was administered to mothers in order to gather socio-demographic information about participating families. This questionnaire, which has been used in multiple studies with the Concordia Project, includes items concerning maternal age, education, occupational status, etc. Serbin and colleagues (1998) found the DIQ to be an effective measure of participants' demographics (see Appendix E).

Child Behaviour Checklist (CBCL). Mothers and teachers of early elementary school children were asked to complete Achenbach's Child Behaviour Checklist-Parent Report Form or Teacher Report Form (CBCL-PRF or CBCL-TRF; Achenbach, 1991), a standardized measure used to examine child behaviour in both research and clinical settings. The checklist is comprised of 118 items scored on a scale of 0 to 3 in terms of how unlikely to likely it is for a child to exhibit certain behaviour problems. The CBCL yields sub-scale scores which can be converted into a Total Problem score as well as scores for Internalizing and Externalizing problems. The Total Problem score combines internalizing and externalizing sub-scales. The Internalizing, Externalizing, and Total Problem scores were considered in the present study.

Results

Prior to conducting statistical analyses, all data were double-checked by the author and an undergraduate research assistant, in order to assure that there were no errors in initial data entry. Following confirmation of the data's integrity, descriptive statistics were used to assess the normality of the distribution, skewness and kurtosis for each variable, and to identify outliers. In cases where non-normality was identified,

outliers were systematically brought in by converting them into a value that was one or two standard deviations above the mean. Even after making the necessary alterations for outliers, some variables remained skewed. This was to be expected since many of these variables, such as child fretting or escaping during a task, are naturally infrequent, and are therefore not typically normally distributed. As such, the data did not undergo any transformations. Due to the number of variables included in the present study, some variables were not analyzed individually, but rather, were collapsed into conceptually relevant clusters to reduce the number of statistical analyses conducted. In addition, the sample size precluded the inclusion of gender as a variable in the analyses.

Separate sets of analyses were conducted to address objectives concerning preschoolers and longitudinal analyses with infants and early elementary school children. All statistical analyses were conducted using the PASW Statistics 18.0 program for Macintosh. Significant findings are reported in tables within the text.

Preschool-Age Analyses

An initial set of one-way repeated measures analyses of variance (ANOVAs) was conducted to determine the effects of context on preschoolers' self-regulatory behaviours. The critical alpha level of $p < .05$ was used as the criterion for all analyses, and Bonferroni corrections were used to adjust for multiple comparisons. The Bonferroni correction was chosen as a post hoc test since it has more power when the number of comparisons is small (Field, 2005). For all ANOVAs, partial eta-squared (ηp^2) are reported as a measure of effect size, and 95% confidence intervals are also provided.

Overall Self-Regulatory Behaviours Across Contexts. All seven categories of preschoolers' emotion self-regulation behaviour were combined to examine the overall

use of emotion self-regulation behaviours in each of the four contexts. These scores were then examined in relation to prosocial behaviour, the only coded category that was not a measure of affect regulation.

A one-way repeated measures ANOVA was conducted to examine differences in the percent frequency of all emotion self-regulation behaviours across the four tasks in the mother-child interaction. The frequency with which emotion self-regulation was used differed significantly across the four contexts, F (1, 3) = 35.92, $\eta p^2 = 0.45$, $p = .000$. Bonferroni post-hoc comparisons indicated that preschool children used more emotion self-regulation behaviour during the interference ($M = .67$, 95% CI [.56, .79]) than in the puzzle ($M = .17$, 95% CI [.15, .23]), free play ($M = .22$, 95% CI [.15, .29]), and clean up tasks ($M = .24$, 95% CI [.13, .35]).

A one-way repeated measures ANOVA examining differences in the percent frequency of overall prosocial behaviours revealed significant differences across contexts, F (1, 3) = 181.27, $\eta p^2 = 0.81$, $p = .000$. Preschoolers used fewer prosocial behaviours in the interference task ($M = .11$, 95% CI [.07, .14]), than in the puzzle ($M =$ 1.00, 95% CI [.97, 1.00]), free play ($M = .99$, 95% CI [.91, .1.00]), and clean up tasks (M = .88, 95% CI [.79, .97]).

Individual Self-Regulatory Behaviours Across Contexts. Having established that the overall observation of emotion self-regulation and prosocial behaviours differed significantly across context, it was of interest to further examine self-regulatory behaviours individually. One-way repeated measures ANOVAs were conducted to examine differences in the proportion of child fretting, non-compliance, overactivity, prosocial attention seeking, negative attention seeking, self-comfort, and escape across

the four tasks. Child sex was examined as as a between-subjects factor, and for all seven categories of emotion self-regulatory behaviour, there were no significant interactions of sex differences across context.

I. Fretting. The frequency with which children fretted differed significantly across contexts, F (1, 3) = 7.23, ηp^2 = 0.14, p = .001. Preschoolers fretted significantly more during the interference task (M = .11, 95% CI [.06, .17]) than in the puzzle (M = .02, 95% CI [.01, .03]), free play (M = .05, 95% CI [.03, .07]), and clean up tasks (M = .05, 95% CI [.01, .08]).

II. Non-Compliance. The frequency with which children were non-compliant differed significantly across contexts, F (1, 3) = 9.19, ηp^2 = 0.17, p = .001. Preschoolers displayed significantly more non-compliance during the clean up task (M = .11, 95% CI [.04, .16]) than in the puzzle (M = .02, 95% CI [.00, .03]), interference (M = .00, 95% CI [.00, .06]), and free-play tasks (M = .03, 95% CI [.00, .06]).

III. Overactivity. The frequency with which children were overactive, with regards to the task demands did not differ significantly across context, F (1, 3) = 7.23, ηp^2 = 0.14, p = .001. This was likely due to the low frequency of overactivity, having occurred in less than 3% of the intervals in any given context.

IV. Prosocial Attention Seeking. The frequency with which children employed prosocial attention seeking differed significantly across contexts, F (1, 3) = 85.20 ηp^2 = 0.66, p = .000. Preschoolers sought attention in a prosocial manner significantly more during the interference task (M = .19, 95% CI [.15, .23]) than in the puzzle (M = .001, 95% CI [.01, .03]), free play (M = .001, 95% CI [.00, .004]), and clean up tasks (M = .00, 95% CI [.00, .00]).

V. Negative Attention Seeking. The frequency with which children employed negative attention seeking differed significantly across contexts, F (1, 3) = 24.81, ηp^2 = 0.36, p = .000. Preschoolers sought attention in a negative manner significantly more during the interference task (M = .16, 95% CI [.10, .22]) than in the puzzle (M = .01, 95% CI [.00, .02]), free play (M = .001, 95% CI [.00, .004]), and clean up tasks (M = .00, 95% CI [.00, .00]). No attention seeking was used during the clean up task.

VI. Self-Comfort. The frequency with which children employed self-comforting behaviours differed significantly across contexts, F (1, 3) = 11.48 ηp^2 = 0.21, p = .000. Preschoolers self-comforted significantly more during the interference task (M = .19, 95% CI [.14, .24]) than in the puzzle (M = .10, 95% CI [.06, .14]), free play (M = .10, 95% CI [.05, .15]), and clean up tasks (M = .04, 95% CI [.01, .07]).

VII. Escape. The frequency with which children escaped did not differ significantly across context, F (1, 3) = 1.49, ηp^2 = 0.03, p = .22. This was due to the low frequency of children leaving the task area, which occurred less than 3% of the time in any context.

Maternal Histories of Risk and Self-Regulatory Behaviours. Hierarchical multiple regression analyses were conducted to evaluate the contributions of maternal childhood risk to preschoolers' self-regulatory behaviours. Predictor variables were maternal childhood histories of aggression and social withdrawal and the outcome variables were child self-regulatory behaviours. Maternal childhood risk status (Aggression, Social Withdrawal) was entered as the first step in the regression analyses, since the variables were hierarchized in temporal order. Maternal education (Step 2) was also controlled for in the analyses, since high levels of maternal education are a protective factor against risk (Serbin et al., 1998). Separate regression analyses were conducted for each self-

regulatory behaviour in each of the four contexts. Significant effects are reported in the text; however, if trends were in line with hypotheses and the literature, these were included.

Puzzle Task. In the set of regressions examining the puzzle task, none of the hierarchical regression models or steps were significant.

Interference Task. For regressions examining children's fretting, non-compliance, overactivity, self-comfort, and escape, no models or steps significantly predicted children's emotion self-regulation behaviours during the interference task. However, regression analyses examining preschoolers' attention seeking yielded significant results.

I. Negative Attention Seeking. Although the regression model examining children's negative attention seeking in the interference task (Table 5) was not significant, maternal histories of social withdrawal (*Beta* = .27, p = .08) emerged as a trend. Mothers who were more socially withdrawn as children had offspring who tended to use more negative attention seeking during the interference task.

II. Prosocial Attention Seeking. In the regression examining prosocial attention seeking in the interference task (Table 6), maternal histories of social withdrawal (*Beta* = -.39, p = .01) emerged as a significant predictor, suggesting that mothers who were more socially withdrawn as children had offspring who used less prosocial attention seeking.

Free Play Task. Consistent with the interference task, both regression analyses examining preschoolers' attention seeking in the free play task yielded significant results. For regressions examining children's fretting, non-compliance, overactivity, self-comfort, and escape, no steps significantly predicted children's emotion self-regulation.

Table 5

Maternal Childhood Levels of Aggression and/or Social Withdrawal Predicting Preschoolers' Negative Attention Seeking in the Interference Task (N=45)

Variables	Beta	Sr^2	T	R^2_{ch}	F_{ch}
Step 1				0.07	1.63
Childhood Aggression	0.07	0.00	0.47		
Childhood Withdrawal	0.27	0.07	1.79^t		
Step 2				0.00	0.04
Childhood Aggression	0.09	0.00	0.50		
Childhood Withdrawal	0.27	0.07	1.77^t		
Maternal Education	0.03	0.00	0.19		
		R = .27	R^2_{Adj} = 0.01	F = 1.08	

$^t p < 0.10$, $^* p < 0.05$, $^{**} p < 0.01$, $^{***} p < .001$

Table 6

Maternal Childhood Levels of Aggression and/or Social Withdrawal Predicting Preschoolers' Prosocial Attention Seeking in the Interference Task (N=45)

Variables	Beta	Sr^2	T	R^2_{ch}	F_{ch}
Step 1				0.13	3.24*
Childhood Aggression	-1.10	0.01	-0.71		
Childhood Withdrawal	-0.36	0.13	-2.51*		
Step 2				0.02	1.39^t
Childhood Aggression	-0.20	0.03	-1.19		
Childhood Withdrawal	-0.39	0.15	-2.69**		
Maternal Education	-0.19	0.03	-1.18		
		R = .40	R^2_{Adj} = 0.10	F = 2.65^t	

$^t p < 0.10$, $*p < 0.05$, $**p < 0.01$, $***p < .001$

I. Negative Attention Seeking. In the regression examining children's negative attention seeking in the free play task (Table 7), maternal histories of social withdrawal emerged as a significant predictor of children's negative attention seeking (*Beta* = .32, *p* = .04), suggesting that mothers who were more socially withdrawn as children had offspring who used more negative attention seeking.

II. Prosocial Attention Seeking. In the regression examining children's prosocial attention seeking in the free play task (Table 8), maternal histories of social withdrawal trended towards predicting children's prosocial attention seeking (*Beta* = .28, *p* = .06). Mothers who were more socially withdrawn as children had offspring who tended to use more prosocial attention seeking during the free play task.

Clean Up Task. For regressions examining children's non-compliance, overactivity, negative attention seeking, prosocial attention seeking, self-comfort, and escape, no steps significantly predicted children's emotion self-regulation during the clean up task. The only significant results for this task were related to preschoolers' fretting and prosocial behaviour.

I. Fretting. In the regression examining fretting in the clean up task (Table 9), maternal level of education (*Beta* = -.29, *p* = .09) emerged as a trend. Mothers who had lower levels of education had offspring who tended to fret more during the clean up task.

II. Prosocial Behaviour. In the regression examining prosocial behaviour in the clean up task (Table 10), maternal levels of education significantly predicted children's prosocial behaviour (*Beta* = .47, *p* = .01). Mothers with higher levels of education had offspring who displayed more prosocial behaviour during this task.

Table 7

Maternal Childhood Levels of Aggression and/or Social Withdrawal Predicting Preschoolers' Negative Attention Seeking in the Free Play Task (N=45)

Variables	Beta	Sr^2	T	R^2_{ch}	F_{ch}
Step 1				0.15	3.80*
Childhood Aggression	-0.16	0.02	-1.10		
Childhood Withdrawal	0.34	0.12	2.40*		
Step 2				0.02	0.77*
Childhood Aggression	-0.23	0.04	-1.38		
Childhood Withdrawal	0.32	0.10	2.19*		
Maternal Education	-0.14	0.02	-0.88		
		R = .41	R^2_{Adj} = 0.11	F = 2.78*	

$^{t}p < 0.10$, $*p < 0.05$, $**p < 0.01$, $***p < .001$

Table 8

Maternal Childhood Levels of Aggression and/or Social Withdrawal Predicting Preschoolers' Prosocial Attention Seeking in the Free Play Task (N=45)

Variables	Beta	Sr^2	T	R^2_{ch}	F_{ch}
Step 1				0.15	3.63*
Childhood Aggression	-0.20	0.02	-1.40		
Childhood Withdrawal	0.31	0.12	2.15*		
Step 2				0.02	1.15*
Childhood Aggression	-0.28	0.04	-1.74		
Childhood Withdrawal	0.28	0.10	1.91^t		
Maternal Education	-0.18	0.02	-1.07		
		R = .41	R^2_{Adj} = 0.11	F = 2.81*	

$^t p < 0.10$, $*p < 0.05$, $**p < 0.01$, $***p < .001$

Table 9

Maternal Childhood Levels of Aggression and/or Social Withdrawal Predicting Preschoolers' Fretting in the Clean Up Task (N=45)

Variables	Beta	Sr^2	T	R^2_{ch}	F_{ch}
Step 1				0.01	0.19
Childhood Aggression	-0.04	0.00	-0.27		
Childhood Withdrawal	0.08	0.01	0.52		
Step 2				0.07	2.89
Childhood Aggression	-0.18	0.02	-1.05		
Childhood Withdrawal	0.03	0.00	0.20		
Maternal Education	-0.29	0.07	-1.70^t		
		R = .27	R^2_{Adj} = 0.07	F = 1.09	

$^t p < 0.10$, $^* p < 0.05$, $^{**} p < 0.01$, $^{***} p < .001$

Table 10

Maternal Childhood Levels of Aggression and/or Social Withdrawal Predicting Preschoolers' Prosocial Behaviour in the Clean Up Task (N=45)

Variables	Beta	Sr^2	T	R^2_{ch}	F_{ch}
Step 1				0.07	1.50
Childhood Aggression	-0.18	0.03	-1.15		
Childhood Withdrawal	-0.22	0.05	-1.42		
Step 2				0.16	8.42**
Childhood Aggression	0.06	0.00	0.34		
Childhood Withdrawal	-0.13	0.02	-0.89		
Maternal Education	0.47	0.16	2.90**		
		R = .48	R^2_{Adj} = 0.17	F = 3.98**	

$^t p < 0.10$, $*p < 0.05$, $**p < 0.01$, $***p < .001$

Maternal Behaviour Predicting Preschooler Self-Regulatory Behaviours. A series of hierarchical regression analyses were conducted to evaluate the contributions of mothers' concurrent behaviors during the interference task to preschoolers' self-regulatory behaviours during this same task. Control variables (Step 1) were maternal childhood histories of aggression and social withdrawal. Predictor variables (Step 2) were mother's constructive or non-constructive verbal expressions during the interference task. The outcome variables were preschooler behaviours (e.g. fretting). Mothers' use of both non-constructive and constructive verbal expressions did not significantly predict preschoolers' non-compliance, escape, or prosocial attention seeking.

I. Fretting. In the regression examining preschoolers' fretting (Table 11), mother's use of non-constructive verbal expressions predicted children's fretting (*Beta* = .53, $p = .01$). Mothers who displayed a higher frequency of non-constructive verbal expressions during the interference task had children who exhibited more fretting. Conversely, mothers use of constructive verbal expressions did not significantly predict children's fretting.

II. Overactivity. In the regression examining children's overactivity (Table 12), mother's use of non-constructive verbal expressions predicted children's negative attention seeking (*Beta* = .35, $p = .05$). Mothers who used more non-constructive verbal expressions during the interference task had children who were more overactive. Conversely, mothers' use of constructive verbal expressions did not predict children's overactivity.

III. Negative Attention Seeking. In the regression examining children's negative attention seeking (Table 13), mother's use of non-constructive verbal expressions

Table 11

Maternal Childhood Levels of Aggression, Social Withdrawal, and Non-Constructive Verbalizations in the Puzzle Task Predicting Preschoolers' Fretting (N=45)

Variables	Beta	Sr^2	T	R^2_{ch}	F_{ch}
Step 1				0.03	0.67
Childhood Aggression	0.11	0.33	0.71		
Childhood Withdrawal	0.16	0.02	0.99		
Step 2				0.26	14.18**
Childhood Aggression	-0.05	0.00	-0.32		
Childhood Withdrawal	0.15	0.02	1.11		
Non-Constructive Verbalization	0.53	0.26	3.77**		
		R = .54	R^2_{Adj} = 0.24	F = 5.32**	

$^t p < 0.10$, $*p < 0.05$, $**p < 0.01$, $***p < .001$

Table 12

Maternal Childhood Levels of Aggression, Social Withdrawal, and Non-Constructive Verbalizations in the Puzzle Task Predicting Preschoolers' Overactivity (N=45)

Variables	Beta	Sr^2	T	R^2_{ch}	F_{ch}
Step 1				0.05	1.03
Childhood Aggression	0.22	0.03	1.41		
Childhood Withdrawal	-0.02	0.07	-0.11		
Step 2				0.11	5.16^t
Childhood Aggression	0.12	0.04	0.75		
Childhood Withdrawal	-0.02	0.07	-0.13		
Non-Constructive Verbalization	0.35	0.00	2.27*		
		R = .40	R^2_{Adj} = 0.10	F = 2.48^t	

$^t p < 0.10$, $*p < 0.05$, $**p < 0.01$, $***p < .001$

Table 13

Maternal Childhood Levels of Aggression, Social Withdrawal, and Non-Constructive Verbalizations in the Puzzle Task Predicting Preschoolers' Negative Attention Seeking (N=45)

Variables	Beta	Sr^2	T	R^2_{ch}	F_{ch}
Step 1				0.07	1.40
Childhood Aggression	0.06	0.03	0.41		
Childhood Withdrawal	0.26	0.07	1.66		
Step 2				0.15	7.61*
Childhood Aggression	-0.06	0.04	-0.38		
Childhood Withdrawal	0.25	0.07	1.77^t		
Non-Constructive Verbalization	0.41	0.00	2.76**		
		R = .47	R^2_{Adj} = 0.16	F = 2.62*	

$^t p < 0.10$, $*p < 0.05$, $**p < 0.01$, $***p < .001$

predicted children's negative attention seeking (*Beta* = .41, *p* = .01). Mothers who used more non-constructive verbal expressions during the interference task had children who exhibited more negative attention seeking. Conversely, mothers' use of constructive verbal expressions did not significantly predict children's negative attention seeking.

IV. Self-Comfort. In the regression examining children's self-comfort (Table 14), mother's use of non-constructive verbal expressions did not predict children's self-comfort. However, mothers' use of constructive verbal expressions significantly predicted children's use of self-comforting behaviours (*Beta* = -.31, *p* = .038), suggesting that mothers who displayed a higher frequency of constructive verbal expressions had children who exhibited significantly less self-comforting behaviours during the interference task.

V. Prosocial Behaviour. In the regression examining children's prosocial behaviour (Table 15), mother's use of non-constructive verbal expressions significantly predicted children's prosocial behaviours (*Beta* = -.55, *p* = .00). Mothers who displayed a higher frequency of non-constructive verbal expressions during the interference task. had children who exhibited less prosocial behaviour. Conversely, mothers' use of constructive verbal expressions did not significantly predict children's prosocial behaviours.

Predictive Analyses

In order to reduce the number of longitudinal analyses (predicting to the preschool period from infancy and predicting from preschool to early elementary school), an exploratory factor analysis, principle components with oblique rotation (using Eigen

Table 14

Maternal Childhood Levels of Aggression, Social Withdrawal, and Constructive Verbalizations in the Puzzle Task Predicting Preschoolers' Self-Comfort (N=45)

Variables	Beta	Sr^2	T	R^2_{ch}	F_{ch}
Step 1				0.06	1.35
Childhood Aggression	-0.10	0.01	-0.68		
Childhood Withdrawal	0.21	0.04	1.40		
Step 2				0.10	4.62^t
Childhood Aggression	-0.14	0.02	-0.93		
Childhood Withdrawal	0.21	0.04	1.45		
Constructive Verbalization	-0.31	0.10	-2.15*		
		R = .40	R^2_{Adj} = 0.10	F = 2.52^t	

$^t p < 0.10$, $*p < 0.05$, $**p < 0.01$, $***p < .001$

Table 15

Maternal Childhood Levels of Aggression, Social Withdrawal, and Non-Constructive Verbalizations in the Puzzle Task Predicting Preschoolers' Prosocial Behaviour (N=45)

Variables	Beta	Sr^2	T	R^2_{ch}	F_{ch}
Step 1				0.01	0.29
Childhood Aggression	-0.02	0.00	-0.13		
Childhood Withdrawal	0.12	0.01	-0.77		
Step 2				0.27	14.90**
Childhood Aggression	-0.14	0.02	0.99		
Childhood Withdrawal	-0.12	0.01	-0.86		
Non-Constructive Verbalization	-0.55	0.27	-3.86**		
		R = .54	R^2_{Adj} = 0.23	F = 5.23**	

$^t p < 0.10$, $*p < 0.05$, $**p < 0.01$, $***p < .001$

values greater than 1 criterion) was conducted. The oblique rotation was used since it allows the factors to be correlated. The Kaiser-Meyer-Olkin (KMO) value of .64 indicates that the set of variables were adequately related for factor analysis (Tabachnick & Fidell, 2001). The analysis yielded three factors, explaining a total of 69.92% of the variance for the entire set of variables. Factor 1 was labeled "active resistance" and consisted of high loadings on non-compliance and escape, and low loadings of prosocial behaviours. This first factor explained 36.55% of the variance. The second factor derived (Factor 2) was labeled "negativity". This factor consisted of high loadings on the following behaviours: negative attention seeking, fretting, and overactivity. The variance explained by this factor was 19.63%. The third factor derived (Factor 3) was labeled "other-oriented regulation" and consisted of a low loading of self-comfort and a high loading of prosocial attention seeking. This third factor explained 13.74% of the variance. Loadings for each factor are displayed in Table 16. The three factors were derived from overall frequencies of behaviours across tasks, rather than context-specific behaviours. Factor scores were used in analyses examining the prediction from infant to preschool behaviour, as well as in the prediction from preschool to early-elementary school behaviours.

Longitudinal Analyses: Infancy to Preschool

A series of hierarchical regression analyses were conducted to evaluate whether the use of self-regulatory behaviours in infancy were predictive of using similar self-regulatory behaviours in the same children as preschoolers. Control variables were maternal childhood histories of aggression and social withdrawal. Predictor variables

Table 16

*Factor Loadings for Exploratory Factor Analysis with Oblique Rotation of Preschoolers' Behaviours**

Preschooler Behaviour	Active Resistance	Negativity	Other-Oriented Regulation
Non Compliance	**.939**	.152	-.135
Escape	**.935**	.191	-.099
Prosocial Behaviour	**-.871**	-.280	.275
Negative Attention Seeking	.066	**.876**	-.186
Fretting	.275	**.705**	.071
Overactivity	.167	**.669**	-.215
Self-Comfort	.059	.033	**-.866**
Prosocial Attention Seeking	-.324	-.295	**.639**

**KMO = .64*

Note. Factor loadings > +/-.50 are in boldface

were infants' self-regulatory behaviours during the Still-Face period. The outcome variables were the factor scores for preschoolers' self-regulatory behaviours.

I. Infant Self-Comfort. In the regression examining infant's self-comfort (Table 17), the model was significant and infants' self-comfort predicted negativity in preschoolers (*Beta* = -.40, p = .02). Infants who displayed less self-comforting during the Still-Face period were more likely to display negativity (high fretting, overactivity, and negative attention seeking) as preschoolers.

II. Infant Attention Seeking. In the regression examining infant's attention seeking, (Table 18), the model was significant and infants' attention seeking predicted negativity in preschoolers (*Beta* = .42, p = .02). Infants who sought more attention during the Still-Face period were more likely to display negativity as preschoolers.

III. Infant Fretting. In the regression examining infants' fretting (Table 19), the model was significant and infants' fretting predicted negativity in preschoolers (*Beta* = .33, p = .06). Infants who fretted more during the Still-Face period were more likely to display negativity as preschoolers.

Longitudinal Analyses: Preschool to Early Elementary School

A series of hierarchical regression analyses were conducted to evaluate whether the use of self-regulatory behaviours in preschool were predictive of mother and teacher reported problems behaviours in these same children during the early elementary school years. Control variables (Step 1) were maternal childhood histories of aggression and social withdrawal. Predictor variables (Step 2) were the three factor scores derived for preschoolers' self-regulatory behaviours. Outcome variables were mother and teacher

Table 17

Maternal Childhood Levels Aggression and Withdrawal and Infants' Self-Comfort during the Still Face Period Predicting Preschoolers' Negativity (Factor 2; N=34)

Variables	Beta	Sr^2	T	R^2_{ch}	F_{ch}
Step 1				0.12	2.09
Childhood Aggression	0.07	0.01	0.41		
Childhood Withdrawal	0.36	0.12	2.04*		
Step 2				0.16	6.39*
Childhood Aggression	0.07	0.01	0.43		
Childhood Withdrawal	0.34	0.14	2.14*		
Infant Self-Comfort	-0.40	0.18	-0.40*		
		R = .53	R^2_{Adj} = 0.21	F = 3.77*	

$^{t}p < 0.10$, $*p < 0.05$, $**p < 0.01$, $***p < .001$

Table 18

Maternal Childhood Levels Aggression and Withdrawal and Infants' Attention Seeking during the Still Face Period Predicting Preschoolers' Negativity (Factor 2; N=34)

Variables	Beta	Sr^2	T	R^2_{ch}	F_{ch}
Step 1				0.12	2.09
Childhood Aggression	0.07	0.01	0.41		
Childhood Withdrawal	0.36	0.12	2.04*		
Step 2				0.16	6.31*
Childhood Aggression	-0.06	0.00	-0.35		
Childhood Withdrawal	0.40	0.15	2.45*		
Infant Attention Seeking	0.42	0.16	2.51*		
		R = .53	R^2_{Adj} = 0.20	F = 3.74*	

$^t p < 0.10$, $*p < 0.05$, $**p < 0.01$, $***p < .001$

Table 19

Maternal Childhood Levels Aggression and Withdrawal and Infants' Fretting during the Still Face Period Predicting Preschoolers' Negativity (Factor 2; N=34)

Variables	Beta	Sr^2	T	R^2_{ch}	F_{ch}
Step 1				0.12	2.09
Childhood Aggression	0.07	0.01	0.41		
Childhood Withdrawal	0.36	0.12	2.04*		
Step 2				0.10	3.79*
Childhood Aggression	0.07	0.01	0.44		
Childhood Withdrawal	0.28	0.07	1.60		
Infant Fretting	0.33	0.10	1.95*		
		R = .47	R^2_{Adj} = 0.14	F = 2.78*	

$^{t}p < 0.10$, $*p < 0.05$, $**p < 0.01$, $***p < .001$

reported Externalizing, Internalizing, and Total problem scores as reported in the CBCL. Neither active resistance (Factor 1) or negativity (Factor 2) significantly predicted externalizing, internalizing, or total problem scores as reported by mothers and teachers. However, other-oriented regulation (Factor 3: high prosocial attention seeking, low self-comfort) at the preschool age was found to be predictive of reported early elementary school problem behaviours.

I. CBCL Mother - Internalizing. In the regression examining child's internalizing problems as reported by mothers (Table 20), other-oriented regulation was a significant predictor of mother-reported internalizing problems (*Beta* = -.38, p = .04). Lower levels of other-oriented regulation were predictive of more mother-reported internalizing problems.

II. CBCL Teacher - Internalizing. In the regression examining child's internalizing problems as reported by teachers (Table 21), there was a trend for other-oriented regulation to predict teacher-reported internalizing problems (*Beta* = -.302, p = .10). Lower levels of other-oriented regulation were predictive of more teacher-reported internalizing problems.

III. CBCL Teacher - Total. In the regression examining child's total problem score as reported by teachers (Table 22), there was a trend for other-oriented regulation to predict teacher-reported total problem scores (*Beta* = -.294, p = .09). Lower levels of other-oriented regulation were predictive of more teacher-reported total problems.

Table 20

Maternal Childhood Levels Aggression and Withdrawal and Preschoolers' Other-Oriented Regulation Predicting Mothers' Ratings of Internalizing Behaviours on the CBCL (N=36)

Variables	Beta	Sr^2	T	R^2_{ch}	F_{ch}
Step 1				0.04	0.64
Childhood Aggression	-0.13	0.03	-0.74		
Childhood Withdrawal	0.13	0.07	0.77		
Step 2				0.13	4.85
Childhood Aggression	-0.10	0.03	-0.58		
Childhood Withdrawal	0.03	0.05	0.19		
Preschooler Other-Oriented Regulation	-0.38	0.02	-2.20*		
		R = .41	R^2_{Adj} = 0.09	F = 2.10	

$^t p < 0.10$, $*p < 0.05$, $**p < 0.01$, $***p < .001$

Table 21

Maternal Childhood Levels Aggression and Withdrawal and Preschoolers' Other-Oriented Regulation Predicting Teachers' Ratings of Internalizing Behaviours on the CBCL (N=36)

Variables	Beta	Sr^2	T	R^2_{ch}	F_{ch}
Step 1				0.00	0.02
Childhood Aggression	-0.00	0.00	-0.02		
Childhood Withdrawal	-0.03	0.00	-0.18		
Step 2				0.09	2.77
Childhood Aggression	0.02	0.00	0.14		
Childhood Withdrawal	-0.09	0.01	-0.50		
Preschooler Other-Oriented Regulation	-0.30	0.09	-1.66^t		
		R = .30	R^2_{Adj} = -0.01	F = 0.93	

$^t p < 0.10$, $^* p < 0.05$, $^{**} p < 0.01$, $^{***} p < .001$

Table 22

Maternal Childhood Levels Aggression and Withdrawal and Preschoolers' Other-Oriented Regulation Predicting Teachers' Ratings of Total Problem Behaviours on the CBCL (N=36)

Variables	Beta	Sr^2	T	R^2_{ch}	F_{ch}
Step 1				0.10	1.60
Childhood Aggression	-0.16	0.03	-0.94		
Childhood Withdrawal	-0.27	0.08	-1.56		
Step 2				0.08	2.91
Childhood Aggression	-0.14	0.02	-0.81		
Childhood Withdrawal	-0.33	0.10	-1.91		
Preschooler Other-Oriented Regulation	-0.29	0.08	-1.71^t		
		R = .42	R^2_{Adj} = 0.09	F = 2.11	

$^t p < 0.10$, $^* p < 0.05$, $^{**} p < 0.01$, $^{***} p < .001$

Discussion

The central focus of the current study was to investigate how context and maternal histories of aggression and social withdrawal are related to preschoolers' emotion self-regulation behaviours. The longitudinal association between infants' and preschoolers' emotion self-regulation, and the predictive relation of preschoolers' self-regulation to early elementary school problem behaviours were also examined. Results partially supported hypotheses and highlighted several key findings pertaining to emotion self-regulation in early childhood. Findings related to the preschool objectives of the study are reviewed first, followed by a discussion of the results from the longitudinal analyses.

One of the main objectives of the current study was to determine how preschoolers' self-regulation of emotion differed across four contexts (puzzle, interference, free play, and clean up tasks). It was hypothesized that the interference and clean up tasks would elicit more frequent use of self-regulatory behaviours than the puzzle or free play tasks. This was partially supported, in that preschoolers used more self-regulatory behaviours during the interference task than in any other task. However, they did not self-regulate more during the clean up task. The relative challenges posed by the interference and clean up tasks were greater than the other two tasks, potentially activating a greater emotional response to be modulated. However, although intentions and goals within a context are essential (Eisenberg & Spinrad, 2004), it appears that the availability of an interaction partner in the clean up task reduced children's need to emotionally self-regulate. The relative situational difficulty, coupled with maternal unavailability in the interference task, required children to use emotion self-regulatory

behaviours more frequently. This finding is consistent with research suggesting that mutual regulation of emotion may be less demanding than self-regulation of emotion for young children (Cole, Teti, & Zahn-Waxler, 2003; Denham et al., 1993).

In addition to examining the overall use of self-regulatory behaviours across contexts, it was hypothesized that negative self-regulatory strategies (i.e. fretting, overactivity, negative attention seeking) would be employed more in the interference task than in any other task. Consistent with this hypothesis, preschoolers fretted, were non-compliant, and prosocially and negatively sought attention more frequently during the interference task. These findings are in accordance with literature highlighting the notion that the regulation of emotion is most important in contexts where higher emotional valences are activated by the challenge of the task (Cole et al., 2004). Although a broad range of tasks were used in the present study, one limitation was that none of these tasks were designed to yield high intensity valences of positive emotions. Future studies of children's emotion self-regulation in very positive contexts would complement these findings.

Preschoolers' choice of self-regulatory strategies during the interference task may be related to their individual styles of emotion regulation, that emerge as a result of repeated interactions between biological factors and the social environment. The development of this type of regulatory style was proposed in Maughan and Cicchetti's (2002) theory of Emotion Regulation Patterns (EMRPs). This system describes three patterns of emotional and behavioral responding that children are most likely to exhibit in various situations they are exposed to. It proposes the existence of emotion regulatory 'prototypes' related to factors such as child temperament and personality. Further

research is needed on the consistency of these styles of emotion regulation to determine whether these are in fact what account for some children to rely on the use of one strategy (e.g. negative attention seeking) over another (e.g. self-comfort; Bridges et al., 2004).

Another main objective of the current study was to examine how maternal childhood histories of aggression and social withdrawal were associated with preschoolers' use of self-regulatory behaviours. It was hypothesized that maternal childhood histories of aggression and social withdrawal would be predictive of preschoolers' negative coping strategies. Hypotheses were partially supported, in that maternal histories of social withdrawal were predictive of attention-seeking behaviours during both the interference and free play tasks.

With regards to social withdrawal, it was found that mothers' histories of social withdrawal predicted significantly more negative and less prosocial attention seeking in their children during the interference task. Childhood social withdrawal has been associated with unresponsive parenting and an unstimulating environment (Serbin et al., 1998). Maternal unresponsiveness results in an increase in children's frustration levels (Pipp-Siegel, 1996), which may account for children having resorted to more negative styles of attention seeking during the interference task. Interestingly, in the free play task, maternal histories of social withdrawal predicted children's more frequent use of both types of attention seeking. This task was marked by mothers' resumed play with their child, and thus children were no longer expected to regulate their emotions with complete independence. During this period, mothers were engaged with their child, therefore attention-seeking cannot be explained by frustration arising due to maternal unresponsiveness. Children's use of both types of attention seeking in this scenario may

be attributed to a carry-over effect of feeling ignored by their parent during the interference task. Children may have used multiple strategies of attention seeking in attempts to maintain their mothers' engagement, and avoid the distance she had displayed moments before. Taken together, the goals of children's bids for attention differed based on the interaction contexts in which they occur.

Surprisingly, maternal histories of aggression were not predictive of preschoolers' difficulties in emotion self-regulation. However, this behavioural style has been associated with a myriad of developmental, behavioural, and health problems in offspring (see Stack, Serbin, Schwartzman, & Ledingham, 2005 for review). For example, past studies with the Concordia Project sample have shown that aggressive girls are at-risk for increased academic and cognitive difficulties (Schwartzman, Ledingham, & Serbin, 1985) as well as more antisocial behaviour (Serbin, Marchessault, McAffer, Peters, Schwartzman, 1993). There are several potential explanations for the lack of findings in the present study First, the novelty inherent in the tasks may have had more of an impact on offspring of socially withdrawn mothers compared with offspring of aggressive mothers. A situation high in novel stimuli, such as the tasks in the current study, may have posed more of a regulatory challenge for children with higher levels of behavioural inhibition, compared to children with behavioural activation. Further, had the context provided greater opportunity for frustration, children of aggressive mothers may have had similar difficulties regulating their emotions. Findings may suggest that the tasks in this study elicited poorer regulation in children who shy away from novel situations. Finally, while some research supports the intergenerational similarity of aggressive behaviours (Huesmann, Eron, Lefkowitz, & Walder, 1984; Serbin et al., 1998), other literature fails

to find similarity from one generation to the next (Cohen, Kasen, Brook, Hartmark, 1998; Cairns, Cairns, Xie, Leung, & Hearne,1998). Cohen and colleagues (1998) found greater intergenerational similarity for behavioural inhibition compared with aggressive temperamental characteristics. As such, the current findings reflect previous literature supporting an intergenerational association of social withdrawal, but not of aggression. In addition, the limited sample size in the current study may explain the nil effect of maternal childhood aggression in predicting their children's behaviours.

Although not a specific hypothesis of the current study, higher levels of maternal education predicted more prosocial behaviour in preschoolers during the clean up task. Conversely, lower levels of maternal education were linked with more child fretting. This is consistent with findings that mothers' educational attainment is linked to improved parenting abilities (Velez, Johnson, & Cohen, 1989). More educated women may have a greater understanding of child development (Serbin et al., 1998), which can lead to modeling more appropriate responses to challenging situations. While cleaning up toys is a task that is not necessarily enjoyable for young children, mothers with higher levels of education may have scaffolded or coached children differently throughout the task, as well as having prepared them over time to deal with such situations in a more prosocial manner.

Despite the association between preschoolers' self-regulatory behaviours and the contexts in which they occurred, no sex differences accompanied these findings. This was surprising, given that gender differences in externalizing behaviour become more pronounced during the preschool years (Keenan & Shaw, 2003). It has been found that since girls experience faster biological, cognitive, and social maturation than boys, they

may acquire more adaptive methods of controlling their behaviour at an earlier age (Keenan & Shaw, 1997). These factors lead to the expectation that boys would display more externally-oriented regulatory strategies (e.g. non-compliance, overactivity) than girls, especially during interference and clean up tasks. However, more recent work (Hill et al., 2006), found that while girls were more advanced than boys in terms of emotion regulation at age 2, comparable levels of emotion regulation were observed in boys later in the preschool period. Since the mean age of children in this study was 4.64 years, this is a possible explanation for the absence of sex differences in self-regulatory behaviours.

The final objective of the preschool portion of the study was to determine whether mothers' use of constructive or non-constructive behaviours during the interference task influenced the type of emotion self-regulation behaviours employed by their child. These maternal behaviours were coded in order to increase understanding of the bi-directional influence between preschoolers' emotion regulation and mothers' behaviours. It was hypothesized that mothers who displayed non-constructive verbal behaviour during the interference task would have children who displayed more negative self-regulatory strategies during this task. Finding supported this hypothesis in that mothers' use of non-constructive verbal expressions predicted more child fretting, overactivity, negative attention seeking, self-comfort, and escape behaviour. In addition, mothers who used non-constructive verbal expressions had children who exhibited less prosocial behaviours. Based on the instructions provided prior to the interference task, mothers were allowed to respond to their child as they saw fit throughout the task, approximating natural responses to children when parents are occupied. When mothers provided constructive responses to bids for attention, their children exhibited more prosocial

behaviours. The provision of constructive verbal support during a task that elicited the most emotion (interference task), may have served a scaffolding function for children's abilities to regulate. It has been found that mothers who scaffold less effectively have children who are more emotionally dysregulated (Hoffman, Crnic, & Baker, 2006).

Following the examination of maternal behaviours during the interference task, self-regulation was explored longitudinally. One objective was to determine if the use of emotion self-regulatory behaviours at 5 ½ months was predictive of the use of similar types of behaviours in the same children as preschoolers. It was found that infants' self-comfort, attention seeking, and fretting predicted preschoolers' negativity (high negative attention seeking, fretting, and overactivity). While there was an association between attention seeking and fretting at both time points, the relation between infants' self-comfort and preschoolers' negativity was more surprising. It is possible that children who self-comforted more had difficulty expressing their frustration or discomfort, but developed this ability over time. These results suggest that very early regulatory behaviours can be an important indicator of future child behaviours. Thus, findings from the present study provide some support for the continuity of regulatory behaviours across developmental stages (Rothbart, Ahadi, Hershey, & Fisher, 2001).

Another objective was to examine whether emotion self-regulation strategies used by preschoolers were predictive of problem behaviours in the same children in their early elementary school years. Results indicated that preschoolers' use of other-oriented regulation was predictive of both mother- and teacher-reported internalizing problems, as well as teacher-reported total problems on the CBCL. No regulatory behaviours predicted externalizing behaviours, although problems regulating negative emotion are

often considered to be one indicator of externalizing behaviour problems (Campbell, Shaw, & Gilliom, 2000). Among school-aged children, externalizing problems are associated with lower emotion regulation skills, such as difficulty with attention and focus (Eisenberg et al., 1996, 2000, 2001). In the present study, other-oriented regulation in preschoolers was predictive of internalizing problems. Based on the constellation of variables making up the "other-oriented regulation" factor, it is possible that these children, who were low on self-comfort and high on prosocial attention seeking with their mothers, were more shy or withdrawn in the classroom setting. It has been found that children with internalizing difficulties tend to be more shy in the classroom than at home (Asendorpf, 1993). Since observations at the preschool age were only made in the home, it is possible that these children would have resorted to less other-oriented regulation, had they been in the classroom. Looking to their mothers to assist them with regulation may point to early indices of difficulty with internally managing their emotions.

The present study took a first step in examining emotion self-regulation in preschoolers within the Concordia Project. Investigating the co-occurrences of emotion regulation behaviours within mothers and children individually, as well as between the dyads, would be an exciting next step. This would allow for the consideration of mothers' emotion regulatory styles and the examination of how they relate to those of their children. Findings of such a study would extend Maughan and Cicchetti's (2002) work on examining Emotion Regulation Patterns (EMRPs), by adding an intergenerational component. The current study paves the way for the longitudinal measurement of the development of emotion self-regulation. Investigating mother-child interactions from early childhood through adolescence will bring to light continuities and

discontinuities in the development of emotion regulatory abilities within this high-risk sample. Since poor emotion regulation has been linked to problematic behaviours in adolescence (Gardner et al., 2008), examination of direct and indirect pathways of its development will contribute to this growing body of research.

Taken together, results from the present study offer several unique contributions to the literature, potentially engendering interest for new research directions in the study of the development of emotion regulation in young children. First, differences in self-regulatory behaviours based on context differences were examined, as has been recommended in extant literature. Second, few studies have examined the development of emotion self-regulation over time. Results from this study highlight the longitudinal progression of certain self-regulatory skills from infancy through the preschool age. Third, results underscore the relationship between maladaptive behaviour such as maternal histories of social withdrawal and their children's emotion self-regulation. To date, this appears to be one of the first studies to assess these particular self-regulatory strategies within a prospective, longitudinal, intergenerational sample of high-risk families. Fourth, results call attention to the fact that poor early self-regulatory abilities may be predictive of behavioural difficulties when children enter the school environment. Together, results speak to the importance of helping children develop adaptive regulatory skills from a young age and have implications for the design of preventive intervention programs to foster children's socio-emotional competence.

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Appendix A

Sample Items from the Pupil Evaluation Inventory (PEI)

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.

Likeability Items

14. Those who everyone likes.

17. Those who have very few friends.

24. Those who are particularly nice.

34. Those who appear to always understand what's going on.

Appendix B

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 C

Preschooler Self-Regulatory Scheme (PSRS)

Preschooler Self-Regulatory Scheme (PSRS)

Elana G. August and Dale M. Stack, 2010

This coding system is designed to measure preschoolers' emotion self-regulation across a variety of contexts, including a puzzle, interference, free play, and clean up task. These tasks involve the interaction between mothers and their preschool-aged children. Codes for the frequency of self-regulatory behaviours were assigned in 10-second intervals. The PSRS was developed for the purposes of the present study and is based in part on existing literature (Dennis, 2006; Grolnick, Bridges, & Connell, 1996; Martin-Storey, Serbin, Stack, & Schwartzman, 2009) and in part on the Infant Self-Regulatory Scheme (ISRS; Millman, Jean, & Stack, 2007).

I. Fretting

a) Anger

Child is overtly upset, mad, displeased, or angry regarding the situation at hand. Anger is a more intense manifestation of Frustration/Irritability. Negative vocalizations may accompany facial features.

Examples:

- eyebrows are furrowed
- child is visibly frowning
- jaw is clenched

b) Frustration / Irritability

Child is upset with mother, self, or objects, as demonstrated by negative vocalizations, sighing, or frowning. This is to be coded when the intensity of the negative mood is deemed to be less severe than 'Anger'. Frustration/Irritability cannot be coded if the behaviours meet criteria for 'Anger'.

Examples:

- whining
- negative tone of voice
- head in hands
- "Je ne suis pas capable!"

c) Crying

Child tears up, cries, whimpers, or sobs. Crying may accompany either 'Anger' or 'Frustration/Irritability'.

II. Non-Compliance

This is a general category of non-compliance which includes both active and passive forms of non-compliance.

a) Active Non-Compliance / Resistance
The child does not comply with instructions or requests provided by the mother. The child overtly refuses to do what is asked of him/her and may express displeasure with being told what to do. The child may overtly challenge the mother's requests. Active non-compliance/resistance can be coded for both verbal and non-verbal behaviours.
Examples:

- "Non! Je ne veux pas ranger les jouets!"
- "Arrete de me dire quoi faire!"
- Upon being asked to clean up, the child expressly takes out new toys and starts playing, so as to challenge the mother.
- The child may throw the toys around in order to make cleaning up more difficult.

b) Passive Non-Compliance
The child does not comply with instructions or requests provided by the mother. The child disregards or ignores what mother says and acts as if he/she has not heard their mother or does not appear concerned with what she is saying. While the child does not *overtly* oppose what mother says, he/she does not respond in a compliant manner with the request. *Time info*: non-compliant behaviour must continue for more than 5 seconds (thus lasting for at least half of an interval) in order to be coded.
Example:

- When the mother asks her child to clean up, the child continues to work on the puzzle as though he/she has not heard instead of cleaning up the toys.

*****Note: if mother permits child to finish activity that he/she is engaged in before moving on to the next task, the behaviour is not considered non-compliance.

III. Overactivity
Child is more active than is required to be by the task(s) at hand. Overactivity should not be coded for verbal expression, such as when a child talks quickly and excitedly to his/her mother or self.
Examples:

- child flails arms and legs
- child stands up and sits down repeatedly without needing to do so for the task at hand
- child repeatedly taps hands and/or feet
- excessive leg shaking
- bouncing up and down
- squirming

*Note: overactivity cannot be coded if the behaviour meets criteria for self-soothing behaviour or attention seeking motor movements

IV. Negative Attention-Seeking
a) Touch

The child's hands are in physical contact with the mother's body, including clothing, hair, etc. In the case of the interference task, the child may also touch the clipboard that his/her mother is working on in order to capture her attention.

b) Increasing Proximity to Mother: Child leans forward in the direction of the mother, gets closer to the mother. This should only be coded if it is clear that the child has purposely changed positions in order to be closer to his/her mother.
*If the child has moved towards the mother in previous time intervals and then remains close to her for the remainder of the task, "Increased Proximity" is only coded once. "Increased Proximity" may be coded again, if, in subsequent intervals, the child continues to move closer to his/her mother.

c) Motor Movements: Child makes exaggerated movements with his/her body or toys to get mother's attention.
Examples:

- child waves toys around in the air to get mother's attention
- child jumps up and down to get mother's attention

d) Exaggerated/Repeated Vocalizations: Persistent and sometimes loud vocalizations by the child with or without looking at his/her mother, who is not engaged in the interaction.
Examples:

- child speaks in animated funny voices to get mother's attention
- child repeatedly says "Maman! Maman! Maman!"

V. Prosocial Attention Seeking: Child seeks mother's attention in a friendly, calm, and prosocial manner.
Examples:

- in a calm manner, child attempts to show or tell mother what he or she is doing
- child inquires as to what his or her mother is doing, when she will play with him/her again
- child asks mother a question in a normal tone but does not persist if mother does not respond

VI. Self-Comfort
a) Self-Talk: Child talks to him/herself throughout a task with or without the purpose of guiding.
Example:

- child talks to him/herself to help figure out where puzzle pieces go

b) Self-Sing: Child hums and/or sings to self while putting together the puzzle. The song can have words or no words and can be made up or an existing song.

c) Self-soothe: Child attempts to self-soothe by tapping/touching/pulling/grasping/rubbing any body part or object. Thumb sucking,

repeated ear rubbing, repeated clothes tugging. Child engages in these behaviours while continuing to concentrate on another task or object.

VII. Escape: Child attempts to increase the physical distance between him/herself and mother. Child is trying to leave the area where the tasks are taking place by crawling, sliding, walking away from mom. Child must get up to leave the area without asking for or receiving permission beforehand.

VIII. Prosocial Behaviours
a) Smiling: Positive facial expression that shows child's amusement, happiness, satisfaction, or affection. The duration of the smile must be 2 seconds.

b) Laughter: Any giggle, chuckle, or laugh of any intensity. The duration of the laughter must be 2-3 seconds.

c) Cooperation
Helping, working with mother, listening, following instructions, joint concentration. Both parties must be engaged in a common task.
Examples:

- child listens or watches as mother shows him/her where a specific puzzle piece goes
- child shows mother that he/she has figured out something about the puzzle
- child and mother simultaneously work on the puzzle together, with or without speaking to one another
- child and mother clean up the toys together, with or without speaking to one another

d) Prosocial Exclamation
Child excitedly talks to mother about tasks or other things. Child engages in the task while making positive statements about it.
Example:

- says "ahah!" when finding a puzzle piece

e) Individual Play
Child concentrates on task alone, without the help or guidance of mother. This category includes parallel play and is often observed during the interference task.

Appendix D

Maternal Constructive and Non-Constructive Behaviour Scheme

Maternal Constructive and Non-Constructive Behaviour Scheme

Elana G. August and Dale M. Stack, 2010

This coding system was designed to examine mothers' use of constructive and non-constructive verbalizations during the interference task. The interference task involved the mother completing questionnaires, while her child was left to occupy him or herself. Codes for the frequency of constructive and non-constructive behaviours were assigned in 10-second intervals.

I. Constructive Verbalizations

a) Positive Verbal Expressions : Mother provides expressions of praise, expressions of affection, or positive vocalizations.

Examples:

- "bravo!"
- "tu es très bonne a ca!"
- "c'est beau mon amour!"

*****This is the polar opposite of "negative verbal expressions"

b) Support, Reassurance, Encouragement: Mother facilitates the behaviours that the child is already engaged in by verbally assisting and encouraging the child in a prosocial manner. This includes the mother explaining the interference task to the child while setting up to complete her questionnaire.

Examples:

- "continue!"
- "oui, c'est ca, tu sais comment le faire!"
- "maman va t'aider bientot"
- "maman va remplir le questionnaire"
- "continue à jouer"

c) Redirection (constructive): Mother suggests new methods, strategies, tips, or guidelines. The aim of redirection is to change the way the child is approaching the task in order to make the task easier , more productive and, less frustrating for the child. Constructive redirection can be both broad or specific. If the child is not engaged in any task, the mother may redirect him/her to the puzzle, etc. in a broad manner. If the child is having difficulty with the task at hand, the mother may suggest specific techniques to redirect the child within the task.

Examples:

- *Broad Redirection*: “complete le casse tete pendent que maman termine le questionnaire”, “essaye un autre casse tete”
- *Specific Redirection*: “essayons de trouver les coins en premier”, “ca aide de mettre les morceaux comme ca”, “regarde, il fault trouver des morceaux bleu pour le ciel du casse tete”

I. Non-Constructive Verbalizations

a) Negative Verbal Expressions: Mothers express discontent, sternness, scolding, unwillingness to assist the child.

Examples:

- “non!”
- “arrête ca!”
- “parle moi pas”
- “arrête de me déranger”
- “je ne peux pas t’aider maintenant”

*****This is the direct opposite of “positive verbal expressions”

b) Redirection (Non-Constructive): Mother redirects the child in a way that does not facilitate the task at hand. The mother’s guidance does not ease the difficulties that the child may be having with the task. The redirective comments made by the mother may be neutral, thus neither helping or hindering the child’s activities. In contrast to Constructive Redirection, which can be both broad and specific, Non-Constructive redirection is always broad in nature. Maternal ambiguity does not help the child’s understanding of the task.

Examples:

- “Fait d’autre chose”
- “Regarde comme il faut”
- “Maman est occupée, essaye encore”

II. Other

a) Ignore: Child addresses mother but mother does not respond in any way.

Examples:

- Child: “Maman regarde j’ai compléter le casse tete!” Mother: No response.
- Child: “Je ne suis pas capable!” Mother: No response.

b) Checking

Definition: Mother spontaneously looks up to observe what the child is engaged in or if they are alright. Checking cannot be coded if the mother is looking toward the child in response to attention seeking behaviours.

Example:

- Child has been quiet for 40 seconds, mother looks at him/her briefly.

c) Questionnaire
Mother is working on completing questionnaire, as requested by the researcher.

Appendix E

Demographic Information Questionnaire (DIQ)

ID #_____

L'INDIVIDU DANS SON MILIEU

Renseignements sociodémographiques

Tous ces renseignements sont traités de façon totalement confidentielle

1. **Sexe** □ M □ F

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

3. **État civil**

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

		Depuis quelle date?
□ Célibataire	□ Conjoint	
□ Marié(e)	□ Séparé(e)	AN MO JR
□ Divorcé(e)	□ Veuf/veuve	_____ _____ _____

4. **Nombre d'enfants** _____

Si enceinte (ou conjointe enceinte), bébé attendu pour: ____ ____
AN MO

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

Pour <u>chaque enfant</u>:

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

2 - Encercler "**TE**" si c'est ton enfant (tu es le parent biologique)
"**EC**" si l'enfant du conjoint (le conjoint actuel est le parent biologique)
"**EA**" si c'est un enfant adopté /"**FA**" en foyer d'accueil et qui vit chez toi
Si "TE" et "EC" sont vrais, encercler les deux.

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

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

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

1 NOM SEXE AN MO JR

_____ □ M □ F ____ ____ ____

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

Année scolaire: _____ Classe spéciale: _____

2 NOM SEXE AN MO JR

_____ □ M □ F ____ ____ ____

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

Année scolaire: _____ Classe spéciale: _____

3 NOM SEXE AN MO JR

_____ □ M □ F ____ ____ ____

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

Année scolaire: _____ Classe spéciale: _____

4 NOM SEXE AN MO JR

_____ □ M □ F ____ ____ ____

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

Année scolaire: _____ Classe spéciale: _____

5. **Ta scolarité** complétée (dernière année terminée):

En quoi? (spécialisation/général): _____

Étudies-tu présentement? OUI : Temps plein □ partiel □ NON □

Si oui, quel diplôme postules-tu _____ pour quand?___/___/___/

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

OUI □ NON □

Occupation: _____ As-tu déjà eu un emploi?

_____

Oui □ Non □

Tes tâches: _____ ⇓

_____ En quoi?

_____

Combien d'heures/sem.? _____

Pendant combien de temps?
____ an(s) ____ mois

Salaire de l'heure _____ $

Quand as-tu arrêté de travailler:
date: ____/____/
AN MO

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

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

Oui □ Non □ l'Assurance chômage?

Oui □ Non □ Prestations d'aide sociale?

Oui □ Non □ la CSST? (préciser:_____)

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

AN MO JR

a) Son nom:_____Date de naissance ____ ____

Son occupation:_____

Ses tâches:_____

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

AN MO

Il/Elle travaille là depuis: date ____ ____

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

Oui □ Non □ l'Assurance chômage?

Oui □ Non □ Prestations d'aide sociale?

Oui □ Non □ la CSST? (préciser:_____)

c) Sa scolarité complétée (dernière année terminée):
En quoi? (spécialisation/général):_____

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

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

8. **Informations sur le père\la mère de tes enfants (si n'habite pas avec toi)**

AN MO JR

a) Son nom:_____ Date de naissance ____ ____

Son occupation:_____

Ses tâches:_____

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

AN MO

Il/Elle travaille là depuis: date ____ ____

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

Oui □ Non □ l'Assurance chômage?

Oui □ Non □ Prestations d'aide sociale?

Oui □ Non □ la CSST? (préciser:_____)

c) Sa scolarité complétée (dernière année terminée):
En quoi? (spécialisation/général):_____

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

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

9. **Disponibilité pour l'entrevue**: un bloc de 2-3 heures

□ Le matin □ L'après-midi
□ Le soir □ La fin de semaine

10. **Je préfère aller à** _____ Guy et Maisonneuve (centre-ville)
_____ 7141 Sherbrooke ouest (N.D.G.)

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

_____ _____
No Rue app.

_____ _____ _____
Ville Code postal

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

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

_____

Adresse électronique: _____

Adresse des parents: _____

_____

_____