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**The Implications of Future Time Perspective and Planning Ability for
Children's Emotion Regulation.**

Leah M. Puddester

Dissertation submitted to the School of Graduate and Postdoctoral Studies

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Dedication

To my parents:

Mom and Dad.....

This accomplishment is every bit as much yours as it is mine

My Heavenly Father....

Thank you for giving me the strength to perservere through every circumstance.

*"For I know the plans I have for you," declares the Lord, "plans to prosper you
and not to harm you, plans to give you hope and a future"."*

Jeremiah 29:11

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Abstract

Studying emotion regulation in childhood has particular importance for understanding the developmental trajectory of these abilities, as well as for informing preventative work that could offset later psychopathology. Gross (1998a) has distinguished between *antecedent*- and *response-focused* emotion regulation strategies, and has shown that emotion regulation strategies that occur earlier in the emotion generative process have more favourable outcomes. The first step in *antecedent* emotion regulation is *situation selection*, which involves seeking out or avoiding certain situations or environments in order to regulate emotion. In fact, there is a growing psychological literature on children's environmental choices, or environmental *niche picking*, and how they may affect self-regulatory processes such as emotion regulation. To date, most research has focused on environmental choices for preferred (favourite) environments, and little attention has been focused on non-preferred environments, namely the school playground - the predominant social environment in which children spend their formative years. One's ability to plan, think about the future, and delay immediate gratification are also thought to be important factors in *antecedent-focused* emotion regulation, as such skills allow an individual to move beyond immediate concerns. Few studies have investigated the relationship between emotion regulation and children's future time perspective and planning ability.

The present study sought to add to existing research on emotion regulation by investigating the mechanisms by which children develop healthy emotion regulation skills. It was hypothesized that children who scored higher on future time perspective and

planning ability would demonstrate better emotion regulation and be rated by peers as less aggressive. It was also hypothesized that any relationship between emotion regulation and aggression would be mediated by future time perspective and/or planning ability. Participants were 82 elementary school students in grades 3 (13 females, 15 males), 4 (17 females, 13 males), and 5 (17 females, 7 males). Parents and homeroom teachers of children also participated by completing the Lability/Negativity scale of the Emotion Regulation Checklist (Shields and Cicchetti, 1997). Children completed peer nomination measures of social behaviour using the Revised Class Play (Masten, Morrison, and Pellegrini, 1985) and one measure of emotion regulation, the Environmental Choices task (Ledingham, Rafter, & Genot, 1995). Children also completed two measures of means-end thinking: the Children's Time Perspective Inventory (Myers, 2000), and the Woodcock-Johnson III Test of Cognitive Abilities - Planning subtest.

Results indicated that children as young as the age of 7 could be classified as having a future time perspective, and that future time perspective significantly predicted peer nominations of children's aggression. In addition, children's planning ability, as measured by the Woodcock-Johnson, played a significant role not only in predicting children's self-reported emotion regulation reasons for environmental choices, but also in accounting for parent ratings of children's emotion regulation. This study also highlighted the importance of environmental niche picking for emotion regulation, with a majority of children indicating that they actively used different locations on the playground to help them regulate their negative emotional states. Contrary to hypotheses, there was no evidence that future time perspective or planning ability mediated the

relationship between emotion regulation and aggression. Limitations and implications of the current findings are discussed.

The Implications of Future Time Perspective and Planning for Children's Emotion Regulation

A rich tradition of research has documented the crucial role that emotions play in many aspects of daily living, and their impact on adaptation to life stressors and circumstances. Many investigators hold that emotion is fundamentally adaptive in nature, helping the organism to process complex situational information rapidly and automatically in order to produce actions appropriate for meeting important personal needs such as self-protection and social support (Frijda, 1986; Greenberg & Safran, 1987; Lazarus, 1991; Tomkins, 1963). Emotions are said to surface when an individual attends to a particular event and sees it as relevant to his or her goals (Gross & Thompson, 2007). They are thought to coordinate experience, provide it with direction, and give it a sense of unifying wholeness. In other words, emotions tell people what is important, and knowing what is important tells them who they are and what they need to do (Elliot, Watson, Goldman, & Greenberg, 2004). Emotions are also thought to serve important social functions, such as helping to provide information about behavioural intentions (Ekman, Friesen, & Ellsworth, 1972; Fridlund, 1994), giving clues as to whether something is good or bad (Walden, 1991), and helping generate flexible scripts for complex social behaviour (Averill, 1980). Nevertheless, the experience of emotion can also lead to negative consequences. Given the varied proposed functions of emotions, an important theoretical issue in the literature is to identify those factors that contribute to the regulation of emotions.

Emotion Regulation

Humans are continually faced with emotion-eliciting situations that call for the inhibition or expansion of emotional experience and/or expression. Indeed, one of life's greatest challenges is learning how to manage, or regulate, emotions effectively.

Contemporary research on emotion regulation is considered to have its roots in the examination of psychological defenses (Freud 1926/1959), in stress and coping research (Lazarus, 1966), in attachment theory (Bowlby, 1969) and in emotion theory (Frijda, 1986). Research on this topic has increased dramatically in the last decade (Gross & Thompson, 2007) and efforts have been made to clarify the construct of emotion regulation (Calkins, 1994; Campos, Campos, & Barrett, 1989; Cole, Michel, & Teti, 1994; Kopp, 1989; Thompson, 1994; Walden & Smith, 1997). The current study utilized the definition and process model proposed by Gross (1998b), who defines emotion regulation as:

“The processes by which individuals influence which emotions they have, when they have them, and how they experience and express these emotions. Emotion regulatory processes may be automatic or controlled, conscious or unconscious, and may have their primary effects at one or more points in the emotion generative process. Because emotions are multi-componential processes that unfold over time, emotion regulation involves changes in the latency, rise time, magnitude, duration, and offset of responses in behavioral, experiential, or physiological domains” (p. 530).

An important point to highlight is that this definition distinguishes between emotion regulation and the broader constructs of coping and self-regulation. Coping includes the

full range of behaviour emitted by an individual in taxing circumstances (Costa, Sommerfield, & McCrae, 1996), and can be defined as the organism's effort to manage its relations with an environment that taxes its ability to respond, with a predominant focus on decreasing negative affect (Lazarus & Folkman, 1984). It includes nonemotional actions to achieve nonemotional goals (Scheier, Weintraub, & Carver, 1986), such as buying a map to plot a course in a new city. Coping also differs from emotion regulation in that the unit of analysis in coping is typically longer - extended periods of hours, days, or months rather than seconds or minutes (Gross, 1999). Emotion regulation can also be distinguished from another closely linked term, self-regulation. Self regulation, like coping, refers to the many processes over which individuals exercise control and has been defined as efforts by the human self to alter inner states or responses, including thoughts, emotions, impulses, appetites, goal-oriented behaviour, and attention (Vohs & Baumeister, 2004). Although self-regulation may involve altering emotions, it is not exclusive to this function. In addition, self-regulation is inherently future-oriented. It has a longer projection into the future than emotion regulation, extending well beyond the individual's present state in the service of goals that individuals pursue over weeks, months, years, or even decades (Little, 1993).

Emotion regulation denotes the set of processes whereby individuals manage their emotional states (Koole, 2008). Eisenberg (2001) has defined emotion regulation "as the process of initiating, maintaining, modulating, or changing the occurrence, intensity, or duration of internal feeling states, emotion-related physiological processes, and the behavioral concomitants of emotion" (p. 120). Some have suggested that emotion regulation is one specific type of self regulation (Tice and Bratslavsky, 2000).

A Process Model of Emotion Regulation

Gross (1998a) developed a model of emotion regulation that outlines the various stages of the process. Figure 1 presents a process model of emotion regulation. An important facet of this model is that individuals have the power to modulate their response tendencies, and that these modulations ultimately determine the final shape of the emotional response (Gross, 1998b). A central assumption of this theory is that emotion unfolds over time, and that therefore emotion regulation strategies must be distinguished in terms of when they have their primary impact during the emotion-generative process (Gross & John, 2003). The concepts of *antecedent-focused* and *response-focused* emotion regulation strategies represent two important categories in the process model.

Antecedent-focused emotion regulation refers to the things that we do before emotion response tendencies have become fully activated and have changed our behavior or physiological responding (Gross & John, 2003). The process model identifies four stages of antecedent-focused emotion regulation: *situation selection*, *situation modification*, *attentional deployment*, and *cognitive change*.

Situation selection. The first step outlined in the process model is *situation selection* and represents the most proactive approach that may be adopted in emotion regulation. *Situation selection* involves actively taking steps that increase the probability that a situation will produce favourable outcomes. It involves seeking out or avoiding certain situations in order to regulate emotions. An example might be avoiding a location that evokes painful memories or seeking out a friend with whom one can have a good cry (Gross, 1998a).

Situation selection necessitates knowledge of the likely features and nuances of particular situations, as well as probable emotional reactions to the given environment. Such a process is not as straightforward as it may appear, as situation selection often involves strategically evaluating the short-term benefits of emotion regulation versus the more distal future costs. For example, an anxious individual may experience immediate relief from avoiding a social event, but at the risk of engendering long-term social isolation. Early emotional life is strongly affected by situation selection even though infants and young children are less able to choose their circumstances for themselves because parents or other adults make situational choices for them (Gross & Thompson, 2007). Nevertheless, for these children it does not yet constitute a voluntary means of emotion regulation.

Situation modification. Situation modification refers to active efforts to directly modify a situation so as to alter its emotional impact. The line between situation selection and situation modification can be a thin one, as active efforts to modify a situation can sometimes result in the creation of a new situation. In earlier life, parents often initiate situation modification, such as redirecting a frustrated child to a less demanding task. In adulthood, modification can be diverse. For example, the emotional consequences of getting a flat tire on the way to an important meeting can be neutralized by converting the meeting into a conference call (Gross, 1998b). In this model, situation modification refers to changes in the external or physical environment one is in.

Attentional deployment. Attentional deployment refers to turning one's attention toward or away from something in order to influence one's emotions, such as when an infant shifts its gaze from an emotion-eliciting stimulus to decrease stimulation (Gross,

1998a). In fact, attentional deployment is one of the first forms of emotion regulatory processes to emerge, and is a regulatory strategy thought to be used extensively across the lifespan, especially when situation selection or modification is not possible (Rothbart, Ziaie, & O'Boyle, 1992). Attentional deployment can take many forms, such as physical withdrawal of attention (e.g., covering one's eye or ears to avoid a stimulus), internal shifts of attention (e.g., distracting oneself, focusing on different aspects of a situation), or responding to some other person's redirection of our attention (Gross & Thompson, 2007).

Cognitive change. Lastly, *cognitive change* consists of modifying the cognitive evaluations that give meaning to emotional situations (Gross, 1998b). In childhood, cognitive appraisals related to emotion are influenced by developing representations of emotions, which include the cause and consequences of emotions (Stegge & Meerum Terwogt, 2007). Parents and caregivers shape how children evaluate and respond to emotion-relevant situations by the information they provide about the circumstances, the explanations they offer about the causes of emotions the child feels or sees in others, and the “feeling rules” or emotion scripts they impart (e.g., big boys don't cry; Gross & Thompson, 2007). The importance of these developmental influences on children's representations of emotion and emotion regulation is reflected in cultural comparisons of children. One study found that, as early as age 6, Nepalese children differed significantly from North American children in their beliefs about whether negative emotions should be visibly expressed (Cole, Bruschi, & Tamang, 2002). Such work suggests that children's cognitive appraisal of emotion is influenced by both culture and early socialization processes in the home (Gross & Thompson, 2007).

The form of cognitive change given most importance in Gross' (1998a) model and in interventions is *reappraisal*, which involves construing a potentially emotionally charged situation in a way that changes its emotional impact. For example, during a graduate school interview, one might view the interview as an opportunity to determine how much one likes the school, rather than as an interrogation or test of one's personal worth (Gross & John, 2003).

Response-focused emotion regulation. The alternative to antecedent-focused emotion regulation is *response-focused* emotion regulation, which refers to things we do once an emotion is already underway and response tendencies have been activated (Richards, Butler, & Gross, 2003). The mechanism of emotion regulation that may be adopted at this stage of the model is referred to as *response modulation*, which involves direct influences on physiological, experiential, or behavioral responding (Gross, 1998b). The most common form of *response modulation* is *expressive suppression*, the inhibition of ongoing emotion expressive behavior, such as keeping a poker face while holding the winning hand or holding back tears in a moment of devastation (Gross & John, 2003), in other words controlling the outward expression of an emotion but not necessarily changing the valence or internal experience of that emotion.

What is important to keep in mind is that not all emotion regulation strategies produce equally effective emotion regulation. In fact, there is clear empirical support for the greater benefits of antecedent-focused emotion regulation (e.g., situation selection and reappraisal), and the greater costs of response-focused emotion regulation (e.g. suppression). Gross and John (2003) compared individuals in terms of their use of reappraisal and suppression strategies. These authors found that individuals who reported

more frequent use of reappraisal strategies had greater experiences of positive emotions and expressed less negative emotion than those individuals who used reappraisal less frequently. Furthermore, individuals who habitually used reappraisal strategies showed fewer symptoms of depression, reported greater life satisfaction, were more optimistic, and had higher self-reported levels of self-esteem. These findings suggest an encouraging affective profile for reappraisers: it is not that they are experiencing and expressing more emotions in general, but rather, it seems that they have learned to successfully regulate their negative emotions in particular (Gross and Levenson, 1995). In general, there is more empirical work examining the importance of reappraisal than examining the significance of situation selection for effective emotion regulation. The present study uses one new measure of emotion regulation that is based on situation selection to explore the utility of this aspect for effective emotion regulation.

Developmental Processes Involved in Emotional Regulation

The emergence of emotion regulation processes is proposed to occur very early in life, within the first weeks to months (Kopp, 1989). Early efforts at emotion regulation occurring prior to 3 months are thought to be largely controlled by innate physiological processes (Derryberry & Rothbart, 2001; Kopp, 1992). These efforts primarily take the form of attentional regulation (e.g., gaze aversion), self-soothing (e.g., sound making and rubbing self), and non-nutritive sucking.

The period of 3 to 6 months denotes important transitions in development and emotion regulation skills. At this time, infants are exhibiting some regularity in their sleep/wake and feeding cycles, signaling an important biological transition (Calkins & Hill, 2007). At this age, infants are also starting to use simple motor skills voluntarily to

alter their arousal levels. Such increases in control allow the infant to use attention engagement and disengagement, especially when faced with aversive stimuli (Harman, Rothbart, & Posner, 1997; Kochanska, Coy, & Murray, 2001). In other words, when faced with aversive stimuli, infants are now able to voluntarily shift their attention from what is distressing them to a more neutral focus.

By the one-year mark in life, infants are said to be more purposeful and active in their efforts to manage affective arousal (Kopp, 1992). Their motor behaviour becomes more organized and sequential in terms of redirection and self-soothing, suggesting that they are responsive to environmental cues. Although infants express emotion almost immediately, at this stage of development the sophistication of these expressions is developing quickly (Lewis, Sullivan, Ramsay, & Alessandri, 1992). Such sophistication now seems to be serving a regulatory purpose by clearly signaling to caregivers their emotional states, which most often results in parents offering assistance in regulation (Southam-Gerow & Kendall, 2002). The successful use of these behaviours is said to be critical in the transition from passive (parent-directed) to active emotion regulation (Calkins, 2002).

By the second year of life, the transition from passive to active emotion regulation is thought to be complete (Rothbart, Ziaie, & O'Boyle, 1992). Toddlers are not yet autonomous in controlling their affective states, but they are capable of invoking specific strategies to attempt to manage their emotions (Calkins & Dedmon, 2000). There are also important brain developments at this stage wherein, by the end of toddlerhood, children display executive control skills that help them control arousal and emotional reactivity in a greater variety of situations (Rueda, Posner, & Rothbart, 2004).

Emotion regulation and attachment. Researchers have recognized the impact of early attachment experiences on individuals' capacities to regulate their emotions (Gross, 1999; Van der Kolk, 1995, Van der Kolk, McFarlane, & Weisath, 1996). Some researchers have focused on the importance of early caregiver-infant relationships in the development of emotion regulation. Bowlby (1969) hypothesized that, through the early attachment relationship with a parent, children develop an internal working model that affects later functioning in terms of emotions and expectations of self and other. Through repeated experiences with the caregiver, children develop representations about their own emotional responding, as well as about the likelihood of caregivers responding and intervening in emotionally taxing events. Cassidy (1994) argued that the patterns of affective responding by infants in the primary attachment relationship are actually strategies to ensure that their attachment needs are met. For example, secure attachments are characterized by open and flexible communication wherein the infant can safely express both positive and negative emotions, and can ensure proximity and comfort from their caregiver. Moreover, the different strategies of insecurely attached infants also provide them with a way of meeting their own needs when faced with an unresponsive or inconsistent caregiver. Avoidant behaviour serves the function of minimizing the attachment relationship while heightened distress serves as an attempt to engage an unresponsive caregiver. Such behaviours may lead to long-term difficulties in other contexts. For example, heightened emotional expression within peer relationships can lead not only to poorer social competence, but also to a pattern of conflictual relationships with peers (Calkins, 2004).

Other research has documented the fact that infants with secure attachments use emotion regulation strategies that engage the caregiver such as social referencing and soliciting social support in taxing situations (Braungart & Stifter, 1991; Nachmias, Gunnar, Mengelsdorf, Parritz, & Buss, 1996), while insecure (avoidant) infants use significantly more self-soothing and solitary exploration of immediate surroundings. Moreover, Diener, Mengelsdorf, McHale, and Frosch (2002) showed that attachment classification (based on the Strange Situation protocol) predicted regulatory strategies when infants were required to regulate negative affect. More specifically, secure infants more often used strategies that involved social orientation than insecure infants. These findings indicate the importance of situation selection and situation modification strategies for children.

Kochanska (2001) conducted a longitudinal study of the development of fear, anger, and happiness across the first three years of life. Differences in the emotional functioning of secure and insecure infants was evident by the first year of life. Results indicated that insecure-resistant infants were significantly more fearful than other infants. Furthermore, secure infants showed a predictable decline in the display of negative affect from birth to 3 years of age, while insecure infants displayed not only an increase in negative affect, but also a decrease in positive affect. Such findings highlight the profound impact of the early attachment process for the development of emotion regulation.

Emotion regulation and family interactions. In addition to the attachment relationship, there is some evidence that other familial factors affect children's emotion regulation. Eisenberg, Cumberland, and Spinrad (1998) have outlined three sorts of

behaviours that directly impact the development of emotional competence in children: parental reactions to/evaluations of a child's emotional expression, parental expression of emotion, and parent-child discussions of emotion.

Emotion regulation can be enhanced or hindered depending upon how others assess one's feelings (Thompson & Meyer, 2007). Empathic and constructive evaluations serve not only to affirm one's feelings but also to provide crucial social support that can assist in the understanding of and dealing with emotional states. Punitive or diminishing responses impede emotion regulation, especially for negative emotional states. These reactions not only serve to discount the way one is feeling, but also to heighten negative affect. Some research has shown that children learn to cope more adaptively with emotion and acquire better emotion regulation skills when parents are accepting and supportive of negative emotion (Denham, 1998; Eisenberg, Cumberland, & Spinrad, 1998). One study showed that mothers who report using more positive control (characterized by warmth and approval) over their sons at 1 ½ years of age had children who by the age of 3 ½ years could manage their negative emotions more effectively (Gilliom, Shaw, Beck, Schonberg, & Lukon, 2002). In another study, preschoolers who indicated that their mothers provided assurance and comfort when they were feeling distressed were rated as more socially competent by their teacher (Denham, 1998).

Parental expression of emotion, as well as the emotional climate of the family, is also thought to be important in the development of emotion regulation. When children are faced with chronic high levels of negative emotion in the home, it can overload their own ability to manage emotions (Thompson & Meyer, 2007). Some research has shown that homes characterized by high levels of positive emotional expressiveness enhance the

development of emotion regulation skills (Eisenberg et al., 2001; Eisenberg et al., 2003). In a study of 4th graders, Ramsden and Hubbard (2002) found that emotion regulation in children as measured by the Emotion Regulation Checklist (Shields & Cicchetti, 1997) was negatively correlated with their family's level of expression of negative affect and positively correlated with the mother's acceptance of her child's negative emotions. Gottman, Katz, and Hooven (1996) proposed that parents who are in tune with their own and their children's emotions and encourage the expression of emotion in the home cultivate healthy emotion regulation in their children by offering warmth and support as well as by providing specific and constructive guidance around coping with emotion, while emotion dismissing parents discount their own emotions, as well as those of their children.

Lastly, parental-child conversations also appear to be important in emotion regulation development. Parent and child conversations about emotion are thought to supply the foundation for the development of emotion regulation by affording children the opportunity to learn how to manage affective states (Thompson & Meyer, 2007). Parental discussions of emotion, like attachment relationships, may also serve to develop working models of emotions that influence expectations for self and others in terms of affective functioning (Dunsmore & Halberstadt, 1997).

Physical and Mental Health Correlates of Emotion Regulation

Successful emotion regulation has been cited as an important factor in physical well-being and a critical component in the motivation and organization of behaviors for healthy psychological functioning (Cicchetti, Ackerman, & Izard, 1995). Poor emotion regulation has also been related to poor physical health outcomes, such as hypertension

and coronary artery diseases (Friedman & Booth-Kewley, 1987; Roter & Ewart, 1992), perhaps because of the stress response elicited during suppression and how that affects immune functioning (Kiecolt-Glaser & Glaser, 1991). Emotion dysregulation is also a prominent feature of many forms of psychopathology (American Psychiatric Association, 1994). By one count, over half of the non-substance related Axis I clinical disorders and all of the Axis II personality disorders involve some form of emotion dysregulation (Gross & Levenson, 1995).

Emotion Regulation and Aggression

Developmental and emotion theorists have proposed that the emergence of emotion dysregulation patterns early in childhood may lead to later developmental psychopathology (Casey, 1996; Cicchetti, Ackerman, & Izard, 1995; Cole, Michel, & Teti, 1994). For example, internalizing disorders, such as depression, are thought to involve deficits in the ability to decrease negative emotions and increase positive emotions (Cole, Michel, & Teti, 1994). In addition, depressed children and adolescents may also lack the capability to reduce negative affect through problem solving or cognitive restructuring (Dodge & Garber, 1991). Externalizing disorders are characterized by behavioural dysregulation as well as by affect dysregulation, particularly with respect to anger (Bradley, 2000).

A growing body of research links externalizing problems to poor emotion regulation, particularly with respect to negative emotional reactivity (Eisenberg et al., 2001; Frick & Morris, 2004; Hubbard et al., 2002; Olson, Schilling, & Bates, 1999; Rothbart, Posner, & Hershey, 1995). Research suggests that children who display externalizing symptoms also have a compromised ability to delay gratification (Krueger,

Caspi, Moffitt, White, & Stouthamer-Loeber, 1996), and these children self-report greater use of inappropriate regulation strategies than do children without externalizing difficulties (Barrett, Rapee, Dadds, & Ryan, 1996; Zahn-Waxler et al, 1994). Both anger proneness (Cornell, Peterson, & Richards, 1999) and an inability to control anger (Furlong & Smith, 1994) predict aggressive behaviour patterns.

The cognitive and behavioural profiles of aggressive children differ significantly from their non-aggressive peers. Regulation problems in this population may be, in part, a result of these children's lack of awareness of their own emotions (Merrum Terwogt, Schene, & Koops, 1990). Children with aggressive behaviour problems seem to be focused on external circumstances at the expense of attending to their own internal cues (Stegge & Meerum Terwogt, 2007). More specifically, they attribute their aggressive actions directly to others' actions towards them and fail to acknowledge the role of their own anger as an important factor (Hubbard et al., 2002; Jenkins & Oatley, 2000). A study by Casey and Schlosser (1994) showed that children with externalizing disorders made more incorrect evaluations when reporting their own facial expressions than did non-externalizers, suggesting that externalizing children have particular difficulties monitoring their own affective reactions. Furthermore, Crick and Dodge (1994) report that children who display problematic aggression differ significantly from nonaggressive children in all steps of processing anger: they give greater attention to threatening information, ascribe antagonistic intentions to others, place greater value on instrumental goals than relational goals, envision significantly more aggressive responses towards others, and lastly opt to act on their aggression more often. All of these factors should contribute to poorer regulation of anger. Musher-Eizenman et al. (2004) also found a

mediational role of social-cognitive variables in predicting aggressive behaviours. More specifically, emotion regulation (especially anger control) predicted social-cognitive information processing variables (i.e., children's approval of aggression for retaliation, fantasizing about aggression, and self-evaluations that they would not be upset about behaving aggressively), which in turn predicted self-reported aggressive behaviour.

Emotion regulation difficulties seem to precede externalizing problems. Stifter, Spinrad, & Braungart-Rieter (1999) found that infants who exhibited low levels of emotion regulation were more likely to display non-compliant behaviours later as toddlers. Eisenberg et al. (1996) investigated the relationship between emotion regulation and negative emotionality (as measured by parent and teacher report behaviour scales) in school age children with problematic behaviour. They found that low emotion regulation in combination with high negative emotionality predicted behaviour problems, whereas effective emotion regulation skills in children buffered against the effects of high negative emotionality. This work supports the proposition that it is not simply negative emotions that lead to aggression, but rather a deficit in emotion regulation skills when trying to manage such emotions.

Other researchers have studied the broader spectrum of externalizing disorders to understand aggression. Eisenberg et al. (2001) looked at a sample of 214 four to eight year olds with externalizing and internalizing problem behaviours. Results indicated that, in general, externalizing children were prone to more anger, impulsivity, and low emotion regulation (defined as being under-regulated on attentional and behavioral control) than were either internalizing children or non-disordered children.

Emotion Regulation and Academic Functioning

Emotion regulation has also been related to children's academic functioning. Gumora and Arsenio (2002) found that students who had more adequate emotion regulation self-reported more positive academic affect, had higher GPAs, and were rated by teachers as having more positive moods and greater academic competence. Students who assessed themselves as having poorer emotion regulation and more negative overall moods reported higher levels of negative academic affect, and were rated by their teachers as less emotionally positive and as having lower academic competence. In general, the results indicated that, although students' emotion regulation, general affective disposition, and academic affect are related to each other, each of these variables also make a significant contribution to students' GPA over and above the influence of other cognitive abilities.

Niche Picking, Environmental Choices, and Emotion Regulation

Discussions of person-environment interactions have emphasized the notion that individuals construct their own unique environmental niches, and that these niches in turn influence the subsequent behavior of these individuals. The term "niche picking" refers to the environmental choices that individuals make to match their microenvironment to their own characteristics. Scarr and McCartney (1983) introduced this notion, hypothesizing that a child's genotype influences not only the child's behavior, but also the way in which the child experiences the environment. These investigators outlined three different types of gene-environment interactions. The first type is referred to as **passive**, and is seen when parents, because of their own genotypes, provide an environment that is congruent with the child's genotype. The second type is called **evocative**, and occurs when others'

responses to an individual are influenced by that individual's behavioral manifestation of his or her genotype. The third type of gene-environment interaction, of greatest interest to the present study, is referred to as **active**: an individual's genotype is assumed to affect the way a person chooses and shapes his or her environment. According to this model, people seek out or create environments that are well suited to them and congruent with their genotype, and these environments subsequently alter their behavior. This model suggests that individuals seek out environments not only because they feel comfortable and secure in them, but also because they are congruent with their personal characteristics and needs. Since individuals tend to acquire greater control over their environments as they get older, the active form of gene-environment interactions (niche picking) may become more important as age increases.

Some researchers have suggested that environmental choices, or niche picking, may have important implications for emotion regulation (Cotterell, 1991; Korpela, 2002; Silbereisen & Eyferth, 1986), and that people tend to choose environments that are congruent with their emotional needs (Mason & Korpela, 2009; Wyllie & Smith, 1996). Gross (1998a, 1998b) argues that emotion regulation strategies that occur early in the emotion-generative process have much more favorable outcomes than those strategies that act later on. His concept of *situation selection*, as the first step in antecedent-focused regulation, is similar to Scarr and McCartney's (1983) notion of niche picking, although narrower in scope. Again, situation selection refers to the act of approaching or avoiding certain people, places, or things in order to regulate emotion proactively, and requires self-knowledge to make decisions about which situations to seek out and which to avoid (Gross, 2002). Other emotion regulation strategies are typically adopted only once the

emotion is already being experienced. This suggests that situation selection, essentially niche picking, is a powerful strategy that may lead to superior emotion regulation.

A number of studies have been conducted that investigated environmental selection and its implications for emotion regulation. Several investigators have queried children and adolescents about their favourite places. Korpela (1989) found that both nine- and twelve-year-olds reported using their favourite places for fun, for relaxation, for privacy, to be with friends, or to engage in certain activities. Clearly some of the reasons given such as “for fun” and “to relax” may fall into the category of emotion regulation.

More recent studies by Korpela and colleagues have also emphasized the role of situation selection in self-regulation. Korpela, Hartig, Kaiser, and Fuhrer (2001) indicated that young adults view their favourite places as environments that produce changes in emotion and cognitions that are of a restorative nature. Korpela, Kytta, and Hartig (2002) found that, in a group of 55 children aged 8-13, around half said that they used their favourite environment for cognitive restoration (defined as clearing one’s mind, forgetting troubles, and being free to relax). About one third of participants said they used favourite places for emotion regulation, going there after emotionally and cognitively draining situations because the place was peaceful and familiar, and allowed them to process matters that distressed them. Findings from a further study (Korpela, 2003) indicated that, compared to individuals who scored low on negative mood, individuals who scored high on negative mood were significantly more likely to report being alone in their favourite place, and were also more likely to report choosing natural favourite places than other places. Korpela (2003) contended that people with high levels of negative emotions might have a greater need to use their environments to improve their

mood by retreating to a favourite place. Thus, features of both social and physical environments may be related to processes of cognitive restoration and emotion regulation.

Not only do individuals seem to use the environment for regulatory functions, but they also seem to develop strong and long-lasting attachments to such places. A recent longitudinal study by Korpela, Ylen, Tyrvaenen, and Silvennoinen (2009) indicated that favourite place preferences showed good temporal stability over a ten-month period.

Beyond research on favourite places, there is evidence that children use their everyday environments to deal with their emotions, and some investigators have indicated that this behaviour begins at a relatively young age. Chawla (1991) reported that, beginning as early as age 3, children highly value having a room of their own that they can name where they can retreat when upset or want to be undisturbed. Smith and Barker (2000) found that children as young as age 5 frequently used “den-making” as a means of creating a private place in day-care settings. Such behaviours may be serving a regulatory purpose, as it has been shown that children who are chronically exposed to high density conditions with few opportunities for privacy in their homes and child-care centers are more susceptible to behavioural disturbances such as aggression, anxiety, and hyperactivity (Maxwell, 1996).

Older children also appear to use their everyday environments for emotional relief. Thurber and Malinowski (1999) looked at niche picking at a summer camp in boys aged 8 to 16 years of age. They found that boys with higher levels of negative emotion were more likely to choose places because they could be alone there, whereas happier boys were more likely to choose places where they could socialize. Boys with higher

negative emotions were also more likely to visit new places than were their less distressed peers.

There appear to be age, gender, and personality differences in niche picking. Sebba (1991) reported that 8- to 11-year-old Israeli boys chose outdoor favourite places more often than girls, who favoured indoor places. Lieberg (1994) found that 13- to 17-year-old Swedish girls preferred private favourite places, whereas boys were more likely to prefer outdoor environments. Children also seem to have different environmental needs based on their personal characteristics. Wyllie and Smith (1996) demonstrated that extroverted adolescents have different patterns of spatial behaviour than do introverted teens. These authors interviewed 394 grade 10 students about their activity spaces and levels of extraversion (as measured by the Revised Eysenck Personality Questionnaire). Results indicated that adolescents who had higher levels of extraversion spent more time in, and were willing to travel further to frequent, their preferred locales than adolescents who identified themselves as being more introverted. Extroverted adolescents also endorsed a stronger preference for social activities than passive activities in these environments. These authors argue that we should not conclude that all adolescents have similar environmental needs. That is, there appear to be important relationships among emotional experiences, individual differences, and environmental choices.

While investigating preferred locales adds to our knowledge of niche picking, studying what environments constitute an individual's favorite places in order to learn how the environment contributes to regulatory processes overlooks the fact that many environmental choices do not necessarily involve a favourite place. For example, children's parents make many choices for them, and time spent in the school

environment, while substantial, is not for most children likely to be classified as time spent in a favourite place. Adults, in contrast, have more control over their environmental choices even though they also spend significant amounts of time in nonpreferred environments such as the workplace. Thus, there is a need to study situation selection in nonpreferred environments to learn more about the role of niche picking in emotion regulation in childhood. The term “non-preferred” environment in the present study does not denote a negative or aversive environment, but rather one in which an individual does not necessarily choose of their own volition. In addition, studies of favourite places have generally focused on global similarities across individuals for what constitutes a favourite place rather than examining differences among individuals that affect person-environment fit. It is clear that more research needs to be directed at understanding the interplay between specific emotional states and environmental choices.

The playground. The present study focused on the influence of a specific environment - the playground - on children’s emotion regulation. The playground is arguably the most significant environment in which children learn to socialize, yet relatively few studies have looked at how children use this environment to regulate their emotions. Several researchers have reported that children behave differently in different areas of the playground (Humphreys & Smith, 1984; Naylor, 1985; Pellegrini, 1989). Children’s behaviour on the playground is influenced by several factors, such as the amount of space per child (Smith & Connolly, 1997), the type of fixed playground equipment available (Brown & Burger, 1984; Frost & Campbell, 1985), and the presence of enclosed areas (Brown & Burger, 1984). Furthermore, different kinds of activities appear to be concentrated in different areas of the playground: simple motor, parallel,

solitary, and vigorous play occur most often on play structures, cooperative and rough and tumble play are most often located in large open spaces, and complex play such as imaginative play is observed most often in private areas (Ledingham & Chappus, 1986; Pellegrini, 1990; Rallis, 1993; Smith & Connolly, 1997).

Not only do different areas of the playground encourage certain types of play, but different kinds of children appear to use the environment differently. Vandenberg (1981) found that more mature, less egocentric children played in environments that supported greater social interaction. Rallis (1993) reported that children who engaged in more cooperative play with peers and spent less time alone played in a greater total number of areas on the playground than did other children. Ledingham and Chappus (1986) demonstrated that more socially competent children played in more areas on the playground, while the most aggressive and withdrawn children played in fewer areas. These findings suggest that socially competent children may use their choices of play environment to modulate their levels of arousal and, in turn, to better regulate their emotions.

Age and gender also appear to influence where children play on the playground. Heusser, Adelson, and Ross (1986) found that younger primary students spent more time on play equipment than did older children. Lever (1976) demonstrated that boys played in areas further from the school than did girls. Sebba (1991) reported that 8- to 11-year-old Israeli boys preferred outdoor places, while girls preferred indoor places.

Ledingham, Rafter, and Genot (1995) showed children pictures of playgrounds and asked them where they would play when experiencing different emotional states. They found important differences in environmental choices when children were asked to

imagine being in a positive versus a negative mood. When in a positive mood (happy or excited) children chose the play structure or paved surfaces more often than when experiencing negative moods (sad, angry, nervous, or bored). In addition, children chose peripheral, secluded areas of the playground more often when in a negative versus a positive mood. While reasons for choices were not addressed explicitly, approximately one quarter of the children spontaneously reported choosing different areas in which to play in order to change the way they felt, suggesting that these children were using their environment to regulate their emotions. Those children who spontaneously gave emotion regulation reasons for choices were described as less aggressive by peers, supporting the argument that more socially competent children use environmental choices to regulate their emotions.

These lines of investigation highlight the role of executive functioning in both emotion regulation and situation selection. In order to anticipate that emotions can be regulated by situation selection one needs to be able to project one's thinking into the future and develop means-ends plans for altering emotional experiences. The present study was particularly interested in exploring the implications of two specific subsets of means-ends thinking on emotion regulation: Future Time Perspective and Planning Ability.

Time Perspective and Planning Ability

Monitoring time is a basic function of human development that has been hypothesized to be crucial for the evolution of human cognitive functioning (Suddendorf & Corballis, 1997). Lewin (1951) defined time perspective (TP) as "the totality of the individual's views of his psychological future and psychological past existing at any

given time” (p. 75). More recently, Nuttin (1985) argued that “future and past events have an impact on present behaviour to the extent that they are actually present on the cognitive level of behavioural functioning” (p. 54). Modern social-cognitive theory, particularly Albert Bandura’s (1997) self-efficacy theory, contends that there is a strong temporal influence on behavioural self-regulation whereby three main temporal factors interact to generate self-efficacious behaviors: efficacy beliefs grounded in past experiences, current appraisals, and reflections on future options. Carstensen, Isaacowitz, and Charles (1999) have proposed that the perception of time plays a fundamental role in the selection and pursuit of social goals, with important implications for emotion, cognition, and motivation.

In comparison to adult populations, less is known about time perspective in children or how children develop concepts of the future. However, future time perspective is considered to be important in the development of fundamental abilities such as planning and goal setting (Kreitler & Kreitler, 1987; Miller, Galanter, & Pribam, 1960), delay of gratification (Mischel, Shoda, & Rodriguez, 1989), and establishing a sense of self-identity that is stable over time (Damon & Hart, 1988; Guardo & Bohan, 1971; Mohr, 1971). Time perspective has not represented a major focus in research on children, with more studies emphasizing the importance of time perspective in adolescence and adulthood. However, given findings in adult populations that link future time perspective to superior psychological functioning, investigating the early importance and developmental antecedents of time perspective would seem to be warranted.

Time perspective appears to develop slowly throughout childhood (Gjesme, 1979), with the earliest stages of children’s ability to understand the future occurring with

the development of object constancy (Silverman, 1996). The development of language aids in the process of understanding the future (Harner, 1982). Two and 3-year-olds are able to talk about the future (Atance & O'Neil, 2005; Nelson, 1989), and at around the age of 4 children are able to start making decisions that have positive consequences for the future, but not for the immediate present self (Moore, Barresi, & Thompson, 1998). Atance and Meltzoff (2005) looked at 108 3-, 4-, and 5-year-old children's ability to anticipate and explain future states. Children were presented with stories and pictures designed to evoke thoughts about future states, such as hunger, thirst, and cold. These researchers showed that 3-, 4-, and 5-year-olds were able to endorse future-state responses to questions, but that 3- and 4-year-olds' performances were negatively affected by introducing items that were semantically related with the scenarios but which did not address the future states. The performance of the 5-year-olds was not compromised in this condition. These researchers argued that children younger than age 5 are capable of future reasoning but, because it is still a novel ability, this reasoning can be easily compromised when other cognitive demands are placed on the child.

Gjesme (1979) notes that the ability to delay gratification in combination with the ability to mentally comprehend the future influences the development of future time perspective. Delay of gratification is said to involve the capacity to learn how to control reactions and inhibit impulses, and this is also a major component of emotion regulation. Future time perspective requires that children shift their focus from their immediate needs in favour of future benefits and consequences. By learning to endure delay, the child becomes aware that there is a temporal period that separates him or her from the event. The child gradually develops more advanced and representative anticipations or

expectations. Eventually, the child sees a connection between the present lack of resources and the future gratification of these needs (Gjesme, 1979).

Future time perspective has been shown to be associated with favourable outcomes in both adolescence and adulthood. Important predictors of future time perspective in adulthood include being male, being older, having a higher income, and having a higher educational level (Padawer, Jacobs-Lawson, Hershey, & Thomas, 2007). Some research has linked future time perspective to favourable health behaviours such as lower body weight and decreased risk of smoking (Adams & Nettle, 2009), and safer sexual practices (Agnew & Loving, 1998, Appelby et al., 2005). Those who endorse a future time perspective have also been shown to have stronger academic motivation (Kerpelman & Mosher, 2004; Malka & Covington, 2005; Pizzolato, 2006), study persistence (Shell & Husman, 2001), and higher GPAs (Barber, Munz, Bagsby, & Grawitch, 2009; Zimbardo & Boyd, 1999). A recent study by Laghi, Baiocco, D'Alessio, and Gurrieri (2009) looking at the relationship between time perspective and suicidal ideation in 3700 Italian adolescents, indicated that time perspective was a significant predictor of suicidal ideation, suggesting that future time perspective may be a protective factor against suicide.

Myers (2000, 2003) has outlined a conceptual framework of time perspective that guided the present study. According to Myers, time perspective, or how one structures oneself in time, is a cognitive-behavioural characteristic that typically emerges in childhood and adolescence. Time perspective influences the kinds of choices people make in their daily lives and lies along a continuum, with the extreme points on either end being present and future orientation. It is not an ability that is either present or absent.

Rather, every person possesses a perspective of time. However, the degree of time perspective and the extent to which this influences daily choices vary across individuals. According to this conceptual framework, time perspective is not situation specific. Rather, it globally affects the way that individuals interact with, make plans for, and think about their future. Figure 2 presents a conceptual model of time perspective.

According to Myers (2000), time perspective encompasses both behavioural and cognitive components. The behavioural component of future time perspective includes the ability to delay gratification, and to exhibit low risk-taking behaviour and low impulsivity. Risk-taking behaviour in younger years usually consists of dangerous play activities and parental defiance, and in latter years progresses to activities like substance use or risky sexual behaviour. The other component is more purely cognitive in nature, involving planning and/or decision-making. It is assumed that those who are more future-oriented are able to delay gratification for a longer period of time than those who are more present-oriented (Kastenbaum, 1961; Lessing, 1968). Rozek, Wessman, and Gorman (1977) investigated delay of gratification and temporal span in 58 girls aged 4 to 9 years. Their results suggested that both temporal span and ability to delay gratification are strongly related to both age and cognitive level. Almost all the younger participants took an immediate but smaller reward, while almost all older girls selected a larger but later reward.

Another factor in the behavioural component is risk-taking and impulsive behaviour. Individuals who are more present-oriented engage in more risk-taking behaviours than those who are more future-oriented, and research has shown that impulsivity is more characteristic of present-oriented individuals than of future-oriented

individuals (Kastenbaum, 1961; Nuttin, 1985). Zimbardo, Keough, and Boyd (1997) reported that present time perspective was significantly correlated with risky driving behaviours in young adults, and that present time perspective remained a significant predictor of risky driving even when pitted against nine other measures related to risky driving, such as sensation seeking, impulsivity, and aggression. Keough, Zimbardo, and Boyd (1999) also showed that present time perspective was a strong predictor of substance use, including heavy drinking, smoking, and taking drugs. In both studies the behaviours of risky driving and substance use were negatively associated with future time perspective.

Rothspan and Read (1996) employed a time perspective measure with heterosexual college students to predict HIV risk. They found that those with high present time orientation scores were more sexually active and had more sexual partners than those with high future time orientation scores. Those high on present time perspective were also less likely to use methods of reducing HIV exposure than future-oriented individuals. A related study by Hutton et al. (1999) investigated the relationship between time perspective and HIV risk behaviours in incarcerated women. As a group, the incarcerated women scored a standard deviation higher on present time perspective than did a control group of female university students. However, female prisoners who scored higher on the future time perspective subscale were less likely to have had an intravenous drug-using sex partner, to have had a large number of sex partners, or to have been high on drugs or alcohol during sex than peers who scored low on this scale. They were also less likely to have had a lifetime diagnosed dependency on cocaine or heroin.

Other behavioural outcomes in younger populations have been linked to time perspective. Wilby, Sandy, and Yaeger (2001) looked at a sample of 454 elementary school students with a mean age of twelve years. Participants were administered a version of an adult scale of time perspective (the Zimbardo Time Perspective Inventory) along with measures of stress and coping. Results of this study indicated that future time orientation was inversely related to substance use, while present time orientation was positively related to substance use. Further analyses revealed that the relationship between time perspective and substance use was indirect and mediated by behavioural coping and anger coping strategies. This latter finding reinforces the connection between time perspective and emotion regulation strategies.

Although there have been no specific studies looking at how time perspective impacts children's emotion regulation, the theories describing these phenomena suggest that there is a relationship between these two constructs. Time perspective integrates cognitive and behavioural elements to affect the choices we make on a daily basis (Myers, 2003). Emotion regulation involves behavioural and cognitive components that influence the type, timing, intensity, and expression of emotions (Gross, 1998b). Both constructs require individuals to modify their current actions and thoughts in order to produce favorable consequences, and both require individuals to move beyond immediate gratification and exert some self-control to fulfill a need or achieve a goal. *Antecedent-focused* emotion regulation, as defined by actions that occur before emotion becomes fully activated (Gross & John, 2003), necessitates that one look into the future and appraise the costs and benefits of behaviour. In other words, it appears that superior emotion regulation requires that an individual both plan ahead and control impulsivity, a

characteristic that is more typical of those with future time perspective than of individuals who are more concerned with immediate desires and impulses. Barkley's (1997) theory of self-regulation highlights the interplay between time perspective and emotion regulation. He asserts that the executive functions that allow one to move forward and backward in time to recall outcomes in previous situations and reflect on behaviours and their possible consequences in the future are the same processes that lead to superior self-regulation. The question of whether individuals with future time perspective are better at emotion regulation currently has no definitive answer, but is clearly a question worth examining.

The other major component of Myer's (2000) time perspective model is the cognitive component in which planning and decision-making behaviour are said to be crucial for time perspective. Those who are future oriented have been found to be more planful in their day-to-day lives than those who are present oriented (Simons, Vansteenkiste, Lens, & Lacante, 2004). Planning involves the capacity to mentally represent a future goal and then create a strategy to reach that goal (Silverman, 1996). In other words, planning organizes future behaviour for a specific purpose.

Kreitler and Kreitler (1987) investigated the development of planning in children. Children aged five, seven, nine, and 11 were asked: "When will you carry out the things you plan?" Results of this study indicated a clear developmental progression in the extension of future time perspective. The youngest group of children nominated plans for acts expected to occur in the immediate future (defined as within minutes to a week), but older children were more likely to have plans for the near (one to four weeks) to distant (more than 2 months) future. These investigators found that the biggest shift from plans

for the immediate future to plans for the near future occurred between the ages of 7 and 9. The shift toward including the far future into plans occurred between 9 and 11 years of age. There was also a steady developmental increase in the percentage of children who considered plans for different points in time. Kreitler and Kreitler (1987) concluded that “one of the implications of these findings is that in order to train children’s ability to plan, one should first increase their time perspective” (p. 219).

The Present Study

The present study sought to add to existing research on emotion regulation by investigating the mechanisms by which individuals develop healthy emotion regulation skills. The current study employed three different measures of emotion regulation a measure of time perspective and a measure of planning ability to measure these broad and diverse constructs appropriately. Of the measures of emotion regulation, a measure of environmental choices had direct applicability to Gross’ (1998a; 1998b) emphasis on the importance of situation selection and involved a novel way of measuring emotion regulation that could be compared to more widely used measures. Myers’ (2000) model and measurement of time perspective guided the present study. Due to the fact that time perspective (and this model in particular) has received relatively little empirical attention, we also decided to include a measure of children’s cognitive planning ability. Time perspective and planning ability seem to have received little attention for their roles in emotion regulation thus far despite their demonstrated significance for adaptive functioning. Furthermore, temporal phenomena are central to Gross’ (1998a; 1998b) model of emotion regulation, suggesting that optimal emotion regulation requires an individual to move beyond immediate gratification and consider future costs and benefits.

For this reason measures of time perspective and planning were included to evaluate their relationship to emotion regulation. The present study was guided by the following hypotheses:

1. Children who score higher on measures of future time perspective and planning ability will also have more favourable parental and teacher ratings of emotion regulation on the Emotion Regulation Checklist than children who score lower on future time perspective and planning measures.
2. Children who score higher on future time perspective and planning ability measures will be more likely to give emotion regulation reasons for environmental choices that they make than children who score lower on future time perspective and planning ability measures.
3. Higher future time perspective scores and higher scores on a planning measure will significantly predict lower aggressive nominations by peers, as measured by the Revised Class Play.
4. Any relationship between emotion regulation and aggressive behaviour will be mediated by the future time perspective or planning ability variables.

Method

Participants

Participants were 82 elementary school students in grades 3 (females = 13; males = 15), 4 (females = 17; males = 13), and 5 (females = 17; males = 7), with a total of six classes (two from each grade level) participating. These grade levels were chosen based on prior research findings indicating that they fall in a critical period for the development

of time perspective (Kreitler & Kreitler, 1987; Myers, 2000, 2003). A parent or guardian of each of the 82 children participating in the study and the homeroom teachers of these children ($n = 5$; one teacher served as homeroom teacher for two classes) also participated in the study by completing a questionnaire describing the children. All children were English-speaking students in regular classes. The response rate by parents was very high, with 92% of all parents contacted giving consent for their child to participate and completing the questionnaire themselves. Subsequently, 95.6% of children whose parents gave consent also consented to participate themselves. Thus, 82 children out of the total 93 (88.2%,) children approached to participate, took part in the study. The participation rate for teachers was 100%.

Measures

Revised Class Play. The Revised Class Play (RCP) is a peer nomination measure designed to assess children's social behaviour (Masten, Morison, & Pellegrini, 1985). Children were asked to pretend that they were directing a class play and told that they must pick the cast from their peers. Each child could nominate up to three girls and three boys from their class who best fit the roles described in each of the 30 items included in the measure. Children were only allowed to nominate classmates whose parents had given permission for them to participate in the study.

There are a total of 30 items on the RCP that are summed to yield three factor scores: Aggressive-Disruptive, Sensitive-Isolated, and Sociability-Leadership. There are a total of 8 items on the Aggressive-Disruptive factor, such as "A person who gets into a lot of fights," and "A person who interrupts when other children are speaking." On the Sensitive-Isolated factor there are 7 items, including "Someone whose feelings get hurt

easily,” and “Someone who is very shy.” The 15 items that load on the Sociability-Leadership factor include “A person everyone likes to be with,” and “Someone you can trust.” See Appendix A.

Research on the RCP has demonstrated good reliability and validity (Masten et al., 1985). In their original sample of third and sixth graders in two schools, Masten and colleagues (1985) found that RCP factor scores were moderately correlated with teacher ratings of social competence. This same study also provided evidence of good internal consistency, with coefficients falling between .81 and .95 for all of the three factor scores. Good stability for RCP scores was also reported at 6 month ($r = .77$ to $.87$) and 17 month ($r = .63$ to $.66$) follow-ups (Masten, et al., 1985). Other studies have also demonstrated the strong psychometric principles of the RCP measure. Luthar and McMahon (1996) used the RCP among inner city ninth-grade students and found strong internal consistency, cross-sex agreement, and temporal stability for all three RCP dimensions. Internal consistency alphas revealed strong internal reliability (.88, .85, .82), moderate interrater agreement r coefficients (.74, .66, .63), and good temporal stability coefficients as at six month follow (.71, .74, .68) for the Aggressive/Disruptive, Sensitive/Isolated and Sociability/Leadership respectively. Furthermore, cross-cultural studies have found good internal consistency with a Chinese sample of children aged 8-10 years, with Cronbach's alpha ranging from .71-.96 for the three RCP scales (Chen, Rubin, and Sun, 1992), and with an Italian sample, with Cronbach's alpha's of .88, .83, and .78 for the Aggressive/Disruptive, Sensitive/Isolated and Sociability/Leadership scales respectively (Casiglia, Coco, & Zapulla, 1998).

Several investigators have reported exploratory analyses that called for a division of Masten et. al's (1985) Sociability/Leadership scale into two distinct factors for both younger children (Casiglia, LoCoco, & Zupulla, 1998; Realmount, August, Sieler, & Pessoa-Brandao, 1997), and adolescents (Luthar & McMahon, 1996). More recent work with the RCP (e.g. Realmount, August, & Hektner, 2000; Zeller, Vannatta, Schafer, & Noll, 2003; Zeller, Reiter-Purtill, & Ramey, 2008) has argued that the 30 roles may be better suited to four dimensions: (i) *popular leader* (e.g., somebody everybody likes); (ii) *prosocial* (e.g. someone who is polite; someone who helps others); (iii) *aggressive-disruptive* (e.g. someone who gets into a lot of fights; someone who teases others); (iv) *sensitive isolated* (e.g., someone who is often left out; someone who has trouble making friends). Zeller et. al (2003) argued that the alternative 4-factor structure was a more reliable and valid means of assessing behavioural reputation, regardless of age of the peer group sample. The four dimension structure also evidenced strong reliability coefficients (Cronbach's Alpha) for the four factors : Popular-Leadership (.89), Aggressive-Disruptive (.88-.89), Sensitive-Isolated (.83-.88), and Prosocial (.77-.85).

Mean scores for each RCP factor were calculated by summing the total nominations given on each factor divided by the numbers of items on that scale (8 for Aggressive/Disruptive; 7 for Sensitive/Isolated; 15 for Sociability/Leadership). In order to correct for differences in class size in the present study, RCP factor scores were standardized by dividing the mean scores on each scale by the total number of possible raters for each child (i.e., the number of classmates who participated in the study minus one). Scores on the total Aggressive/Disruptive nominations in the present study ranged from 0 to 74 ($M = 18.28$). Total scores on the Sensitive/Isolates ranged from 0 to 56, (M

= 18.28), while total scores on Sociability/Leadership ranged from 3 to 145 ($M = 57.10$). Internal consistency alphas for the present sample revealed good internal reliability (.84, .81, .80), for the Aggressive/Disruptive, Sensitive/Isolated and Sociability/Leadership respectively.

Emotion Regulation Checklist (ERC). The Emotion Regulation Checklist (ERC) (Shields and Cicchetti, 1997) is a 24-item measure that is usually completed in 10 minutes by adults who are familiar with the child. It consists of both positively and negatively weighted items that are intended to encapsulate processes central to emotionality and regulation, including affective lability, intensity, valence, flexibility, and situational appropriateness of emotional expressions. Raters are asked to give judgments on a 4-point Likert scale ranging from 1 (almost always) to 4 (never) as to how typical each item is for a particular child. Both a parent and the classroom teacher completed the Emotion Regulation Checklist for each child participating in the study.

In the development of the ERC, a factor analysis was conducted by Shields and Cicchetti (1997) on data collected from a sample of 513 maltreated and impoverished children ranging from 6 to 12 years of age during two consecutive years of summer camp. The factor analysis yielded a two-factor solution. The first factor, Lability/Negativity, is composed of items assessing mood swings, angry reactivity, emotional intensity, and dysregulated positive emotions. Items on the Lability/Negativity factor include “Is easily frustrated,” “Responds angrily to limit-setting by adults,” and “Displays exuberance that others find intrusive or deceptive.” Higher scores on this scale reflect greater levels of Lability/Negativity, or in other words poorer emotion regulation. The second factor, Emotion Regulation, reflects processes felt to be key for adaptive

regulation, including equanimity, emotional understanding, and empathy. Items on the Emotion Regulation factor include “Is a cheerful child,” “Responds positively to neutral or friendly overtures by adults,” and “Can say when she/he is feeling sad, angry or mad, fearful or afraid.” Higher scores on the Emotion Regulation scale reflect more favourable adjustment.

Validity data on this measure came from a study on 143 maltreated children and a non-maltreated comparison group. Internal consistencies, assessed through Cronbach’s alpha, were 0.96 for the Lability/Negativity factor and 0.83 for the Emotion Regulation factor. Analyses revealed that the two subscales were significantly correlated ($r = -.50$). A composite ERC score was also generated by reverse scoring all negatively weighted items and summing across all 24 items. The internal consistency estimate for the ERC composite score was 0.89.

As mentioned previously, a major bone of contention in the field of emotion regulation research is the precise definition of emotion regulation. Shields and Cicchetti (1997) define emotion regulation as capturing processes central to adaptive regulation including socially appropriate emotional displays and empathy. As a result, many of the items on the emotion regulation subscale of the ERC seem to tap into more general regulatory processes than the construct of emotion regulation, as defined earlier by Gross (1998b), which guided the present study. Items on the Lability/Negativity scale of the ERC appeared to be more consistent with Gross’ conceptualization of emotion regulation than items on the Emotion Regulation scale of the ERC. Therefore, it was decided to administer and analyze only data from the Lability/Negativity scale of the ERC.

The Lability/Negativity scale of the ERC is made up of 15 items, with a possible range of scores from 15 to 60. The range of scores in the present study was 15 to 51. The mean for parent ratings of Lability/Negativity ($M = 25.67$) was somewhat higher than the mean for teacher ratings ($M = 20.84$). Internal consistency was explored via Cronbach's alpha. The Lability/Negativity scale appeared to have high internal consistency for both teachers' (.94) and parents' (.92) reports.

Environmental choices. Children were presented with three 3-dimensional models for each of two different playgrounds, for a total of six different playground models. The two different playgrounds included features such as open fields, play structures, soccer nets, and paved areas suitable for games such as hopscotch and four corners in different configurations and with different amounts of total space available for play. Two different models of the playgrounds were used previous studies employing the Environmental Choices task (Ledingham, Clark, Blum, Parkinson, & Beshir 2003; Pursoo, Puddester, & Ledingham, 2008). The first playground in that study was modeled after an actual playground that the children had experience with, while the other playground model was unfamiliar to them. Though neither model in the present study replicated an actual playground that the sample had experience with, it was decided to retain the two versions of the playgrounds to give a greater breadth of responses and to determine whether children had meta-cognitive rules about how different playground areas would affect them even when they had no experience with a given playground. Each of the three different versions of each playground displayed different configurations of social densities represented by figures representing male and female children and a teacher. One model provided no social density information, thus giving no indication as

to where children might play. A second model contained small figures that, on the basis of previous research (Ledingham & Chappus, 1986; Ledingham et al., 1995), were clustered in ways that represented typical social densities observed on actual playgrounds, with highest social densities in central areas of the playground and at the sites of popular activities (i.e., play structures, a hopscotch court, a soccer field), and lowest social densities on in the parts of the playground that were most distant from the school. The third model contained figures representing children playing in a way that was believed to be foreign to most actual school playgrounds (e.g., more children represented in remote and private areas of the playground and fewer on central and popular parts of the playground such as in wide open areas and on the play structure). Typically, specific physical features of playgrounds are confounded with social features. The use of three different spatial density models for each separate playground presenting different information about social features was intended to help unconfound the influence of the physical environment from that of its social context (Puddester, Pursoo, & Ledingham, 2008). In other words, if children make judgments about where to play that are based solely on the basis of physical features of the playground, then models with atypical social densities should yield similar choices of where to play to models with typical social densities. In contrast, if social features of the playground are important for determining where children play, then models with typical and atypical social densities should yield different choices about where to play.

Children were interviewed using a booklet containing representations of each of the playground models. For each playground model, children were asked to indicate where they would go to play when they were feeling each of six emotions (happy, sad,

excited, bored, angry, and nervous). In addition, children were asked the specific reason why they would choose a certain location, and were probed if the response they gave was not easily codable into the categories of: (a) emotion regulation; (b) aggression; (c) solitary; (d) social; (e) nature; (f) specific physical feature/activity goal or (g) other.

Table 1 presents the scoring criteria for environmental choices.

This methodology was developed by Ledingham, Clark, Blum, Parkinson, and Beshir (2003). The researchers looked at whether children would report making different choices of where to play when in different moods. A sample of 101 children from grades two, four, and six were tested using peer nomination measures of aggression, social withdrawal, and prosocial behaviour, and shown models of their own school's playground and two others. They were then asked to indicate where on the playground they would go to play when in a specific emotional state (happy, sad, angry, bored, nervous, excited) and why they would go there, for each playground. The two unfamiliar playgrounds were used to determine whether children had meta-cognitive rules about how different playground areas would affect them even when they had no experience with a given playground.

These researchers found that children were able to make choices about where they would play when asked to imagine that they were in a specific emotional state. Judgments about where to play when in a given emotional state were similar for familiar and unfamiliar playgrounds, suggesting that children have generalized schema about how playgrounds affect them. Children said that they would play in public areas more often when in positive moods, and in more secluded, private areas more often when in negative moods. The number of emotion regulation reasons given differed as a function

of emotional state. A total of 36 emotion regulation responses were given for the angry condition, 18 for the sad condition, 26 for the nervous condition, 20 for the bored condition, five for the excited condition, and only two were given for the happy condition. Thus, emotion regulation was seen as a response to negative emotion states, and particularly in response to anger. More aggressive children said they would choose public areas more often and private areas less often than did less aggressive children for angry moods. These results suggest that this particular protocol is sensitive to factors that are important for emotion regulation. Nevertheless, in this study, because no social density information was provided, it was unclear whether choices were made on the basis of physical or social features of the playgrounds. The present study addressed this issue. Furthermore, this measure has shown strong interrater reliability. Puddester et al. (2008) performed interrater reliability analyses on the Environmental Choices measures using the Kappa statistic to determine consistency among raters. The interrater reliability for raters in the 2008 study was found to be highly consistent for Area (public/private) choices ($\text{Kappa} = 1.00$), Surface (grass, asphalt, play structure) choices ($\text{Kappa} = 0.99$), and Reasons provided ($\text{Kappa} = .98$). Interrater reliability was also calculated for Environmental Choices task in the present study. Again, the Kappa statistic was used. Results of the interrater reliability for the present study were very similar to results from the 2008 study, with high agreement between the two raters: Area choices ($\text{Kappa} = 1.00$), Surface choices ($\text{Kappa} = .98$), and reasons provided ($\text{Kappa} = .94$).

Children's Time Perspective Inventory. Myers (2000) developed the Children's Time Perspective Inventory (CTPI) to fulfill the need for a reliable measure of time perspective in children (see Appendix B). The CTPI is a 20 item self-report questionnaire

that emphasizes developmentally appropriate content and language. It endorses items such as “I have a hard time waiting,” “It is more important to have fun than to get homework done on time”, and “Before making a decision I think about what could happen.” Responses on the CTPI are rated on a three-point scale of “No,” “Sometimes,” and “Yes,” with lower scores reflecting more future-oriented responses and higher scores reflecting a more present time orientation. The item content is intended to capture general or usual temporal behaviour (Myers, 2003).

The CTPI was normed on 103 elementary school children (of which 62 were girls), including 48 third graders and 55 sixth graders, and yielded good estimates of internal consistency (Cronbach’s $\alpha = .77$). A factor analysis yielded two factors. Factor 1 (five items) was labeled Risk-taking ($M = 5.28$, $SD = 2.55$, Cronbach’s $\alpha = .73$) and Factor 2 (eight items) was labeled Impatience and Spontaneity ($M = 4.71$, $SD = 3.01$, Cronbach’s $\alpha = .74$). Risk-taking items reflect both impulsivity and lack of concern for uncertainty (i.e., “I like to take chances,” “Taking chances keeps my life from getting boring”). Impatience and Spontaneity items reflect an inability to delay gratification and a lack of cognitive concern for consequences (i.e., “I have a hard time waiting,” *reversed scored*, and “I spend a lot of time thinking over a big decision”). Average scores on the CTPI ranged from .2 to 1.55, with a mean of .82, median of .80, and mode of .55. (Myers, 2003)

The CTPI has been compared with the Future Time Orientation Scale (FTOS) (Gjesme, 1979), a measure of time orientation typically used in adult populations (Myers, 2000). Responses on the FTOS are structured such that scores between 0 and 21 indicate a low future orientation, while scores from 22 to 42 indicate a high future orientation.

The CTPI and the FTOS were found to be related, with the correlation between the two variables being positive and significant, $r = .36$. Correlations were also calculated between the total score on the FTOS and the two factors of the CPTI. There was no significant correlation between the total FTOS score and the Risk-Taking factor on the CTPI ($r = -.10$). There was, however, a significant correlation between the total FTOS score and the Impatience and Spontaneity factor ($r = .55$). These findings provide some evidence of convergent validity for the total CTPI score and in particular for the Impatience and Spontaneity factor score as measures of future time perspective (Myers, 2003). In the present study, only the total score (and not the two individual scales) was used in analyses.

Scores on the CTPI have a potential range from zero to 40. In the present sample, scores ranged from 3 to 33, with a mean score of 18.50. The internal consistency of this scale in the present study was good ($.76$).

Woodcock-Johnson III Test of Cognitive Abilities - Planning Subtest. We included a supplemental measure of planning that was expected to correlate with the measure of future time perspective. The Planning subtest of the Woodcock-Johnson III Test of Cognitive Abilities is a test of executive functioning that measures the mental control processes involved in identifying, selecting, and applying solutions to problems using forethought. It is thought to draw on visual spatial thinking (Gv) and fluid reasoning (Gf) abilities. The subject is asked to trace a pattern without removing his or her pencil from the paper or retracing any lines. For example, practice items on this task require the subject to trace vertical and horizontal lines, then items proceed to more complicated shapes such as triangles and octagons, and eventually to very intricate three-

dimensional geometric shapes. As task demands become more complex, participants must use greater effortful control and planfulness. Scores on the Planning subtest in theory range from zero to 18. In the present sample, scores ranged from 0 to 18, with a mean score of 8.14.

The Woodcock-Johnson III was designed to expand specific skill and content areas for assessment, by adding 8 new tests to the original Woodcock-Johnson, (Woodcock, McGrew, & Mather, 2001). The original Woodcock-Johnson Test of Cognitive Abilities was normed on a sample of 4732 subjects from across the United States. The norming sample was chosen to be representative of the United States population from three years of age through 65 and older. This sample was also stratified across the following variables: age, sex, race, occupational status, geographic region, and type of community (urban or suburban). The most recent version, the Woodcock-Johnson III Tests of Cognitive Abilities, is based on the Cattell-Horn-Carroll (CHC) three-stratum theory of cognitive abilities. CHC theory combines Cattell's Horn's Gf-Gc (Cattell, 1971; Horn, 1989), and Carroll's three-stratum theories of human abilities (Carroll, 1993). Test-retest values on all scales on the WJ-III ranged from .67 to .78, indicating strong temporal stability. This measure also appears to have external validity. McGrew and Woodcock (2001) reported a correlation of $r = .71$, between the WJ-III General Intellectual Ability and Full Scale IQ on the Wechsler Intelligence Scale for children for a sample of 150 grade 3-5 students. Lohman (2003) investigated the concurrent validity of the WJ-III and Form 6 of the Cognitive Abilities Test (CogAT; Lohman & Hagen, 2001). Interbattery confirmatory factor analyses showed that the general factors on the two batteries correlated significantly ($r = .82$). Due to the fact that

the Planning subtest is typically administered within the battery of tests, there are no empirical studies that investigated the psychometric properties of the WJ-III Planning subtest in isolation.

Procedure

Children were recruited from the Avalon East School Board, Newfoundland. Data collection was carried out at a single school in the district, with two classes included at each of the three grade levels. Ethics approval was obtained at both university and school board levels. Information packages were sent home to all parents of students in grade 3, 4, and 5. This package included a letter of invitation from the school principal (see Appendix C) encouraging parents and children to participate. It also contained a letter describing the study and a consent form for parents (see Appendix D). Parents were also asked to complete a short questionnaire (ERC) about their child's emotions and behaviour, and to return the consent form and completed questionnaire to the school. Reminder letters were sent to those homes that had not returned the forms within a week. Children whose parents gave consent also had a chance to give their own personal consent (see Appendix E) for participation. Classroom teachers were also asked to participate (see Appendix F) in the study and completed the same questionnaire as parents for each child in their classroom who was participating in the study.

All measures were administered to children in the school setting, with a group administration used for two measures (Revised Class Play and Children's Time Perspective Inventory), and individual testing carried out in a designated testing room for the two remaining measures (Woodcock-Johnson planning measure and the

Environmental Choices task). Parents and teachers completed the Emotion Regulation Checklist at their leisure and returned it to the school in a sealed envelope.

Group administration. All children participating in the study were administered two measures in their home classroom. Children who were not participating were given seatwork to complete, but remained in the classroom during administration. For the first measure administered, the RCP, the names of all children participating in the study were written on the black board and children were given the following instructions:

“We want you to pretend that you are the director of a play. The most important job of the director is to pick the best person for different roles in the play. Today you need to pick up to 3 boys and 3 girls from the names on the board that could play each role that I am going to read out. You cannot write down your own name for a role, but you can write down the same person for more than one role. Do not write down names of children who are in your class but whose name is not on the board. We also want to know what actors and athletes are your favourite, and will ask you to write this down at the end. I will read out each role aloud and give you time to write down your answers. Please keep your answers to yourself and do not look at other students’ answers. Ready? Let’s get started.”

After administration of the RCP and distractor items (favourite actors and athletes), the CTPI questionnaire was administered to the group. Children were asked to write their name and grade on the top of the sheet and to circle for each item the word that best described them (“no,” “sometimes,” or “yes”). Again, children were reminded to keep their answers to themselves.

Individual administration. The remaining measures (Woodcock-Johnson Planning subtest and the Environmental Choices task) were administered individually. Children first completed the Planning subtest from the Woodcock Johnson III. Participants were given a booklet with the test items. All children started with a sample item and were given the following directions: *“Look at this drawing. Watch how I make an X where I am going to start and then go over the drawing without lifting my pencil from the paper. Now you try one. Put an X where you start and then go over the drawing without lifting your pencil from the paper.”* Children were given another sample item and told *“You may cross a line, but you may not draw over a line you have already drawn.”* Children in the study began on Item 7 and were told, *“Start here and go over all the drawings on this page. For each drawing remember to go over the entire drawing without lifting your pencil from the paper. You may cross a line, but you may not draw over a line you have already drawn. Finish as much of each drawing as you can without lifting your pencil. Remember to make an X where you start.”*

If children retraced a line or attempted to erase, then the examiner prompted them to proceed to the next item. If the subject lifted the pencil, they were reminded not to lift the pencil but were allowed to continue from where he or she left off. During the task the examiner counted the number of errors (i.e. lifting the pencil, retracing lines) to calculate a score. As the subject completed a shape, items were scored immediately. This allowed the examiner to follow continuation rules, as children were only administered more difficult items if they had not committed a specified number of errors on preceding items.

For the environmental choices task, children were presented with three 3-dimensional models for each of two different playgrounds, for a total of six different

playground models. Prior to interviewing, the examiner reviewed all the major features on the playground with the child. Children's answers were recorded by using a booklet containing representations of each of the playground models. For each playground model, children were asked where they would go to play when they were feeling each of six emotions (happy, sad, excited, bored, angry, and nervous). Locations chosen were coded as public or private as well as for the specific features of the locale (play structure, grass, asphalt, or other). In addition, children were asked to state the reason why they had chosen a certain location, and were then probed if the response they gave was not easily codable into seven categories: (a) emotion regulation; (b) aggression; (c) solitary; (d) social; (e) nature; (f) specific physical feature/activity goal, or (g) other. The order of presentation of the two different playground models was randomized to control for possible order effects. That is, the order of presentation at the broadest level of the playground models (Playground 1 versus Playground 2) was randomized, although the order of presentation of the three social density models within those playgrounds remained constant (no social information first, central social density second, and peripheral social density third). Diagrams of these playgrounds with the three social density versions are presented in Appendix G.

Results

Preliminary Analyses

Prior to conducting descriptive and regression analyses, boxplots were computed for all variables in order to identify and remove any univariate and/or multivariate outliers. Variables were then examined in terms of means and distributions. All means for

Revised Class Play (RCP) composite scores (Aggressive/Disruptive, Sensitive/Isolated, and Sociability/Leadership), Woodcock-Johnson III Planning Subtest (WJ Planning), Children's Environmental Choices- Emotion Regulation (Environmental ER), Teacher and Parent Emotion Regulation Checklist Lability/Negativity Scale (Teacher Lability/Negativity ERC and Parent Lability/Negativity ERC), and Children's Time Perspective Inventory (CTPI) fell within ranges previously reported for the target population. Total scores on the RCP Sensitive/Isolated scale and the Teacher Lability/Negativity ERC variable were transformed using a square-root transformation to normalize the distributions. Logarithmic transformations were employed on the RCP Aggressive/Disruptive scale and the Parent Lability/Negativity ERC variable to normalize the distributions of these variables. The remaining variables (Sociability/Leadership, WJ Planning, and Environmental ER) did not require any transformations. An alpha level of .05 was chosen for all statistical tests.

Descriptive Statistics

Table 2 presents the intercorrelations among demographic variables and measures of social behaviour, planning ability, and emotion regulation. The Aggressive/Disruptive variable was positively and significantly correlated with the Sensitive/Isolated factor of the RCP. Aggressive/Disruptive scores were negatively correlated with Sociability/Leadership scores. Aggressive/Disruptive scores were also correlated significantly with CTPI scores; children with lower ratings of aggression were more likely to rate themselves as having a greater future time perspective orientation. Furthermore, Aggressive/Disruptive scores were positively correlated with Teacher (but not Parent) Lability/Negativity ERC scores. This suggests that children with more

favourable teacher ratings of emotion regulation were less likely to be seen by peers as aggressive or disruptive. In addition, Aggressive/Disruptive scores were negatively correlated with Environmental ER scores. In other words, children rated as more aggressive were less likely to give emotion regulation reasons for where they chose to go on the playground.

Two other factor scores on the RCP - Sensitive/Isolated and Sociability/Leadership - were significantly and negatively correlated. Sensitive/Isolated scores were negatively and significantly correlated with Environmental ER choices, while Sociability/Leadership scores were negatively and significantly correlated with Teacher Lability/Negativity ERC scores. Thus, higher scores on the Sensitive/Isolated scale were associated with fewer emotion regulation reasons given by the child for environmental choices, while higher scores on the Sociability/Leadership scale were associated with better emotion regulation as assessed by teachers.

Scores on the WJ Planning variable correlated significantly and negatively with Sensitive/Isolated scores, and positively with Sociability/Leadership scores. Scores on WJ Planning were also negatively correlated with Parent Lability/Negativity ERC scores, but positively with Environmental ER scores. In summary, higher scores on WJ Planning were associated with lower parent ratings of children's lability/negativity (an indication of better emotion regulation), as well as with more emotion regulation reasons for environmental choices by children. Contrary to the assumption that both CTPI and WJ Planning scores would be related each other, these two variables were not significantly correlated.

With respect to measures of emotion regulation, Teacher Lability/Negativity ERC scores were positively and significantly correlated with Parent Lability/Negativity ERC scores, indicating that teachers and parents held similar views of children's emotion regulation. Furthermore, both Parent Lability/Negativity ERC scores and Teacher Lability/Negativity ERC scores were negatively and significantly correlated with Environmental ER scores, indicating that those children who had higher parent and teacher ratings of lability/negativity were less likely to self-report emotion regulation as a reason for environmental choices. These findings provide support for the choice of the environmental reasons variable as a measure of emotion regulation.

Gender and Grade Level Effects.

To examine the effects of gender and grade level on the measures of social behavior, planning ability, and emotion regulation, a series of 2 (Gender) x 3 (Grade Level) ANOVAs was carried out. Table 3 presents means and standard deviations as a function of gender on measures of social behaviour, emotion regulation and planning ability. Table 4 presents means and standard deviations on variables as a function of grade level.

With respect to Aggressive/Disruptive scores, a 2 (Gender) x 3 (Grade Level) ANOVA indicated a significant main effect of Gender, $F(1, 81) = 4.77, p < .01$ and Grade Level, $F(2, 81) = 6.14, p < .05$, for peer nominated scores on the Aggressive/Disruptive scale. There was no significant interaction. Effect size was calculated using partial eta squared for both grade ($\eta^2 = .01$) and gender ($\eta^2 = .02$), and indicated very small effect sizes. Results indicated that males had significantly higher peer nominated scores on the Aggressive/Disruptive scale than females. With respect to

differences as a function of Grade Level, children in higher grades had lower peer nomination scores on the Aggressive/Disruptive scale. More specifically, post-hoc comparisons using the Tukey HSD test indicated that the mean score on Aggression for Grade 5 students ($M = .81$, $SD = 1.04$) was significantly lower than mean scores for Grade 3 ($M = 2.08$, $SD = 2.00$) and Grade 4 students. Children in Grade 3 did not differ significantly from children in Grade 4. For the other two scales of the RCP, Sensitive/Isolated and Sociability/Leadership, there were no significant Gender or Grade Level effects.

With respect to CTPI scores, a 2 (Gender) x 3 (Grade Level) ANOVA indicated significant main effects of Gender, $F(1, 79) = 9.81$, $p < .01$ and Grade Level, $F(2, 79) = 5.03$, $p < .01$. Effect size was calculated using partial eta squared for both grade ($\eta^2 = .12$) and gender ($\eta^2 = .11$), and indicated very small effect sizes. There was no significant interaction. Females self-reported significantly higher future time perspective scores than did males. With respect to the Grade Level, these differences were in an unexpected direction. Post-hoc comparisons using the Tukey HSD showed that children's mean scores for Grade 3 ($M = 15.94$, $SD = 1.13$) were significantly lower (more future oriented) than the mean score of children in Grade 4 ($M = 20.09$, $SD = 1.05$) and Grade 5 ($M = 20.65$, $SD = 1.28$). Children in Grade 4 and Grade 5 did not differ significantly in terms of their future orientation. There was no significant Gender or Grade Level effect on the other measure of planning ability (WJ Planning).

With respect to teacher ratings of emotion regulation, a 2 (Gender) x 3 (Grade Level) ANOVA indicated a significant main effect of Gender for Teacher Lability/Negativity ERC scores, $F(1, 79) = 8.80$, $p < .01$. Again, effect size was

calculated using partial eta squared for both grade ($\eta^2=.006$) and gender ($\eta^2=.11$) and indicated very small effect sizes. Overall, teachers rated males as having higher levels of Lability/Negativity (an indicator of poorer emotion regulation) than females. There were no significant Gender or Grade Level effects on the other two measures of emotion regulation: Parent Lability/Negativity ERC and Environmental ER.

Environmental Choices

Six emotions (two positive, three negative, and one neutral) were assessed for their influence on environmental choices. For each emotion, choices of where subjects chose to play were coded into two broad types of locale (public vs. private) and four area categories (play structure, asphalt, grass, and other) based on the findings of Ledingham and Chappus (1986), and Rallis (1993). In addition, answers to probes for the specific reason why subjects chose a certain location were coded into seven categories of choices: emotion regulation, activity/physical feature, aggression, social, solitary, nature, and other based on the criteria developed by Puddester, Pursoo, and Ledingham (2008). Total scores for negative ('angry' plus 'sad' plus 'nervous') and positive emotions ('happy' plus 'excited') were divided by the number of emotions that comprised the scores (three for negative emotions and two for positive emotions) to yield the average number of choices of public and private areas for each positive or negative emotional state.

Reasons provided for environmental choices. The frequency of reasons for choosing particular environments in which to play (summed across both playground models and the three social density conditions) as a function of the emotional state is shown in Table 5. With respect to Activity/Physical Features reasons, 44% of the reasons were given when happy, 29% when excited, 13% when bored, 5% when sad, 4% when

angry, and 5% when nervous. For Aggressive reasons, 98% were given for angry emotional states, and 2% for bored. For Social reasons, 33% were given for happy emotional states, 37% for excited, 15% for bored, 3% for sad, 4% for angry, and 9% for nervous. In terms of Solitary reasons, relatively few were given when in positive emotional states (1% happy; 2% excited); 20% were given in bored emotional states, 32% sad, 21% angry, and 25% for nervous. For Nature reasons, 37% were given for the happy emotional state, none for excited, 29% for bored, 29% for sad, none for angry, and 5% for nervous.

Of particular interest were the emotion regulation reasons given. The number of emotion regulation reasons given differed as a function of the emotional state (positive or negative) being probed, $\chi^2(1, n = 783) = 118.21, p < .01$. Of the 783 emotion regulation responses given, 218 (27.8%) were in response to the "angry" probe, 196 (25.0%) were in response to the "nervous" probe, 138 (17.6 %) were in response to the "bored" probe, 183 (23.4%) were in response to the "sad" probe, 17 (2.2%) were in response to the "excited" probe, and 31 (4.0%) were in response to the "happy" probe. Taken together, 597 (92.5%) of the emotion regulation reasons were provided for negative emotions and only 48 (7.5%) for positive emotions. In summary, as one would expect, emotion regulation responses were given significantly more frequently in response to negative emotional states than in response to positive emotional states; presumably, individuals do not feel the need to regulate positive emotional states. In addition, a 2 (Gender) X 3 (Grade Level) was conducted on the dependent variable of total emotion regulation reasons given. There were no significant effects of Grade Level. Gender differences did approach

significance, $F(1, 81) = 3.81, p = .055$, with females giving more emotion regulation reasons than males.

Environmental choices as a function of playground presented. Children were presented with two distinct playground models with which they had had no previous direct physical experience. The layout of these models can be seen in Appendix G. Analyses were conducted to investigate whether the specific playground that children were presented with affected their locale choices or frequency of emotion regulation reasons. To investigate these differences, three one-way ANOVAs were conducted with the dependent variable of playground presented, and a Bonferroni correction was applied. The first ANOVA looked at total number of emotion regulation reasons given as a function of the particular playground layout presented. There was no significant effect of playground on the number of emotion regulation reasons given, $F(1, 80) = .51, p > .05$. The second ANOVA investigated the total number of private area choices as function of the particular playground layout presented. Again, the particular playground layout did not have a significant effect, $F(1, 80) = .60, p > .05$. The third ANOVA used total number of public choices as a function of the playground layout presented, and revealed no significant effect of playground, $F(1, 80) = .82, p > .05$. Mean and standard deviations for the variables included in these analyses are presented in Table 6 and 7.

Choices of different environmental areas as a function of gender, grade level, and emotional valence. A 2 (Gender) X 3 (Grade Level) x 2 (Emotional Valence) MANOVA followed by subsequent ANOVAs were conducted on the three dependent variables representing total choices for three different playground features (grass, asphalt, and play structure) summed across both playground models and all three social density

information conditions. Table 8 presents the means and standard deviations of environmental area choices as a function of mood. The MANOVA revealed that there was a significant main effect of Emotional Valence, Wilks' $\lambda = .41$, $F(3, 74) = 35.87$, $p < .001$ and a significant main effect of Gender on children's choice of area, Wilks' $\lambda = .88$, $F(3, 74) = 3.09$, $p < .05$. There was no significant main effect of grade level, or any significant interactions.

To investigate the main effect of emotional valence on choice of area, three within-subject ANOVAs were conducted for each of the three dependent variables related to area chosen (grass, asphalt, and play structure). Greenhouse-Geisser corrected values were used, based on the recommendations of Tabachnick & Fidell (2007), and Pallant (2007). In the first ANOVA, results indicated that children chose the asphalt surface significantly more often when in a negative mood than when in a positive mood, $F(1.00, 76) = 96.13$, $p < .001$. A second ANOVA revealed that children chose play structures significantly more often when in a positive mood than when in a negative mood, $F(1.00, 76) = 48.81$, $p < .001$. Lastly, a third ANOVA indicated that there was no significant main effect of emotional valence on the grass surface variable, $F(1.00, 76) = .052$, $p > .05$.

To examine the effect of gender on children's choice of surface, another ANOVA was conducted. Results indicated that there was no significant effect of gender on choices of grass or play structure areas, but there was a significant effect of gender on choices to play on asphalt, $F(1.00, 76) = 48.81$, $p < .001$. Overall, girls chose the asphalt surface significantly more often than boys.

Grade, gender, and emotional valence differences in environmental choices of public versus private areas. In order to investigate the effects of grade, gender, and emotional valence (positive/negative) on choices of public versus private areas, a 3 (Grade) x 2 (Gender) x 2 (Emotional Valence) MANOVA was performed on dependent variables of private and public area choices summed across both playgrounds and all three social density conditions. Both grade and gender were between subjects variables, while emotional valence was a within subjects variable. Table 9 presents the means and standard deviations of choices of public and private areas as a function of emotional valence, grade, and gender.

The results indicated a significant main effect of emotional valence on public and private area choices, Wilks' $\lambda = .24$, $F(2,75) = 117.00$, $p < .001$. There were no significant main effects of gender or grade level, and no significant interactions. To investigate the main effect of emotional valence on choice of area (public versus private), two within-subject ANOVAs were conducted on the dependent variables of choices of private and public areas. The first ANOVA revealed a significant main effect of emotional valence on choices of private areas, $F(1.00,76) = 217.22$, $p < .001$. Overall, children chose private areas more often when in a negative mood than when in a positive mood. A second ANOVA revealed a significant effect of emotional valence on the number of choices of public areas, $F(1.00,76) = 236.36$, $p < .001$. Children chose public areas significantly more often when in a positive mood than when in a negative mood.

Environmental choices as a function of social information presented: A 3 (Social Information) X 2 (Emotional Valence) MANOVA was carried out on the dependent variables of public and private locale choices to see whether social density

representations on the playground models and emotional valence affected whether children made more choices to play in public or private areas. Table 10 presents the means and standard deviations of environmental choices as a function of social information presented. The number of choices of public and private areas were summed across the two different playgrounds separately for each of the three social density conditions (no information, central, or peripheral) and then divided by the number of emotional states contributing to each emotional valence score (two for positive, three for negative). The MANOVA indicated a significant main effect of Social Information, Wilks' $\lambda = .85$, $F(4, 78) = 3.57$, $p < .05$, a significant main effect of Emotional Valence, Wilks' $\lambda = .03$, $F(2, 80) = 1323.25$, $p < .001$, and a significant Social Information X Emotional Valence interaction, Wilks' $\lambda = .72$, $F(4, 78) = 7.70$, $p < .001$.

Main effects and interactions were explored by investigating the effects on private and public locale choice measures separately using ANOVAs. Within-subjects ANOVAs revealed a significant effect of Emotional Valence on both private, $F(1.00, 81) = 433.06$, $p < .001$, and public areas variables, $F(1.00, 81) = 54.43$, $p < .001$. Children chose private areas more often when in a negative mood than when in a positive mood. Furthermore, children chose public areas more often when in a positive mood than when in a negative mood.

With respect to the main effect of Social Density, within-subject ANOVAs revealed that there was a significant effect of social density information on both private area choices, $F(1.62, 81) = 6.68$, $p < .01$, and public area choices, $F(1.77, 81) = 7.41$, $p < .01$. To examine these effects, paired samples t-tests were first conducted on the different levels of social density information on both private choices and public choices. Results

indicated that children chose private areas significantly more often in the peripheral social density condition than in the no social information, $t(81) = 2.05, p < .05$, and central social density conditions, $t(81) = 3.43, p < .001$. Children also chose private locales significantly more often in the no social density information condition than in the central social density condition, $t(81) = 2.80, p < .001$. In terms of public locales, children chose these locations more often in the central social density condition than when either no social information was given, $t(81) = 3.16, p < .001$ or in the peripheral social information condition, $t(81) = 3.79, p < .001$. There were no significant differences in number of public area choices between the no social information and peripheral density conditions, $t(81) = 1.98, p > .05$.

Lastly, the significant Social Information X Emotional Valence interaction was explored. Within-subject ANOVAs revealed that the interaction was significant for both the private, $F(1.62, 81) = 6.68, p < .01$, and public, $F(1.62, 81) = 6.68, p < .01$, dependent variables. These simple main effects were then examined by via paired samples t-tests. Bonferroni adjustments were applied to the alpha levels for these comparisons, with p set at $.05/6 = .008$. The first set of comparisons contrasted private area choices in the three social density conditions for negative moods. Paired samples t-tests revealed that, after the Bonferroni adjustments, when in a negative mood, children were no more likely to choose private areas when no social information was presented than when peripheral social information was presented; there were also no significant differences for private choices when in a negative mood between peripheral and central density conditions, or between no social information and central density conditions. When in a positive mood, children were significantly more likely to make private area choices in the peripheral

social density condition than either the no social information, $t(81) = 5.26, p < .001$, or the central density conditions, $t(81) = 6.10, p < .001$; there was no significant difference between no social information and central density conditions.

The next set of comparisons looked at public area choices. In regards to public area choices when in a negative mood, there were no significant differences between social information conditions when the Bonferroni correction was applied. When in a positive mood, children were more likely to make public area choices in the central density condition than in the peripheral density condition, $t(81) = 6.78, p < .001$. They were also more likely to choose private areas when in a positive mood when no social information was presented than in the peripheral density condition, $t(81) = 5.36, p < .001$. There was no significant difference between no social information and central density conditions. Figures 4 and 5 present the graphs for these interactions.

Emotion Regulation Measures as Predictors of Children's Social Behaviour

A series of multiple regressions was conducted to examine the relationship between emotion regulation and children's social behaviours. First, a standard multiple regression was performed using the three measures of emotion regulation (Parent Lability/Negativity ERC, Teacher Lability/Negativity ERC, and Environmental ER reasons) as the independent variables to predict the dependent variable of Aggressive/Disruptive behaviour from the RCP. Table 11 presents the results of this regression analysis. The regression model was significant and explained 27% of the total variance in children's Aggressive/Disruptive scores. Two of the independent variables, Teacher Lability/Negativity ERC and Environmental ER, contributed significantly to the model. A second standard multiple regression analysis was performed using all three

measures of emotion regulation to predict the Sensitive/Isolated scale of the RCP. Results of this regression are presented in Table 12. The regression model was not significant, and none of the emotion regulation measures significantly predicted Sensitive/Isolated scores. Finally, a standard multiple regression was performed using all three emotion regulation measures to predict the Sociability/Leadership factor of the RCP. Table 13 displays these results. The model was significant, and accounted for 16% of the variance in Sociability/Leadership scores. The only variable to significantly predict Sociability/Leadership scores was the Teacher Lability/Negativity ERC measure.

In summary, one measure of emotion regulation, the Teacher Lability/Negativity ERC measure, predicted both Aggressive/Disruptive scores and Sociability/Leadership scores. Another measure, that assessed ER reasons given for environmental choices, significantly predicted Aggressive/Disruptive scores. The Parent Lability/Negativity ERC measure of emotion regulation was not significantly related to any of the scales of social behaviour.

Future Time Perspective and Planning Ability as Mediators Between Emotion Regulation and Social Behavior

A focal point of this study was to examine the relationships between children's emotion regulation and social behaviour, and after exploring these relationships, to examine whether future time perspective and/or planning ability mediated the relationship between emotion regulation and social behaviour. Since a significant relationship was found between emotion regulation measures and the Aggressive/Disruptive scale as well as the Sociability/Leadership scale of the RCP, it was

decided to carry out further steps for these variables to investigate the possibility of mediation.

Baron and Kenny (1986) stated that there are four steps in establishing mediation: Step 1 involves showing that the predictor variable is correlated with the outcome variable; Step 2 involves showing that the predictor variable is correlated with the mediator; Step 3 involves establishing that the mediator affects the outcome variable after controlling for the predictor variable; lastly, Step 4 involves showing that when the mediating variable is included with the predictor variable to predict the outcome variable it reduces the size of the contribution of the predictor variable.

Some researchers have argued, that Baron and Kenny's (1986) procedure has low power for testing mediated effects. More recent mediation research in the social sciences advocates using the product of coefficients method (Dietz, Donahue-Jennings, Kelley & Marshall, 2009). For this reason, the assessment of whether a mediated effect existed was based on the recommendations of MacKinnon and colleagues (MacKinnon & Dwyer, 1993; MacKinnon, Fairchild, & Fritz, 2007; MacKinnon, Lockwood, Hoffman, West & Sheets, 2002). The mediation model proposed by MacKinnon and colleagues is presented in Figure 3. They argued that to demonstrate a mediation effect: a) there must be a significant relationship between the predictor variables (the three measures of emotion regulation) and the proposed mediator (the two measures of planning ability) as represented in *path a*, (b) there must be a significant relationship between the proposed mediator (Planning Ability) and the outcome variable (Social Behaviour) as represented in *path b*, and (c) the indirect effect of the product of these two pathways (*path a x b*) must also be significant. If the effect of the predictor variable on the outcome variable is

zero when the mediator is included, there is evidence for full mediation (Judd & Kenny, 1981). MacKinnon et al. (2002) recommend using the product of coefficients method originally proposed by Sobel (1982) to test the significance of the coefficients method. This involves calculating an estimated Z score, representing the mediated effect, in place of traditional Baron and Kenny procedures. The product of the unstandardized betas is divided by its standard error; ($SEab$) where $SE(ab) = \sqrt{(SE(a)^2 \times (b)^2 + SE(b)^2 \times a^2)}$ (see MacKinnon et al., 2002).

To investigate *Path A* of the mediation model (emotion regulation as a predictor of future time perspective or planning ability), a hierarchical multiple regression was first used to assess the ability of the three measures of emotion regulation (Teacher Lability/Negativity ERC, Parent Lability/Negativity ERC, and Environmental ER) to predict CTPI scores. Due to the fact that previous analyses showed significant effects of gender and grade level on the CTPI variable, it was decided to control for these effects. Table 14 presents the results of this regression. Gender and grade level were entered in Step 1, and explained 13% of the variance in CTPI scores. The three measures of emotion regulation (Teacher Lability/Negativity ERC, Parent Lability/Negativity ERC, and Environmental ER) were added at Step 2, yielding a significant regression equation with the total variance explained by the model being 19%. Both gender and grade level contributed significantly to the model, but only one of the measures of emotion regulation, Parent Lability/Negativity ERC, contributed significantly to the prediction of CTPI scores.

To evaluate the importance of emotion regulation for planning ability, a standard multiple regression was used to assess the ability of the three measures of emotion

regulation (Teacher Lability/Negativity ERC, Parent Lability/Negativity ERC, and Environmental ER) to predict WJ Planning scores. Based on previous analyses, there was no reason to control for gender or grade level effects for this variable. Results of this regression are presented in Table 15. The overall regression equation was significant, but none of the measures of emotion regulation on their own contributed significantly to the prediction of WJ Planning scores.

To investigate *Path B* in the mediation model for the prediction of aggression, regressions were employed to investigate the relationship between both future time perspective and planning ability, and aggression.

First, a hierarchical multiple regression was used to investigate the relationship between the CTPI and WJ Planning Variables, and the Aggressive/Disruptive scale. Due to the fact that previous analyses showed significant effects of gender and grade level on the aggression variable, it was decided to control for these effects. Table 16 presents the results of this regression. Gender and grade level were entered in Step 1, and explained 20% of the variance in Aggressive/Disruptive scores. The CTPI and WJ Planning variables were added at Step 2, yielding a significant regression equation. The total variance explained by the model as a whole was 26%. Both gender and grade level contributed significantly to the model. In addition, CTPI scores emerged as a significant predictor of aggression scores. The WJ Planning measure did not contribute significantly to the model.

Subsequently, a standard multiple regression equation was used to investigate the relationship between the CTPI and WJ Planning, and the Sociability/Leadership scale of the RCP. Again, previous analyses gave no reason to control for Gender and Grade Level

effects. The overall model was not significant, although WJ Planning emerged as a significant predictor of Sociability/Leadership scores. Results are presented in Table 18.

The above analyses did not support conducting the final step of mediation due to the fact that none of the variables met both criteria necessary for evidence of mediation (i.e., while *path a* was significant for both analyses, *path b* of the mediation model was not significant for either measure of social behaviour). In summary, the current results suggest that planning does not mediate the relationship between emotion regulation and aggression.

Discussion

The present study sought to extend our understanding of emotion regulation, particularly in child populations, by investigating the relationship of time perspective and planning ability both to emotion regulation and to aggressive behaviour. Results indicated that children as young as the age of 7 could be classified as having a future time orientation, and that future time perspective significantly predicted peer nominations of children's aggression. In addition, children's planning ability (as measured by the Woodcock-Johnson) was related to children's self-reported emotion regulation reasons for environmental choices and parent ratings of children's emotion regulation. Somewhat surprisingly, the CTPI time perspective score and the Woodcock-Johnson planning score were unrelated. This study demonstrated significant overlap between some very different measures of emotion regulation using three different informants and highlighted the importance of environmental niche picking for emotion regulation, with a majority of

children indicating that they actively used different locations on the playground to help them regulate their negative emotional states.

Measuring Emotion Regulation

A well-documented challenge in the field of emotion regulation research involves how to operationalize the construct of emotion regulation. A process model of emotion regulation that focused on *antecedent-focused* emotion regulation processes (Gross, 1998a) guided our conceptualization of adaptive emotion regulation processes, and hence which measures we administered. The present study employed two very different measures of emotion regulation including one quite new one: the Lability/Negativity scale of the Emotion Regulation Checklist is part of a fairly widely used measure of emotion regulation, while the score for emotion regulation reasons given for choosing a place to play on the Environmental Choices Task is a relatively new measure. Furthermore, three different informants were used in measuring children's emotion regulation skills - homeroom teachers and parents for the Lability/Negativity ERC and child self-reports for the Environmental Choices Task. The agreement between all three measures was significant and in the appropriate direction, offering good evidence for the validity of these measures. Given the dearth of studies that have examined the correspondence between different measures of emotion regulation and between different respondents using the same measure, the present study adds additional evidence for the validity of the emotion regulation construct.

The measures of emotion regulation were also related to children's peer nominations for social behaviour. Both teacher and child measures of emotion regulation correlated with the Aggressive/Disruptive variable, the teacher measure correlated with

the Sociability/Leadership variable, and the child measure correlated with the Sensitive/Isolated measure.

The measures of emotion regulation in the present study revealed important gender differences. Overall, teachers conceptualized boys as having poorer emotion regulation skills than girls. There was also a significant gender effect in terms of children's self-reports of emotion regulation reasons for environmental choices, with boys giving fewer emotion regulation reasons than girls for their environmental choices.

Examination of parent and teacher ratings revealed interesting findings regarding how parents and teachers differed in their identification of children's behaviours related to emotion regulation. Although the two measures were correlated, overall it seemed that teacher ratings were a stronger predictor of the peer nomination measures of social behaviour. Measures of both aggression and sociability as reported by peers were significantly correlated with teachers' emotion regulation ratings. There were no significant relationships between parent ratings of emotion regulation and the three peer-generated measures of children's social behaviour. This may be related to the different contexts in which parents and teachers observe and interact with children; teachers and peers observed children in the same context, while parents saw how children behaved in quite a different environment. However, teachers also have the benefit of observing children in interaction with same age peers, and this may make normative comparisons easier. Parents have a more limited scope of comparison (siblings generally of different ages and possibly genders, or extended family). Furthermore, parents may be more motivated than teachers to represent their children more favourably (Laghi et al., 2009). Such findings do not diminish the importance of parent ratings of children's behaviour in

the least. Rather, they are consistent with the idea that children exhibit different behaviours in different environments, and that key figures in children's lives may have similar but not identical views of the child's functioning (Stifter, Willoughby, & Towse-Goodman, 2008).

Children's Environmental Choices

Another focal point of this study was to determine if, how, and when children use their playground environment to modulate their emotions. Emotion regulation reasons were the second most frequent category of responses, accounting for 25% of all reasons given, more than reasons in categories of socializing, solitude, aggression, and nature. The only more frequent response for environmental choices that children gave was activity/physical feature (34%). That is, when giving reasons about why they chose a particular locale in a particular mood, children frequently said that they did so to actively change the way they were feeling. They were also much more likely to give emotion regulation reasons when in a negative mood. In fact, 92.5% of the emotion regulation reasons were given in response to negative emotion probes (being sad, angry, or nervous), and particularly in response to the "angry" probe. This corresponds well with the intuitive notion that it is mainly unpleasant negative emotional states that individuals seek to modify. Children saw little need to regulate their mood when they were experiencing a positive emotional state: only 7.5% of emotion regulation reasons were given for the two positive emotional states. Thus, emotion regulation as measured here involved an attempt to make affective experiences more positive rather than an attempt to reduce the intensity of all emotions, whether positive or negative.

Results also indicated that not only do children use their environments for emotion regulation, they also seem at the ages sampled here to have important metacognitive rules about how they make these choices. Children in all three grade levels chose private areas more often when feeling sad, angry, or nervous, and chose public areas more often when feeling happy or excited. Furthermore, children made similar choices across two different models of playgrounds that they had no physical experience with in terms of where they would choose to play when in either positive or negative moods.

Children apparently were affected by different physical aspects of the playground as a function of their emotional state. When in a negative emotional state, children displayed a preference for asphalt over grass and the play structure. When in a positive emotional state, children chose the play structure more often than either grass or asphalt. However, in addition to examining the significance of physical features for environmental choices in response to different emotions, the study also attempted to unconfound the effects of social density from the influence of physical features in their effects on environmental choices. This an area often ignored in person-environment interaction research. To this end, three versions of the two playgrounds were presented to the children. The first had no information about the social densities of different areas on the playground. The second had what we believed on the basis of previous observational research to have typical patterns of social density that involved higher concentrations of children in central areas of the playground (play structures and structured activity areas). The third presented what we expected to be an atypical pattern of social densities, with the majority of child figures located at the peripheries of the playground. This latter

condition successfully unlinked the typical relationships between social and physical features of the playgrounds: if results from this third model were different from results from the central density model, it would provide evidence for the importance of social factors separate from that of the physical features. In line with this expectation, children chose private areas significantly more often when peripheral social density representations were presented than when central social density distributions were presented and public areas significantly more often with central social density distributions than with peripheral social densities.

There were also significant interactions between mood and social information presented on private and public choices. These indicated that, while the three social information conditions did not differ for negative emotion states on either public or private area choices, for positive emotion states peripheral social density representations yielded significantly higher rates of private area choices than either no social information or central social density conditions. Central social density and no social information conditions yielded significantly higher rates than peripheral social density condition for public area choices. Overall, the significant interactions suggest that when positive emotions were involved there was an influence of social environments on the choice of where to play. In contrast, it appeared to be only physical features rather than social features of the environment that affected choices of where to go when negative emotions were involved and emotion regulation was necessary. In general, the overall similarities observed between the no social information condition and the condition involving central social density representations in the interaction effects suggested that children can infer information about social densities directly from the physical features of the playground.

That is, children appear to have metacognitive rules about how children will be distributed on playgrounds. The findings from the environmental choices task are generally consistent with the findings of Puddester et al. (2008) and Ledingham et al. (1995) who employed the same Environmental Choices task. They are also consistent with Thurber & Malinowski's (1999) research on males 8 to 16 years at a residential summer camp. These researchers indicated that participants with higher level of negative emotion were more likely to choose places where they could be alone, whereas those in more positive emotional states chose environments where there were higher social densities.

In a broader sense, the current findings are also in line with favourite place research that indicated that preferred environments are actively used for cognitive and emotional restoration/regulation. Korpela et al. (2001) indicated that young adults described their favourite environments as those that afforded cognitive restoration and emotional regulation. In a second study, Korpela et al. (2002) reported that one third of children aged 8 to 13 indicated that they actively used their favourite places for emotion regulation after an emotionally taxing event. In a third study, Korpela (2003) indicated that individuals who scored high on negative mood were significantly more likely to report being alone in their favourite place.

Where the current results differ from Korpela and colleagues' body of work, and add to the present body of environmental niche-picking research, is on the factors that influence environmental choices. Korpela and colleagues have suggested that the most important determinant of environmental niche picking (as it pertains to favourite places) is the opportunity to experience nature. The present study suggests that both physical

features (such as play equipment) and social features are important in situation selection, the first step of successful emotion regulation (Gross, 1998b). The current study showed that “nature” was given as a reason for a choice of where to go only 13 times in total and accounted for only 0.5% of all the reasons for environmental choices. Furthermore, there was no difference in rates of identifying nature as a reason for choices while in a positive or negative emotional state. This suggests that other factors besides nature are much more important for situation selection, particularly when negative emotions are involved. We must remember that the present study differed in the fact that it did not look at “favourite” places, but rather at choices made in an essentially non-preferred environment (i.e. the school playground). In general though, the present study seems to give additional credence to the importance of environment - mood interactions, and broadens our understanding and appreciation of how children use their everyday surroundings to maintain and modulate internal feeling states.

Future Time Perspective and Planning Ability

Few studies have investigated the implications of either future time perspective or planning ability for children’s emotion regulation. The current study studied the importance of the two constructs. The first measure, The Children’s Time Perspective Inventory, is to date the only empirically validated measure that assesses time perspective in children, and is said to have both cognitive and behavioural components. The CTPI is a self-report measure completed by children that looks at how planful children are in their day-to-day activities. The WJ Planning subtest was originally included in the study as a supplemental measure of planning ability given the CTPI’s limited use in the field. The WJ Planning subtest is a paper and pencil test identified as a test of executive functioning

that measures mental control processes involved in identifying, selecting, and applying solutions to problems using forethought. It was hypothesized that, although distinct, the two measures would be correlated. Contrary to this hypothesis, the CTPI and WJ Planning subtest were not significantly correlated. That is, these two measures seem to be encapsulating different aspects of planning ability or means-end thinking.

In the present study, children were classified as future oriented more often than present oriented. Following Myers' (2000, 2003) criteria, scores less than 20 on the CTPI were used to indicate a future time orientation, while scores greater than or equal to 20 indicated a present time orientation. Using these reference points, 65% of the 82 children were classified as having a future time orientation. This finding is in line with those reported by Myers (2003), who found that 62% (N= 207) of children in grades 3-5 were classified as having a future time perspective. Such findings challenge some assumptions within the field that all children are present oriented (Goldman & Everette, 1985; Kastenbaum, 1961; Lomranz, 1985), or that the development of future time perspective does not emerge until adolescence with the dawn of formal operations (Inhelder & Piaget, 1958). In the present study, grade level was related to one's ability to be future oriented, but surprisingly in the opposite direction to what we expected: children in the third grade endorsed significantly higher future-time perspective items than did children in grades 4 and 5. Children in fourth and fifth grades did not differ from each other in terms of their CTPI. This unexpected finding could be due to the small sample size in each grade, which may have led to atypical results. Furthermore, it may be that the grade level range was not wide enough to evaluate developmental differences appropriately. Gender, however, was also a significant determinant of time perspective, with girls endorsing

future orientation items significantly more often than males. In this study, the majority of girls (78 %) were classified as having a future time perspective, while less than half (47 %) of the boys were.

We hypothesized that children who scored higher on planning ability and endorsed a future time perspective would have better emotion regulation ratings from both parents and teachers, and would give more emotion regulation reasons themselves. Results obtained from the correlational analyses supported this hypothesis in part: the WJ Planning measure correlated significantly with both parent ratings of emotion regulation and child emotion regulation reasons for choices. In other words, parents rated children who scored higher on the WJ Planning measure as having better emotion regulation skills and children who gave more emotion regulation reasons had higher WJ Planning scores. Contrary to our hypothesis, teacher ratings of emotion regulation were not significantly related to the WJ Planning measure.

We also hypothesized that children's time perspective would correlate significantly with teacher, parent, and child measures of emotion regulation. However, contrary to expectations, children's time perspective was not correlated significantly with any measures (parent, teacher, or child) of emotion regulation in the current study. Why did the WJ Planning subtest correlate significantly with emotion regulation scores (parent and child) while time perspective did not? There are several lines of reasoning that may explain this finding. First of all, the CTPI had limited empirical evidence for its reliability and validity, and this possible lack of psychometric power may account for why the two measures were not significantly correlated. In contrast, the WJ Planning subtest comes from a widely used and respected battery of cognitive abilities tests that are

based on strong psychometric principles (Floyd, Shaver, & McGrew, 2003; Woodcock, McGrew, & Mather, 2001). It is also possible that the lack of a significant correlation between the CTPI and the WJ Planning scale tells us that the two measures are likely capturing quite distinct aspects of children's ability to make plans. The WJ planning subtest is a direct test of planning where children have to inhibit immediate responses and apply forethought in order to achieve a specific goal. It is primarily a cognitive task that is performed in a standardized testing environment. In contrast, the CTPI is a self-report measure that attempts to capture children's planning ability and impulse control on everyday tasks. It is subject to the limitations and flaws inherent in self-report measures. That is, how children respond to a questionnaire may not always be truly representative of how they function in everyday circumstances and may be influenced by social desirability factors (Laghi et al., 2009).

Is the CTPI really a psychometrically weak measure that does not measure planning skills well? The present study indicated that the CTPI yielded a broad range of scores (3-33), and correlated with other variables in the direction predicted by the literature (e.g. gender and aggression). Moreover, parent ratings of emotion regulation significantly predicted CTPI scores. This suggests that it was not necessarily the methodological weakness of the CTPI that led to its failure to correlate with emotion regulation measures. Nevertheless, unlike the findings reported by Myers (2000, 2003), none of the children in the present study were classified as having an extreme future orientation (scores of 0 on the CTPI). It may be that children of this age group are only at the beginning stages of future-orientation, and that this ability is not yet developed enough to influence their emotion regulation skills. The surprising direction of the grade

level differences does suggest that there is considerable heterogeneity in future orientation within this age range. Hence, at this stage of development, the WJ Planning measure may be a truer measure of planning ability and effortful control than future time perspective in terms of the skills required in the emotion regulation process (e.g. situation selection, modification, attentional deployment, or cognitive change).

The results may also reflect the choice of measurements used in this study. As stated before, the CTPI is the only measure of children's time perspective that we are aware of, and we included that WJ Planning subtest to supplement the planning/decision making component of time perspective. However, as is evidenced by the current results, these two constructs are not fully overlapping. In Myers' (2000) model, planning falls under the cognitive component of time perspective. However there is a second component to time perspective, the behavioural component. A task such as the delay of gratification (Mischel, Shoda, and Rodriguez, 1989), which theoretically taps into the behavioural component of the time perspective, was not included in this study. At the proposal stage of this study the delay of gratification task, as well as the Tower of Hanoi (Welsh, 1991) were researched as additional measures. However, due to the fact that only one researcher would be collecting the data, and the amount of time these tasks could take to administer to this age group, it was mutually decided that the WJ Planning would be the most feasible measure to include to complement the CTPI.). It should be noted that planning, as required by the pencil and paper task in the WJ, may invoke very different processes than planning a birthday party or some other future event. In hindsight, had we included a more diverse array of tasks relevant to the cognitive and behavioural components of time perspective, we might have been able to more

appropriately capture the time perspective construct and our findings might have been strengthened.

Lastly, it remains a distinct possibility that time perspective and emotion regulation represent entirely independent processes that have quite different relationships to emotion regulation. That is, time perspective may invoke processes that affect behavioural outcomes (e.g., aggression), but do not actively involve modulating the “processes by which individuals influence which emotions they have, when they have them, and how they experience and express these emotions” (Gross, 1998b, p. 530). Many of the items on the CTPI appear to be looking at behavioural self-regulation (e.g., “I have a hard time waiting”, “I do things without thinking first”), and goal-oriented behaviour (e.g. “I do not mind waiting for something I want”). Both self-regulation and goal-oriented behaviour do not necessarily involve emotional goals. Therefore, time perspective processes may be more akin to the broader definition of self-regulation, said to be “the many processes by which the human psyche exercises control over its functions, states, and inner process” (Vohs & Baumeister, 2004). Furthermore, emotion regulation is a process thought to be immediate and short in duration - seconds or minutes (Gross, 1999), whereas self-regulation is an ongoing monitoring of physiological and psychological states that is thought to be inherently future oriented (Little, 1993). Time perspective involves a much longer temporal extension, and requires one to control behaviours and impulses not only in the immediate, but also in the distant future of days, months and even years. These temporal extensions may invoke quite different aspects of functioning. As is evident, the two terms, self-regulation and emotion regulation, overlap extensively, and it is hard to separate one from the other. The murkiness of these waters

continues to plague the field of emotion regulation research (Cole, Martin & Dennis, 2004; Goldsmith & Davidson, 2004; Gross, 2007). Such speculations can only be disentangled with further research.

Aggression

This study was particularly interested in exploring the antecedents and concomitants of aggressive behaviour. We hypothesized that children who reported greater future time perspective would have lower peer-reported levels of aggression. This hypothesis was indeed supported, and allowed us to conclude that children who endorsed a greater future time perspective were less likely to be seen as aggressive by their peers. In fact, aggression was the only outcome variable that time perspective significantly predicted. We also hypothesized that children who scored higher on the WJ Planning subtest would have lower peer nominated levels of Aggressive/Disruptive behaviour. Contrary to this hypothesis, the WJ Planning measure was not significantly related to this measure of aggression.

There were significant age differences in aggression, with children in lower grades having higher ratings of aggression. This highlights the developmental trajectory of this behaviour and suggests that learning to manage aggressive impulses and behaviour may be a developmental task that is evolving in this age group. There were also significant gender effects, with boys having higher scores on aggression than girls, which is in line with previous research (Broidy et al., 2003; Mullin & Hinshaw, 2007; Zahn-Wexler, Schmitz, Fulker, Robinson, & Emde, 1996). Furthermore, peer nominations of Aggressive/Disruptive behaviour were moderately correlated with peer nominations of Sensitive/Isolated behaviour. This may suggest us that children who had problems with

externalizing behaviour were also prone to difficulties within the internalizing spectrum. This is not surprising given the high comorbidity of aggression and depression (American Psychiatric Association, 1994). Such findings may suggest that these children's emotion regulation difficulties were not specific to emotions such as anger, but reflected difficulty regulating all emotions (including sadness). Another possibility, though, relates back to other research conducted on the RCP that proposes that the Sensitive/Isolated factor of the RCP may be better represented by a two factor structure: passive withdrawal and active isolation (Younger & Daniels, 1992). That is, children who score high on the aggressive/disruptive scale may also score higher on the sensitive/isolated scale not necessarily because of emotion dysregulation, but perhaps because these children are more likely to be rejected by their peers.

As hypothesized, children who gave more emotion regulation reasons for environmental choices were seen by their peers as being less aggressive. Furthermore, teacher (but not parent) ratings of emotion regulation were predictive of aggression scores. These findings converge with previous research that indicates that externalizing disorders are characterized by problems with emotion regulation (Bradley, 2000; Eisenberg et al., 1996; Furlong & Smith, 1994; Hubbard et al., 2002; Mullin & Hinshaw, 2007; Shields & Cicchetti, 1997; Silk, Steinberg, & Morris, 2003; Stifter, et al., 1999; Olson, Schilling, & Bates, 1999; Rothbart, Posner, & Hershey, 1995). The current findings also suggest that aggressive children are using their environment less effectively than nonaggressive children, as evidenced by their lower self-reported Environmental ER reasons. More specifically, they may not be effectively using the playground to help them recover from negative emotions, perhaps because they are not monitoring their own

internal states (Stegge & Meerum Terwogt, 2007) or have not developed appropriate emotion regulation skills (Gross, 1998b). However, it should be noted that only children's reports of environmental choices for emotion regulation were indexed: there were no actual observations made of where aggressive and nonaggressive children chose to play.

We must remember that the domain of aggressive behaviour is not homogenous. That is, there are several subtypes of aggression to which this study and other studies in this area may have paid less attention (Hinshaw & Lee, 2003). Most often when we think of aggression we envision *overt or reactive aggression*, which is typically comprised of fights, verbal altercations and threats, and physical quarrels. Both the Emotion Regulation Checklist and Aggression subscale of the RCP used in this study included items most descriptive of overt aggression ("Is prone to angry outbursts and tantrums"; "Is easily frustrated"; "A person who gets into a lot of fights"; "A person who loses their temper easily"). Another crucial subtype of aggression is *relational aggression*, which can be defined as behaviour patterns that consist of harming the reputation of others via gossip, rumor spreading, and aligning with certain peers in an effort to exclude others (Mullins & Hinshaw, 2007). It is also more likely to involve proactive aggression, or the calculated means of obtaining resources important to oneself. Relational aggression, which is more prevalent in girls (Hinshaw & Lee, 2003), does not involve the same reactivity in response to provocation or lack of awareness of internal cues seen in the profiles of individuals with reactive aggression problems (Coie & Dodge, 1998; Frick & Morris, 2004). Because the measures in this study contained more items characteristic of physical and reactive aggression, there may have been a slight underestimation of the true

prevalence of aggressive behaviour, particularly in females. This factor could also have affected the relationships found between aggression and other important constructs investigated in this study, such as emotion regulation and planning ability. Given the grave consequences of relational aggression in the school environment, future studies would be wise to consider the broader spectrum of aggressive behaviour in their conceptualization and operational definitions of this behaviour.

Future Time Perspective and Planning Ability as a Mediator Between Emotion Regulation and Aggression

It was hypothesized that any relationship between emotion regulation and aggression would be mediated by planning ability. Following criteria by MacKinnon and colleagues (1993; 2007), this hypothesis was tested. Analyses did not support the importance of future time perspective or planning ability as a mediator in the relationship of emotion regulation with aggression, but it does appear that future time perspective, planning ability, and emotion regulation have direct effects on aggression. It may be that it is not only emotion regulation but also more general self-regulation skills that are called into play when managing aggressive impulses and behaviour (Baumeister & Vohs, 2004).

Several authors suggest that the power of mediation analyses may be decreased when the independent variable and mediating variable are strongly correlated (Frazier, Tix, & Barron, 2004; MacKinnon et al., 2002; MacKinnon, Fairchild, & Fritz, 2007). The intercorrelations between time perspective/planning ability and emotion regulation was not particularly high ($r = .26$), but may still have decreased the power of the mediation analyses somewhat.

Limitations of the Present Study

This study was correlational rather than experimental in design, and it was cross-sectional and did not look at behavioural change over time. The correlational design did not allow us to make any statements of causality between the various constructs. Future research may warrant an experimental design, where children could be assigned to different treatment conditions (e.g., planning ability skills training; emotion recognition education) and then compared to controls on measures of emotion regulation and social behaviour. Furthermore, a longitudinal design would allow us to elucidate the developmental trends and stability of the constructs of interest in this study, and perhaps identify additional factors that enhance or hinder healthy emotion regulation.

In terms of the participants, the overall sample size ($N = 82$) was somewhat small, and may have reduced the power of the statistical analyses. Recruiting school-age children in academic settings is always a challenge, and this study might have benefited from more participants in that it would have enabled us to use different statistical methods such as structural equation modeling to examine the relationships among the multiple measures of emotion regulation, time perspective, planning ability, and the three measures of social behaviour. In addition, this sample was recruited from a relatively small suburban community in Newfoundland. The population was homogenous, with all children being English-speaking and Caucasian. There was no significant ethnic diversity represented in this sample. This may limit the generality of the findings in this study.

Results obtained using the time perspective measure may also have been limited by the age range of the sample. Despite the rather large range of scores obtained on this variable, it may be that developmental differences were not wide enough from third to

fifth grade to help time perspective emerge as a significant predictor of emotion regulation. Incorporating older participants (namely junior high or high school students) might possibly have given us more ability to look at the true importance of this variable.

The time perspective measure may also have been somewhat limited by the fact that only self-report measures were used to assess future orientation (Simons et al., 2004). Furthermore, the fact that the planning measure is typically measured and interpreted in a battery and there was no psychometric data available for this scale on its own may have influenced current findings because despite its face validity it may not be a valid measure of overall planning ability. Future research could perhaps employ a multi-method approach to the measurement of time perspective.

It should also be noted that measures of emotion regulation used, although having multiple informants and correlating with other measures in predictable ways, were all indirect. It may be that direct observations of emotion regulation processes might have yielded another picture.

Contributions of the Present Study and Suggestions for Future Directions in Research

In spite of these potential weaknesses, this study had some significant strengths. First, the rate of participation in the present study was 92%, which is very high, and which almost certainly ensured that children of interest, namely those with extreme scores on aggression and emotion regulation abilities, were represented in the sample. Such a response rate increased the confidence we have in our findings as being representative of children's functioning.

Second, this study challenged some notions in the field about the emergence of future time perspective in children as young as the age of seven, and its ability to predict significant variables such as aggression. These findings open up exciting lines of investigation, such as what aspect of future time perspective is first seen, how it changes throughout development, and how it can be fostered to support optimal mental health and academic achievement. It also calls into mind, however, the real scarcity of research on time perspective in school-age populations. To our knowledge, there is currently only one measure of time perspective in children. This instrument has limited empirical evidence for its usefulness and even less prominence in the field. Future research needs to discern the best way of measuring this phenomenon. Much of what we know about childhood time perspective has had to be inferred from research on older adolescents and adults. Therefore, our assumptions of how time perspective develops are often just that - assumptions. Longitudinal studies that measure and track the developmental changes in time perspective would seem to be warranted.

The present study also adds substantially to the body of research on intra-individual niche picking. It highlights the implications of mood for choosing locales, and the power of environments to help individuals regulate and recover from distressing emotions. It calls for greater attention to be paid to children's environments. Gifford (1997) points out that environmental psychology has traditionally been quite segregated from the central core of psychology, and thus the impact of studies investigating the organism-environment connection seem to have had limited influence on research in psychopathology. To date, neither clinical, nor developmental, nor social psychology has investigated the impact that emotions have on environmental choices (Thurber &

Malinowski, 1999). Stokols (1995) has suggested that it might be the interdisciplinary nature of environmental psychology that makes it less visible to many psychologists than other subdisciplines of psychology. There is much talk of children's and adolescents' "environments" in psychology, but this discussion focuses almost completely on the social environment of caregivers and close friends. In terms of Bronfenbrenner's (1979) ecological framework, most psychological studies never get far beyond the microsystem in which children live. The current study calls for greater consideration and integration of children's environments into assessment and intervention procedures, as well as for examining their importance for developmental trajectories.

With the proliferation of research on emotion regulation in the past ten years, a general consensus on what it is, how it develops, and how it differs from other forms of regulation appears to be emerging (Cole, Martin, & Dennis, 1994; Eisenberg & Spinrad, 2004; Gross, 2007). That being said, much work still needs to be done. There still seems to be considerable overlap between notions of emotion regulation and self-regulation, especially in terms of how these two constructs are measured (Cole et al, 2004; Eisenberg, Hofer, & Vaughn, 2007). As stated previously, of the two, self-regulation appears to be the broader term. Self-regulation refers to the many processes that individuals exercise over inner states, including thoughts, emotions, impulses, goal oriented behaviour and attention (Vohs & Baumeister, 2004). In contrast, emotion regulation is specific to the initiation, maintenance, and modulation of the intensity and duration of feeling states (Eisenberg, 2001). As research moves forward, and as we continue to examine the developmental trajectory of children's regulatory abilities, finer grain distinction need to be made between these constructs. Such distinctions need to start

at the foundational level of how researchers operationalize the term emotion regulation, and then focus on how they construct and refine measures of this specific process. Given that Gross' (1998a) conceptualization and model appear to have strong empirical support, it may be advantageous for investigators to measure the different aspects of emotion regulation (situation selection, situation modification, attentional deployment, cognitive change, suppression, etc.) directly in order to investigate how and when people engage in these strategies. For example, measures could directly assess the frequency with which people engage in antecedent emotion regulation (seeking out or avoiding certain situations in order to regulate emotions, modifying situation to alter their emotional impact, deploying attention in order to influence emotions, modifying the cognitive evaluations that give meaning to emotional situations) compared to response-focused emotion regulation (inhibiting the expression of ongoing emotion expressive behaviour). Such distinctions could then be examined in relation to outcome variables such as mental and physical health and adaptive functioning.

As other researchers (e.g., Mullins & Hinshaw, 2007) have pointed out, it is an exciting time to be working in the area of emotion regulation and developmental psychology. It is also an exciting time to be translating these findings into the field of child psychopathology. Emotion dysregulation is central to the description and diagnostic criteria for most, if not all, psychological disorders (American Psychiatric Association, 1994). It is not just clinical research that stands to gain from the findings of emotion regulation research, but in addition our general understanding of normal developmental trends in emotion regulation should be greatly enhanced by incorporating a developmental psychopathology perspective that allows normal and abnormal emotion

regulation paths to be studied side by side, with the potential for reciprocal enlightenment (Cicchetti & Cohen, 2006). Intervention studies designed to increase emotion regulation abilities and to assess the consequences for general adjustment in child populations of emotion regulation could add to our understanding of its importance across the life span. In other words, when we can understand how emotion regulation contributes to developmental psychopathology, the broader field of emotion regulation should become better informed (Campbell-Sills & Barlow, 2007; Gross, 2007).

Lastly, the overarching goal of any psychological research is not just to better understand phenomena within academic circles, but most importantly, to take such findings and create effective interventions that serve those who are struggling. The findings of this study could potentially inform cost-effective and preventative interventions for emotion dysregulation that could be employed not only by clinicians but also by school personnel. For a moment consider these two facts: children spend most of their waking hours during the formative years in the school environment, and the majority of problems with externalizing behaviours occur not in the classroom but on the school playground. This tells us something about how and where we should be focusing prevention and intervention services. By incorporating knowledge about children's environments and the role of planning for emotion regulation and aggression, the playground could serve as an important milieu in which to shape and foster children's mental health. We are living in a time of managed health care and lengthy waitlists for individual psychological services, which sadly causes some children to fall through the cracks (Lunsky et al., 2007; Miller, 1996; Perry & Szalavitz, 2006; Reid & Brown, 2008). The present study suggests that teachers are quite in tune with and adept at assessing

children's emotional and behavioural functioning, in addition to being heavily involved in children's lives. Educating teachers about the role of the environment, emotion regulation, and planning ability might not only help them to identify children at high risk and refer them to professionals more appropriately, but also might give them some ways of intervening themselves. For example, by increasing teachers' awareness of the significance of environmental choices on the playground and helping them monitor children's (especially dysregulated children's) environmental patterns, they could potentially serve as powerful agents by simply redirecting children to less socially dense areas when they are in emotionally taxing situations. In addition, by disseminating this knowledge to teachers, they may be in a better position to foster these skills in children before they find themselves in emotionally taxing situations in the classroom. The possibility of researchers, health professionals, and school personnel working together might help to contribute to a much brighter picture for our children's future.

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Table 1

Scoring Criteria for Reasons Provided in Environmental Choices Task

Reason	Criteria
Emotion Regulation	Evidence that an active effort was made to change the valence and/or experience of a specific emotion. <i>Example: "To calm down," "To get more excited."</i>
Aggression	Evidence of planned physical aggression (did not include verbal aggression) toward classmate or inanimate object. <i>Example: "To get into a fight," "To kick the fence."</i>
Solitary	Evidence of choosing locale in order to be away from socially dense areas or seek privacy. <i>Example: "To be alone," "To get away from other kids."</i>
Social	Selecting a locale based solely on social factors. <i>Example: "To be with my friends," "To hang out"</i>
Nature	Evidence of seeking locales to experience nature for nature's sake, not as an explicit form of regulation. Must contain an explicit differentiation from man-made structures (e.g., fence, swing, etc.) <i>Example: "To watch the clouds pass by," "I like being close to the trees."</i>
Physical Feature	Evidence of choosing locale based foremost on the physical (man-made) structures contained in area and not the activities they may afford. <i>Example: "I like slides," "The rock wall is cool."</i>
Activity	Evidence of engaging in a specific activity or task in specified locale, not selected predominantly because of social factors. <i>Example: "To play soccer," "So I can swing."</i>

Table 2

Intercorrelations Among Variables (Untransformed)

Measure	Agg/Dis	Sens/Iso	Soc/Lead	CTPI	WJ Planning	Terc	Perc	Enviro ER
1. Agg/Disruptive	—	.38**	-.22*	.23*	-.02	.46**	.20	-.38**
2. Sens/Isolated	—	—	-.49**	-.02	-.24**	.18	.21	-.25**
3. Soc/Leadership	—	—	—	-.40	.26*	-.33**	-.20	.15
4. CTPI	—	—	—	—	.11	.08	-.10	-.11
5. WJ Planning	—	—	—	—	—	-.13	-.25*	.26*
6. Teacher ERC	—	—	—	—	—	—	.34**	-.32**
7. Parent ERC	—	—	—	—	—	—	—	-.38**
8. Environmental ER	—	—	—	—	—	—	—	—

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

Table 3

Means (and Standard Deviations) on Measures of Social Behaviour, Emotion Regulation, and Planning Ability (Untransformed) as a Function of Gender

	Males	Females
Aggressive/Disruptive	1.95 (1.82)	1.02 (1.10)
Sensitive/Isolated	1.03 (1.04)	.63 (.67)
Sociability/Leadership	4.41 (2.64)	3.99 (2.43)
CTPI	20.41 (6.45)	17.08 (5.55)
WJ Planning	8.57 (4.59)	7.83 (4.35)
Teacher Lability/Negativity ERC	24.12 (9.59)	18.53 (4.82)
Parent Lability/Negativity ERC	26.56 (7.14)	25.00 (4.57)
Environmental ER	7.31 (5.85)	10.66 (5.96)

Table 4

Means (and Standard Deviations) on Measures of Social Behaviour, Emotion Regulation, and Planning Ability (Untransformed) as a Function of Grade Level

	Grade 3	Grade 4	Grade 5
Aggressive/Disruptive	2.08 (2.00)	1.29 (1.05)	.81 (1.04)
Sensitive/Isolated	1.08 (.95)	.75 (.89)	.54 (.63)
Sociability/Leadership	4.12 (2.65)	4.26 (2.51)	4.10 (2.47)
CTPI	16.08 (6.89)	19.90 (5.71)	19.38 (5.17)
WJ Planning	7.64 (4.35)	8.45 (4.50)	8.35 (4.65)
Teacher Lability/Negativity ERC	21.88 (8.83)	20.60 (6.04)	19.91 (8.20)
Parent Lability/Negativity ERC	24.82 (3.99)	25.79 (7.14)	26.59 (5.98)
Environmental ER	7.78 (5.67)	9.17 (7.08)	11.00 (4.97)

Table 5

Total Frequencies of Reasons Given for Different Environmental Choices as a Function of Emotional State

<i>Emotion</i>	<u>Reason</u>					
	Emotion Regulation	Activity/Physical Feature	Aggression	Socialize	Solitary	Nature
Happy	31(4%)	467 (44%)	0 (0%)	155 (33%)	8 (1%)	6 (37%)
Excited	17 (2%)	302 (29%)	0 (0%)	173 (37%)	2 (.2%)	0 (0%)
Bored	138 (18%)	133 (13%)	1 (2%)	68 (15%)	145 (20%)	5 (29%)
Sad	183 (23%)	52 (5%)	0 (0%)	12 (3%)	232 (32%)	5 (29%)
Angry	218 (28%)	45 (4%)	50 (98%)	17 (4%)	150 (21%)	0 (0%)
Nervous	196 (25%)	57 (5%)	0 (0%)	42 (9%)	182 (25%)	1 (5%)
Total for Negative Emotions	597 (76%)	154 (16.7%)	50 (100%)	71 (17.8%)	564 (98.3%)	6 (50.0%)
Total for Positive Emotions	48 (6%)	769 (83.3%)	0 (0%)	328 (82.2%)	10 (1.7%)	6 (50.0%)

Note: Scores for total negative and positive emotions do not include the emotion "boredom". Percentages for individual emotions sum to 100% in each column.

Table 6

Means (and Standard Deviations) for Environmental Emotion Regulation Reasons as a Function of Playground Model Presented

	Playground 1	Playground 2
Environmental ER	8.63 (6.03)	9.60 (6.20)

Table 7

Means (and Standard Deviations) for Public and Private Locale Choices as a Function of Playground Model Presented

Surface	Private	Public
Playground 1	18.08 (3.34)	17.87 (3.34)
Playground 2	17.41 (4.23)	18.63 (4.11)

Table 8

Means (and Standard Deviations) for Average Number of Surface Area Choices per Emotion Separately for Positive and Negative Mood States

Surface	Positive	Negative
Grass	2.38 (.88)	2.39 (.80)
Asphalt	1.05 (.59)	2.24 (.82)
Play Structure	2.52 (1.02)	1.30 (.92)

Note: Positive mood choice scores were divided by two (happiness and excitement) and negative mood choice scores were divided by three (angry, sad, and nervous) for each type of surface to yield means with similar metrics for positive and negative moods.

Table 9

Means (and Standard Deviations) of Public and Private Area Choices as a Function of Emotional State, Grade, and Gender

Emotion	<u>Choice of Locale</u>	
	Public	Private
Positive Emotions		
Grade 3		
Male	4.39 (.90)	1.23 (.59)
Female	4.76 (.59)	1.57 (.89)
Grade 4		
Male	4.84 (.88)	1.11 (.87)
Female	4.08 (1.09)	1.88 (1.11)
Grade 5		
Male	4.62 (1.16)	1.37 (1.16)
Female	4.69 (.83)	1.56 (1.24)
Negative Emotions		
Grade 3		
Male	1.42 (.70)	4.53 (.69)
Female	2.00 (1.11)	3.95 (1.18)
Grade 4		
Male	1.90 (.81)	4.10 (.81)
Female	1.88 (.97)	4.12 (.97)
Grade 5		
Male	1.90 (.81)	4.10 (.81)
Female	2.65 (.72)	3.33 (.73)

Note: Positive emotions comprised of sum of happy and excited. Negative emotions comprised of sum of angry, nervous, and sad. Neutral emotion (bored) not included.

Table 10

Means (and Standard Deviations) for Choices of Public and Private Areas as a Function of Each Positive and Negative Mood State and Social Information Presented

Playground	<u>Choice of Locale</u>	
	Public	Private
No Social Information		
Positive Mood	1.63 (.41)	.37 (.41)
Negative Mood	.60 (.42)	1.39 (.42)
Central Social Density		
Positive Mood	1.71 (.38)	.29 (.38)
Negative Mood	.66 (.45)	1.34 (.45)
Peripheral Social Density		
Positive Mood	1.29 (.58)	.82 (.71)
Negative Mood	.73 (.43)	1.25 (.44)

Note: Positive mood choice scores were divided by two (happiness and excitement) and negative mood choice scores were divided by three (angry, sad, and nervous) for each type of surface to yield means with similar metrics for positive and negative moods.

Table 11

Summary of Standard Multiple Regression Analysis Using Emotion Regulation Measures (Teacher Lability/Negativity ERC, Parent Lability/Negativity ERC, and Environmental ER) to Predict Aggressive/Disruptive Scores

	Unstandardized Coefficients		Standardized Coefficient	F (df1, df2)	p <	R ²
	B	(Std. Error)	β			
Teacher ERC	.22	.07	.35**			
Parent ERC	.01	.53	.02			
Environmental ER	-.02	.01	-.28*	9.06 (3,76)	.001	.27

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

Table 12

Summary of Standard Multiple Regression Analysis Using Emotion Regulation Measures (Teacher Lability/Negativity ERC, Parent Lability/Negativity ERC, and Environmental ER) to Predict Sensitive/Isolated Scores

	Unstandardized Coefficients		Standardized Coefficient	F (df1, df2)	p <	R ²
	B	(Std. Error)	β			
Teacher ERC	.08	.08	.13			
Parent ERC	.42	.62	.08			
Environmental ER	-.01	.01	-.19	2.44 (3,76)	> .05	.09

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

Table 13

Summary of Standard Multiple Regression Analysis Using Emotion Regulation Measures (Teacher Lability/Negativity ERC, Parent Lability/Negativity ERC, and Environmental ER) to Predict Sociability/Leadership Scores

	Unstandardized Coefficients		Standardized Coefficient	F (df1, df2)	p <	R ²
	B	(Std. Error)	β			
Teacher ERC	-1.21	.39	-.36**			
Parent ERC	-1.99	3.14	-.08			
Environmental ER	.00	.05	.01	4.56(3,76)	.01	.16

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

Table 14

Summary of Hierarchical Multiple Regression Analysis Using Emotion Regulation (Teacher Lability/Negativity ERC, Parent Lability/Negativity ERC, and Environmental ER Planning) to Predict CTPI Scores

	Unstandardized Coefficients		Standardized Coefficient	F Δ (df1, df2)	p <	R ² /Δ R ²
	B	(Std. Error)	β			
Step 1						
Grade	2.23	.89	.29**			
Gender	3.53	1.36	.29**	5.63 (2, 75)	.01	.13
Step 2						
Grade	2.26	.87	.35**			
Gender	3.15	1.44	.26*			
Teacher ERC	.47	.99	.06			
Parent ERC	-17.05	7.72	-.27*			
Environmental ER	-.18	.12	-.19	3.43 (5,75)	.01	.06

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

Table 15

Summary of Standard Multiple Regression Analysis Using Emotion Regulation Measures (Teacher Lability/Negativity ERC, Parent Lability/Negativity ERC, and Environmental ER) to Predict WJ Planning Scores

	Unstandardized Coefficients		Standardized Coefficient	F (df1, df2)	p <	R ²
	B	(Std. Error)	β			
Teacher ERC	-.24	.70	-.04			
Parent ERC	-9.64	5.68	-.21			
Environmental ER	.13	.09	.18	3.27(3,76)	.05	.08

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

Table 16

Summary of Hierarchical Multiple Regression Analysis Using CTPI and WJ Planning to Predict Aggressive/Disruptive Scores

	Unstandardized Coefficients		Standardized Coefficient	F Δ (df1, df2)	p <	R ² / Δ R ²
	B	Std. Error)	β			
Step 1						
Grade	-.16	.06	-.30**			
Gender	.26	.09	-.30**	10.05 (2, 79)	.001	.20
Step 2						
Grade	-.20	.06	-.36**			
Gender	.19	.10	.22*			
CTPI	.02	.00	.25*			
WJ Planning	-.00	.01	-.02	6.55 (4,79)	.001	.05

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

Table 17

Summary of Standard Multiple Regression Analysis Using CTPI and WJ Planning to Predict Sensitive/Isolated Scores

	Unstandardized Coefficients		Standardized Coefficient	F (df1, df2)	p <	R ²
	B	(Std. Error)	β			
CTPI	.00	.01	.01			
WJ Planning	-.02	.01	-.23*	2.16(2,79)	>.05	.05

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

Table 18

Summary of Standard Multiple Regression Analysis Using CTPI and WJ Planning to Predict Sociability/Leadership Scores

	Unstandardized Coefficients		Standardized Coefficient	F (df1, df2)	p <	R ²
	B	(Std. Error)	β			
CTPI	-.03	.05	-.07			
WJ Planning	.14	.06	.24*	2.16(2,79)	>.05	.05

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

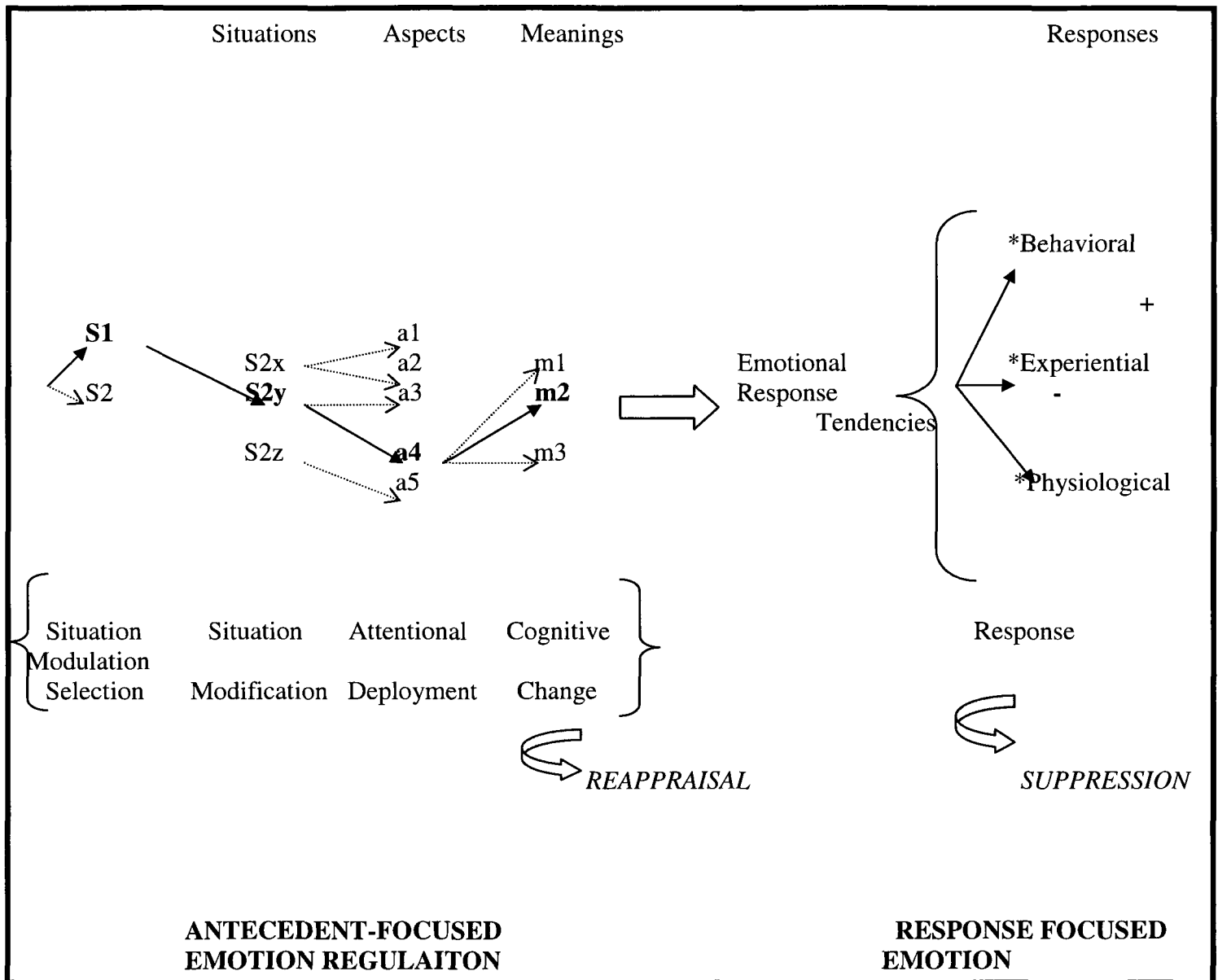


Figure 1. Process model of emotion regulation, distinguishing antecedent-focused emotion regulation from response-focused emotion regulation. Adapted from “The Emerging Field of Emotion Regulation: An Integrative Review”, by J. J. Gross, 1998, *Review of General Psychology*, 2, p. 282.

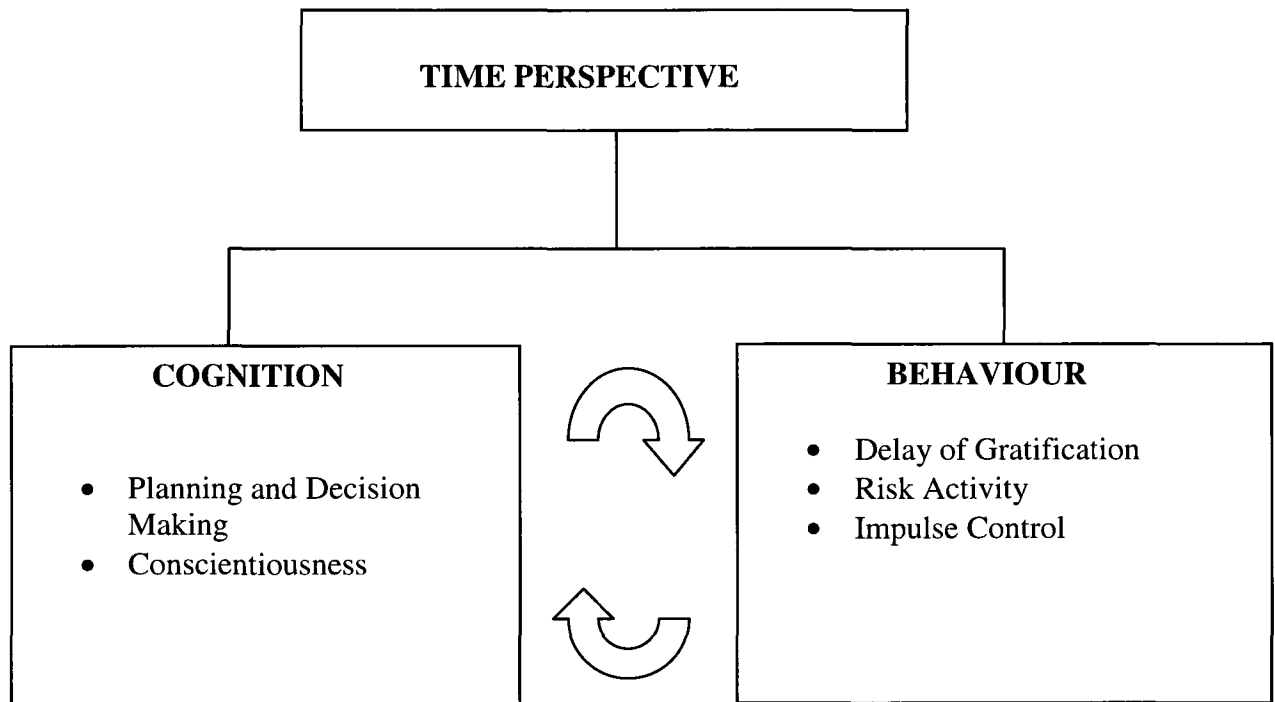


Figure 2. Conceptual map of time perspective, underscoring behavioural and cognitive dimensions of CTPI constructs. Adapted from “*The Children’s Time Perspective Inventory (CTPI): Exploratory Research with Typical Children and Children with Attention-Deficit/Hyperactivity Disorders*,” by M.R. Myers, 2003, (Unpublished doctoral dissertation), University of Toledo, Ohio, p. 16.

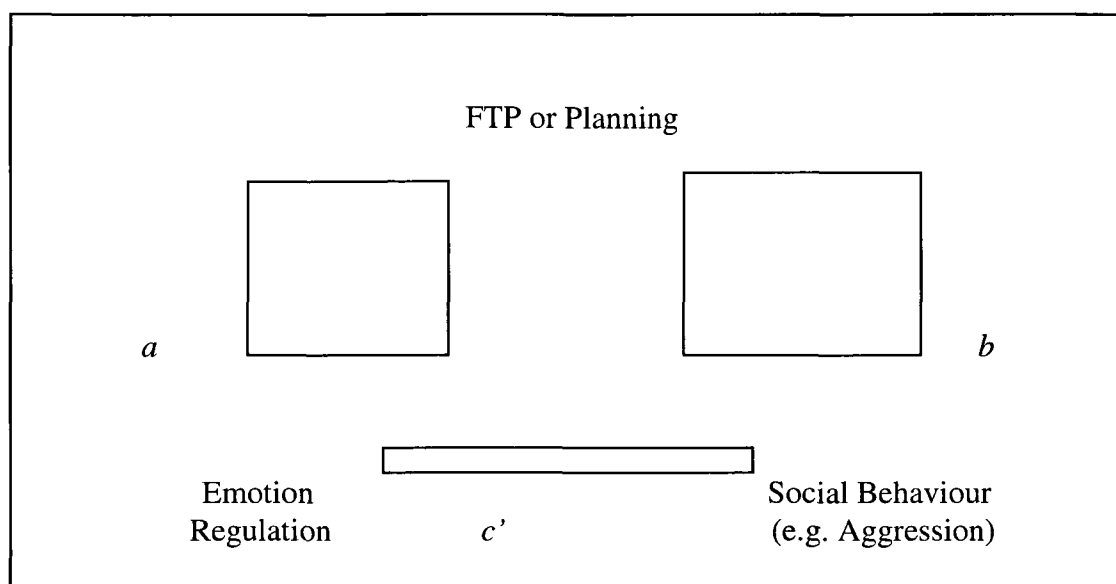


Figure 3. Mediation Model, showing pathways of mediational analyses. For the present study, the independent variable is *emotion regulation*, the mediator is *planning ability*, and the dependant variable is social behaviours (aggression). Adapted from “Mediation Analysis”, by D.P. MacKinnon, A.J. Fairchild, & M.S. Fritz, 2007, *Educational Psychology*, 30 (1), p.594.

Mean Choices of Private Areas as a Function of Emotional Valence and Social Information Presented

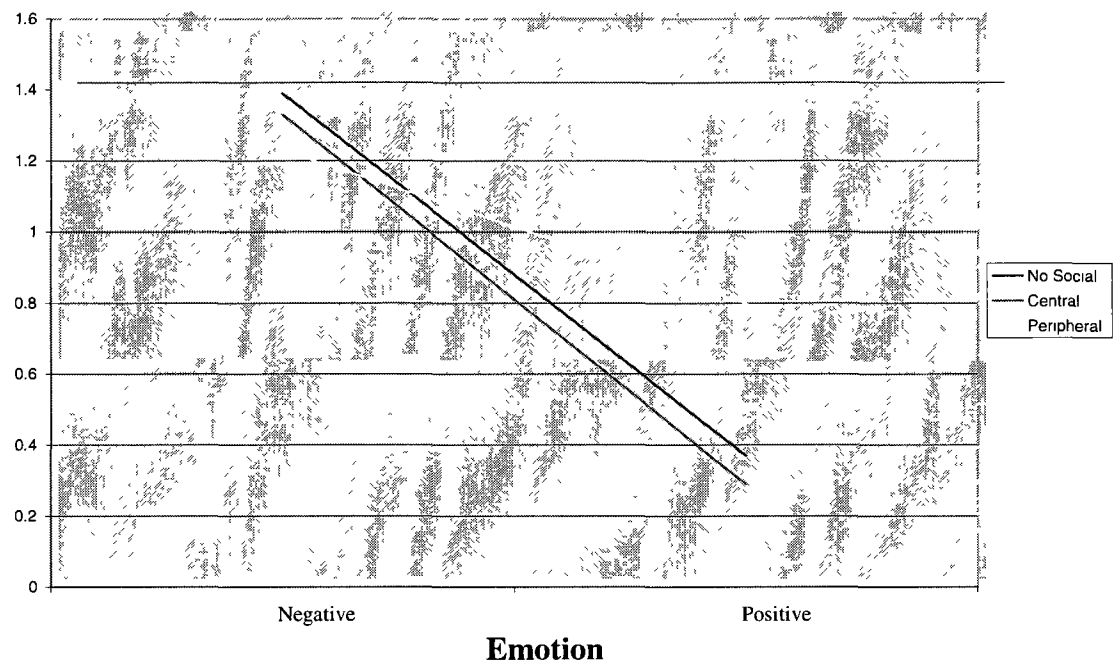


Figure 4. Mean choices of private areas as a function of emotional valence and social information presented. Y axis displays means of private area choices.

Mean Choices of Public Areas as a Function of Emotional Valence and Social Information Presented

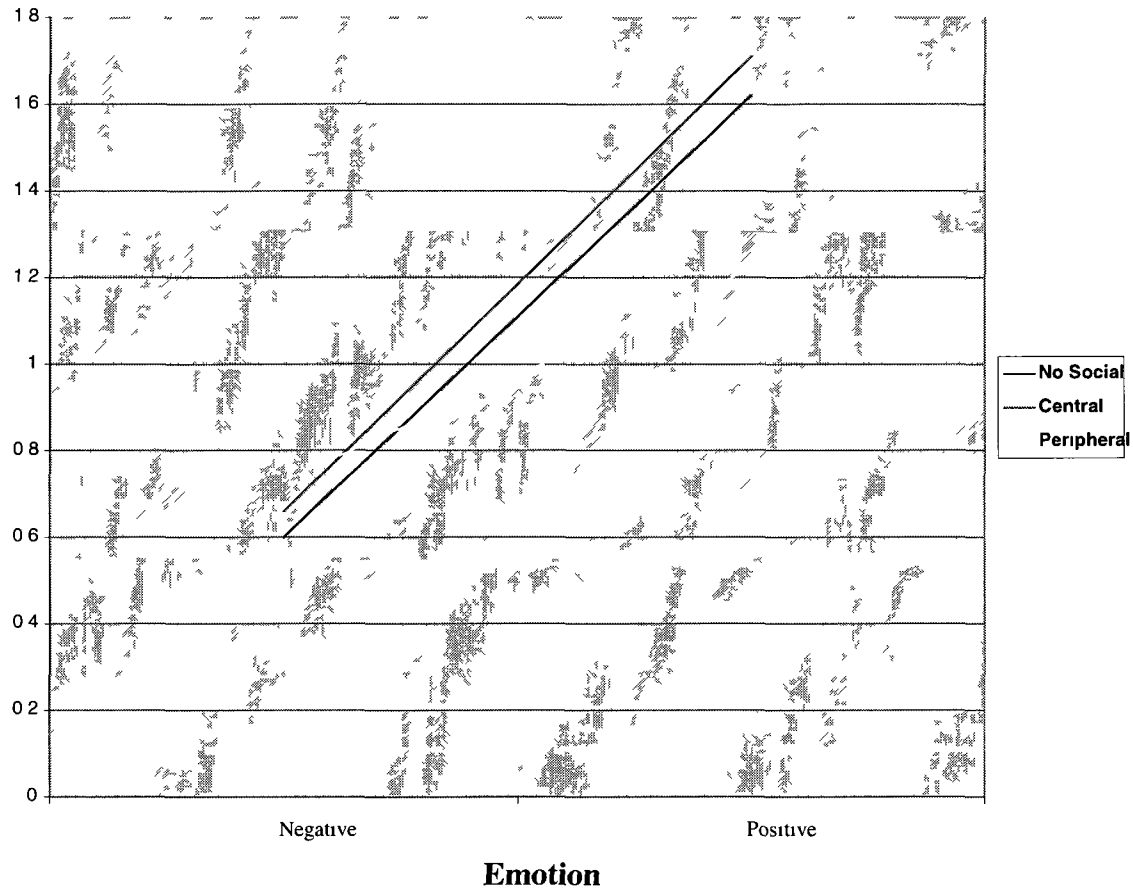


Figure 5. Mean choices of public areas as a function of emotional valence and social information presented. Y axis displays means of public area choices.

Appendix A:
Revised Class Play Questionnaire

REVISED CLASS PLAY

Name: _____
Grade: _____
Age: _____
Date: _____
School: _____

A CLASS PLAY:

1. A person who is good leader:

BOYS

GIRLS

2. A person who gets into a lot of fights:

BOYS

GIRLS

3. Someone who would rather play alone that with others:

BOYS

GIRLS

4. A person with good ideas for things to do:

BOYS

GIRLS

5. A person who loses their temper easily:

BOYS

GIRLS

6. Someone who shows off a lot:

BOYS

GIRLS

7. Someone you can trust:

BOYS

GIRLS

8. A person who interrupts when other children are speaking:

BOYS

GIRLS

9. Somebody who has many friends:

BOYS

GIRLS

10. Someone who waits their turn:

BOYS

GIRLS

11. Someone whose feelings get hurt easily:

BOYS

GIRLS

12. A person everyone listens to:

BOYS

GIRLS

13. Someone who plays fair:

BOYS

GIRLS

14. Someone who has trouble making friends:

BOYS

GIRLS

15. Someone who acts like a little kid:

BOYS

GIRLS

16. Someone who has a good sense of humour:

BOYS

GIRLS

17. A person who can't get others to listen:

BOYS

GIRLS

18. Somebody who is very shy:

BOYS

GIRLS

19. Somebody who is polite:

BOYS

GIRLS

20. Somebody who makes new friends easily:

BOYS

GIRLS

21. A person who is too bossy:

BOYS

GIRLS

22. Somebody who is often left out:

BOYS

GIRLS

23. Someone who helps others when they need it:

BOYS

GIRLS

24. Someone who is usually sad:

BOYS

GIRLS

25. A person everyone likes to be with:

BOYS

GIRLS

26. A person who can get things going:

BOYS

GIRLS

27. Somebody who teases other children too much:

BOYS

GIRLS

28. Someone who is usually happy:

BOYS

GIRLS

29. Somebody who picks on other kids:

BOYS

GIRLS

30. Someone who likes to play with others rather than alone:

BOYS

GIRLS

Appendix B:
Children's Time Perspective Inventory

Children's Time Perspective Inventory:

Name:

Age:

Grade:

Please circle the answer that best describes you:

I am a: BOY GIRL

1) I believe that my day should be planned ahead each morning.

NO SOMETIMES YES

2) If things do not get done on time, I do not worry about it.

NO SOMETIMES YES

3) I have a hard time waiting.

NO SOMETIMES YES

4) I do things without thinking first.

NO SOMETIMES YES

5) I like to take chances.

NO SOMETIMES YES

6) It is more important to have fun than to get homework done on time.

NO SOMETIMES YES

7) I think taking chances is scary.

NO SOMETIMES YES

8) Before making a decision, I think about what could happen.

NO SOMETIMES YES

9) I feel there will always be time to catch up on my homework.

NO SOMETIMES YES

10) I start projects the day before they are due.

NO SOMETIMES YES

11) Taking chances keeps my life from getting boring.

NO SOMETIMES YES

12) If I have a lot to do, I plan ahead.

NO SOMETIMES YES

13) I spend money when I get it instead of saving it.

NO SOMETIMES YES

14) I spend a lot of time thinking over a big decision.

NO SOMETIMES YES

15) It is easy for me to wait my turn.

NO SOMETIMES YES

16) I would rather win \$5.00 today than \$15.00 in 3 months.

NO SOMETIMES YES

17) It is better to be safe than to take a chance.

NO SOMETIMES YES

18) I do not mind waiting for something I want.

NO SOMETIMES YES

19) I think it is fun to be a little unsafe.

NO

SOMETIMES

YES

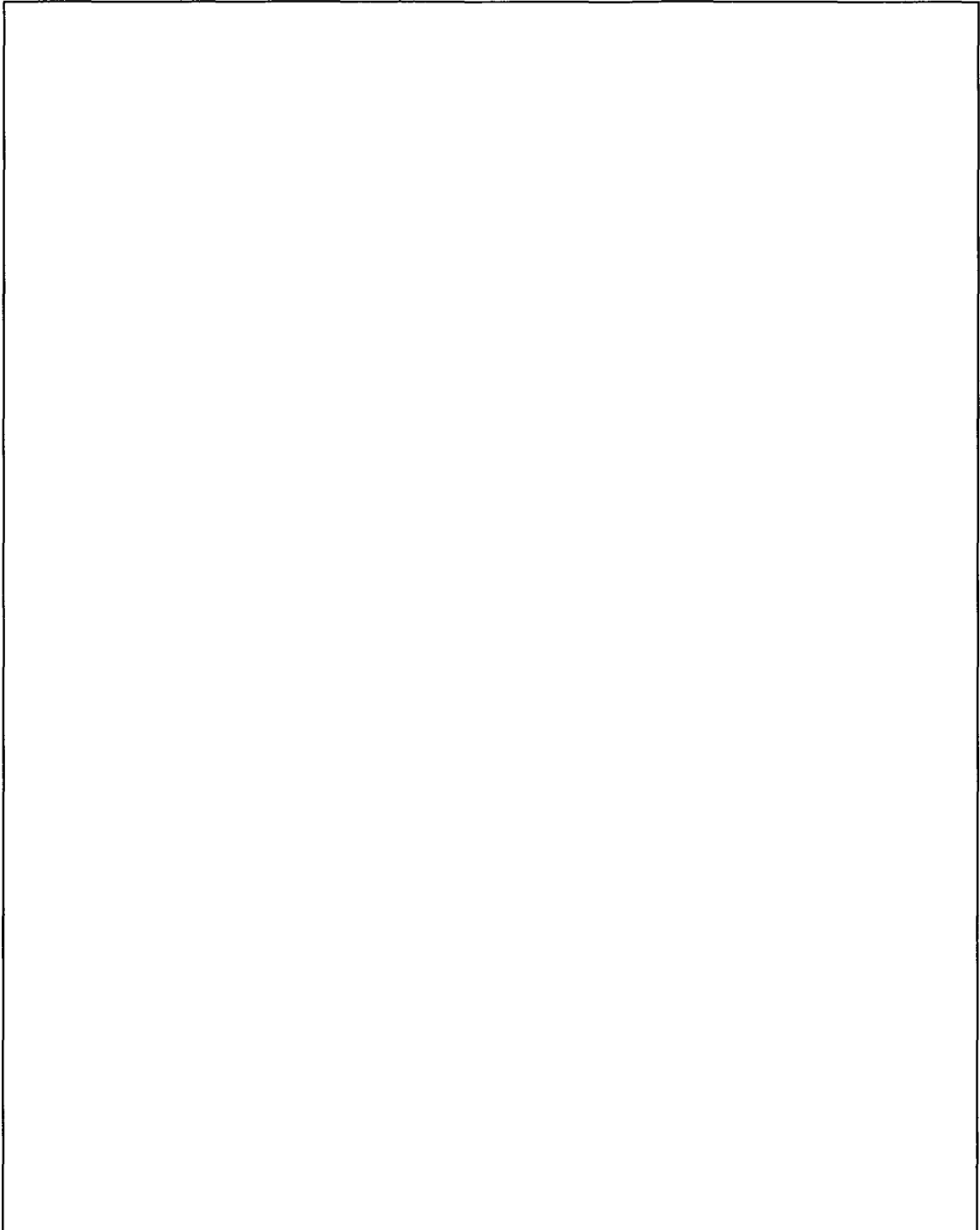
20) I like to spend time checking over my work.

NO

SOMETIMES

YES

Appendix C:
Letter From School Principal to Parents.



Appendix D:
Letter and Consents form for Parents/Caregivers

Dear Parent or Guardian,

We are doing a research project looking at the choices children make about where they play on school playgrounds. The goal of the project is to learn more about how their environment and ability to plan ahead affect their ability to cope with different emotions. All of the students in your child's classroom are being asked to participate. This research project has been approved by your school board and by the principal and governance council of your child's school, as well as by the Research Ethics Board at the University of Ottawa.

Should you agree, there will be a questionnaire for you to complete about your child's emotions and behaviours. The questionnaire will be included in the package sent home with your child, and should be returned in a sealed envelope provided with the consent form to the school by your child. Your child will be asked to complete a questionnaire to tell us which classmates would be best to play parts in a school play, and who his/her favorite singers and athletes are. They will also be administered a questionnaire asking them about how much they plan ahead for their daily activities. The questionnaire will be administered to the class as a whole and will take about 25-30 minutes. After that, your child will participate in an individual interview lasting 30-40 minutes, where he/she will be asked to show us on models of playgrounds where they would go to play when they are in different moods and tell us why they would choose to play there. They will also be administered a simple pencil and paper task where they will have to trace different patterns without lifting their pencil from the paper.

Based on other studies like this that we have done, we believe that children will enjoy the activities we ask them to do. However, only children with written permission from their parents and who themselves indicate they agree to participate will be included in the study. Furthermore, any child who wishes to stop at any time may do so. Students who do not participate in this research will be given a study/reading period while the other students complete the survey.

Whether a child participates or not will not affect his/her grades or the services he/she receives at school. Be assured that all data be kept completely confidential and anonymous, and student will only be identified by a numerical ID and not by name.

Your cooperation with the project would be greatly appreciated! If you have any questions please do not hesitate to contact us at the numbers listed below. Requests for information or complaints about the ethical conduct of the project can also be addressed to the Protocol Officer for

Ethics in Research, Catherine Paquet, at 613-562-5800 ext: 1787. The school will be provided summaries of the findings of the study.

Whether or not you decide to allow your child to participate, please complete the attached form and return it to the school by April 8th, 2008. Thank you in advance for your help.

Leah M. Puddester, BSc. (Hons).
PhD Candidate, Clinical Psychology
University of Ottawa
613-562-5800 ext: 4446
709-334-2343

Dr. Jane Ledingham (PhD., C. Psych.)
Research Supervisor
University of Ottawa
613-562-5800 ext: 4453

PARENT/GUARDIAN CONSENT FORM:

I have read and understood the request for my son/daughter to participate in the study entitled “The Implications of Future Time Perspective for Children’s Emotion Regulations”. I have discussed this with my son/daughter and

_____ I give permission for my son/daughter to participate

_____ I do **not** give permission for my son/daughter to participate

Name of Student: _____
(please print)

Signature of Parent/Guardian: _____

Date: _____

Appendix E:
Student Consent Form

Dear Student:

We want to learn more about where on the playground kids like to play and why they like to play there. To do this we need to ask students some questions. If you would like to be part of this project and your parents give permission for you to participate, then we will ask you some questions. First, we will meet in your classroom with you and all the other children who are participating. We will ask you to pretend that you are directing a play, and pick three boys and three girls from your class to play each roll, and then ask you who your favorite singers and athletes are. We will also ask you some questions about how much time you spend getting ready for your day. This should take 25-30 minutes. After that, we will meet with each child alone, and show you six models of different playgrounds and ask you questions about where you would go to play when you are in different moods and why you would go play there. We will also ask you to an activity where you will have to trace different patterns without lifting your pencil from the paper. This will take 30-40 minutes.

We think that you will enjoy taking part on this project, but you do not have to be in it. If you do not want to participate, then you don't have to. If you say that you want to take part and then change your mind, then you can tell us that you want to and stop and we will stop right away. All of your answer will be kept private. They will not be shared with your friends or teachers.

If you want to be part of this project, please sign your name below.

Leah Puddester
University of Ottawa

Dr. Jane Ledingham
University of Ottawa

YES, I WOULD LIKE TO PARTICIPATE IN THIS PROJECT

Sign your name here

Appendix F:
Letter and Consent Form for Teachers

Dear Teacher:

We are doing a research project looking at the choices children make about where they play on school playgrounds. The goal of this project is to learn more about how children's environments and their ability to plan ahead affect their ability to cope with different emotions. All of the students in your classroom are being asked to participate. This research project has been approved by your school board and by the principal and governance council of your school, as well as by the Research Ethics Board at the University of Ottawa.

Each student who has received parental permission will be asked to complete two testing sessions- one in-class testing session, and one individual testing session. During in class testing, students will be asked to complete a questionnaire to tell us which classmates would be best to play parts in a school play, and who his/her favorite singers and athletes are. They will also be administered a questionnaire asking them about how much they plan ahead for their daily activities. These questionnaires will be administered to the class as a whole and will take about 25-35 minutes. After that, each student will participate in an individual interview lasting 30-40 minutes, where he/she will be asked to show us on models of playgrounds where they would go to play when they are in different moods and tell us why they would choose to play there. They will also be administered a simple pencil and paper task where they will have to trace different patterns without lifting their pencil from the paper. You are not asked to participate in either the in-class testing or individual testing session. The researchers will complete all testing.

Should you agree, there will be a questionnaire for you to complete about each participating student's emotions and behaviours. We will provide you with a copy of the questionnaire for each child which you can complete at your convenience. This questionnaire will ask you to answer 15 questions about how typical the statements are of the child/student, on a 1-4 scale (1 = never; 2 = sometimes; 3 = often; 4 = almost always). Each questionnaire should be completed in a maximum of 5 minutes.

Your participation in this project is completely voluntary. Your school or school board does not require it. Should you choose to participate, you can choose to terminate your participation at any time. All of your responses will be kept completely confidential and anonymous. Only the researchers will have access to the data, which will be kept in a locked storage unit off the school premises.

Your cooperation with the project would be greatly appreciated! If you have any questions please do not hesitate to contact us at the numbers listed below. Requests for information or complaints about the ethical conduct of the project can also be addressed to the Protocol Officer for Ethics in Research, Catherine Paquet, at 613-562-5800 ext: 1787. The school will be provided summaries of the findings of the study.

Whether or not you decide to participate, please complete the attached form and return it to the researchers at your earliest convenience. Thank you in advance for your help.

Leah M. Puddester, BSc. (Hons).
PhD Candidate, Clinical Psychology
University of Ottawa
613-562-5800 ext: 4446
613-290-2972

Dr. Jane Ledingham (PhD., C. Psych.)
Research Supervisor
University of Ottawa
613-562-5800 ext: 4453

TEACHER CONSENT FORM:

I have read and understood the request for my participation in the study entitled “The Implications of Future Time Perspective for Children’s Emotion Regulations”.

_____ I wish to participate in this study

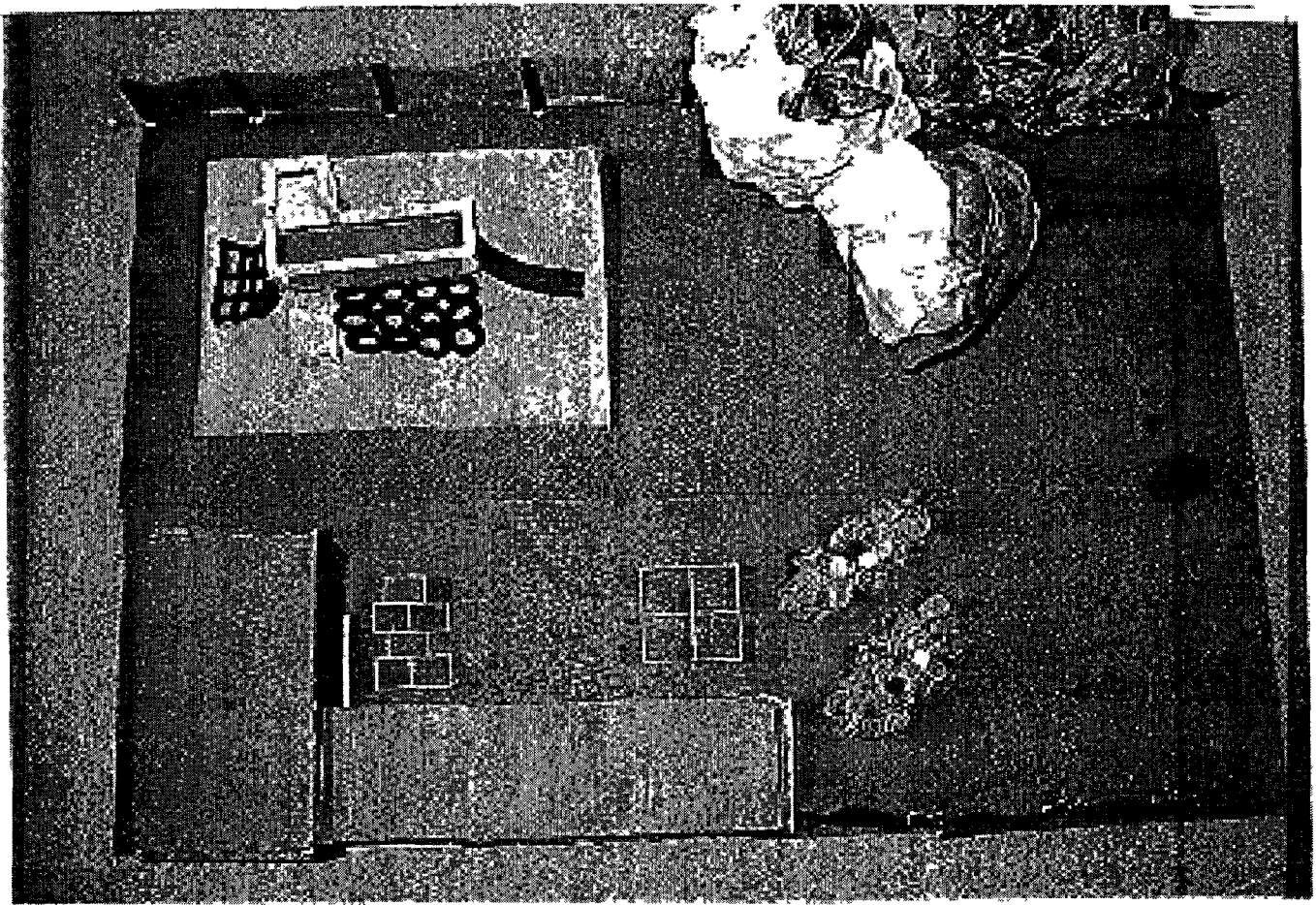
_____ I do **not** wish to participate in this study

Name of Teacher: _____
(please print)

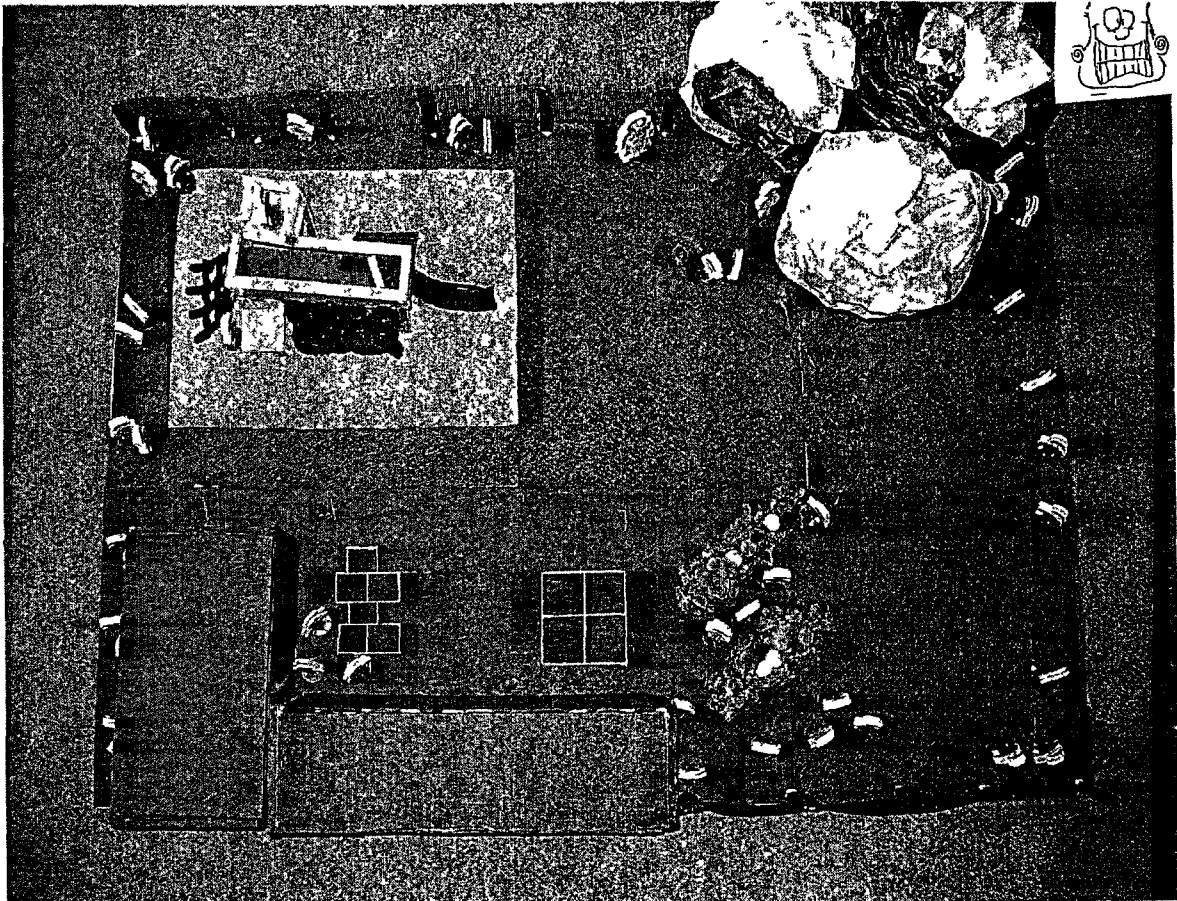
Signature of Teacher: _____

Date: _____

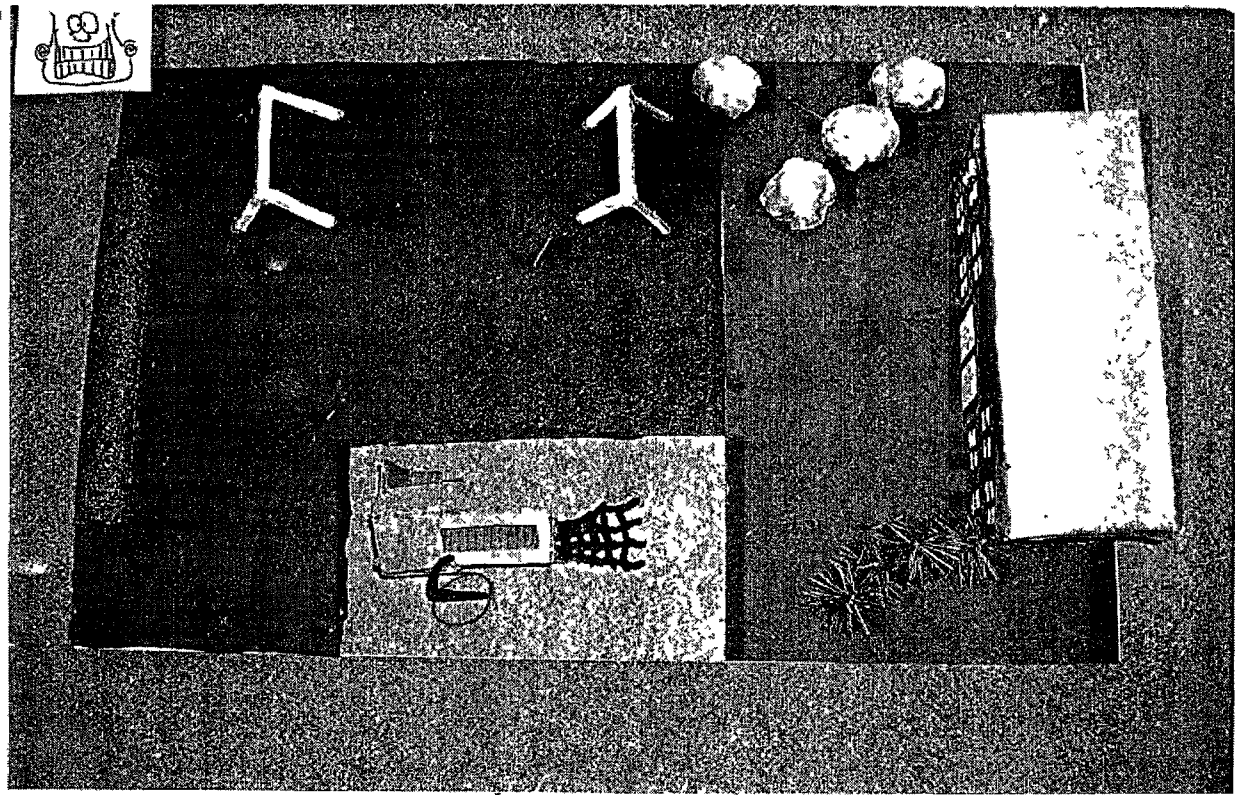
Appendix G:
Playground Models



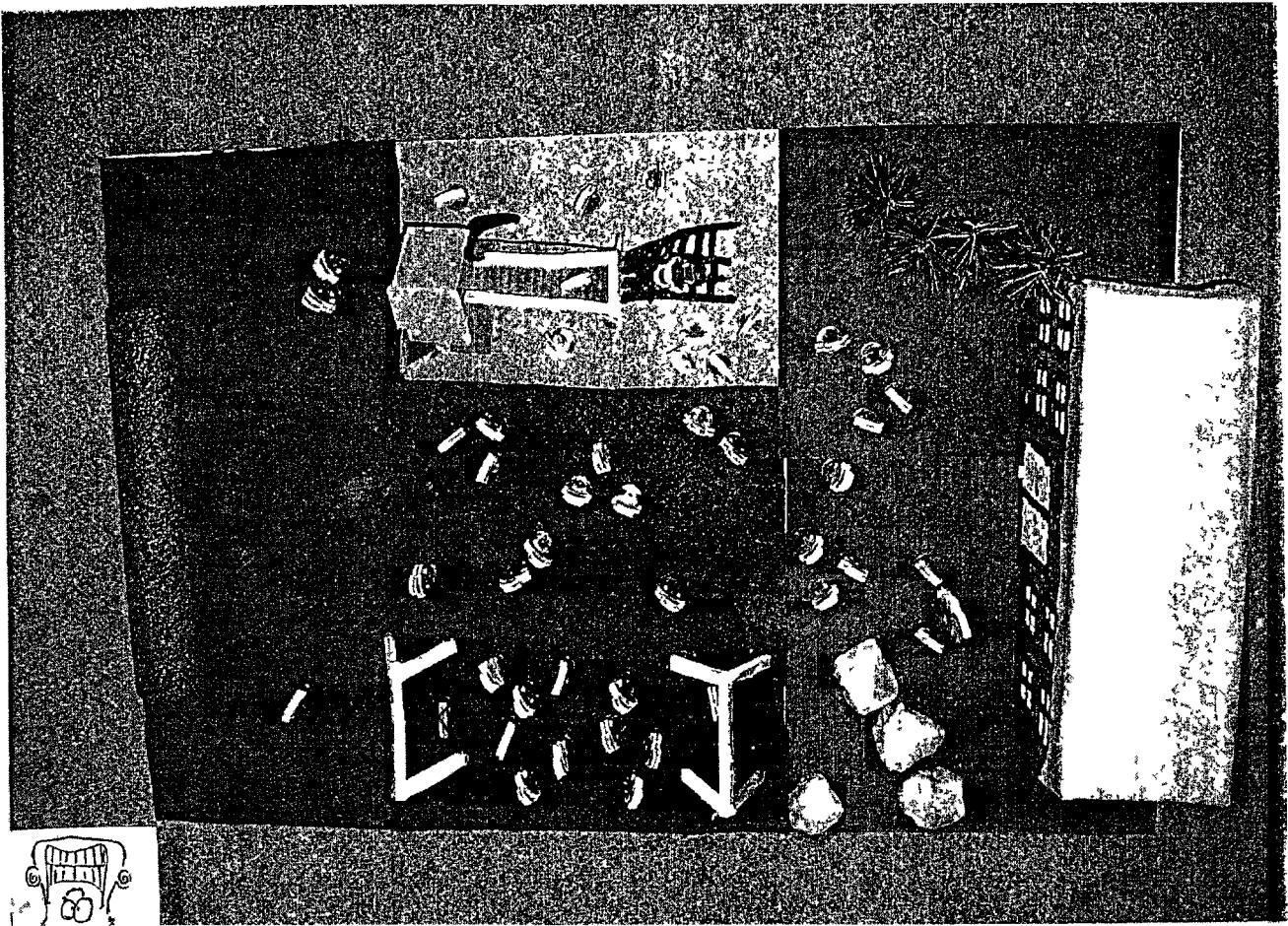
Playground One: No Social Information



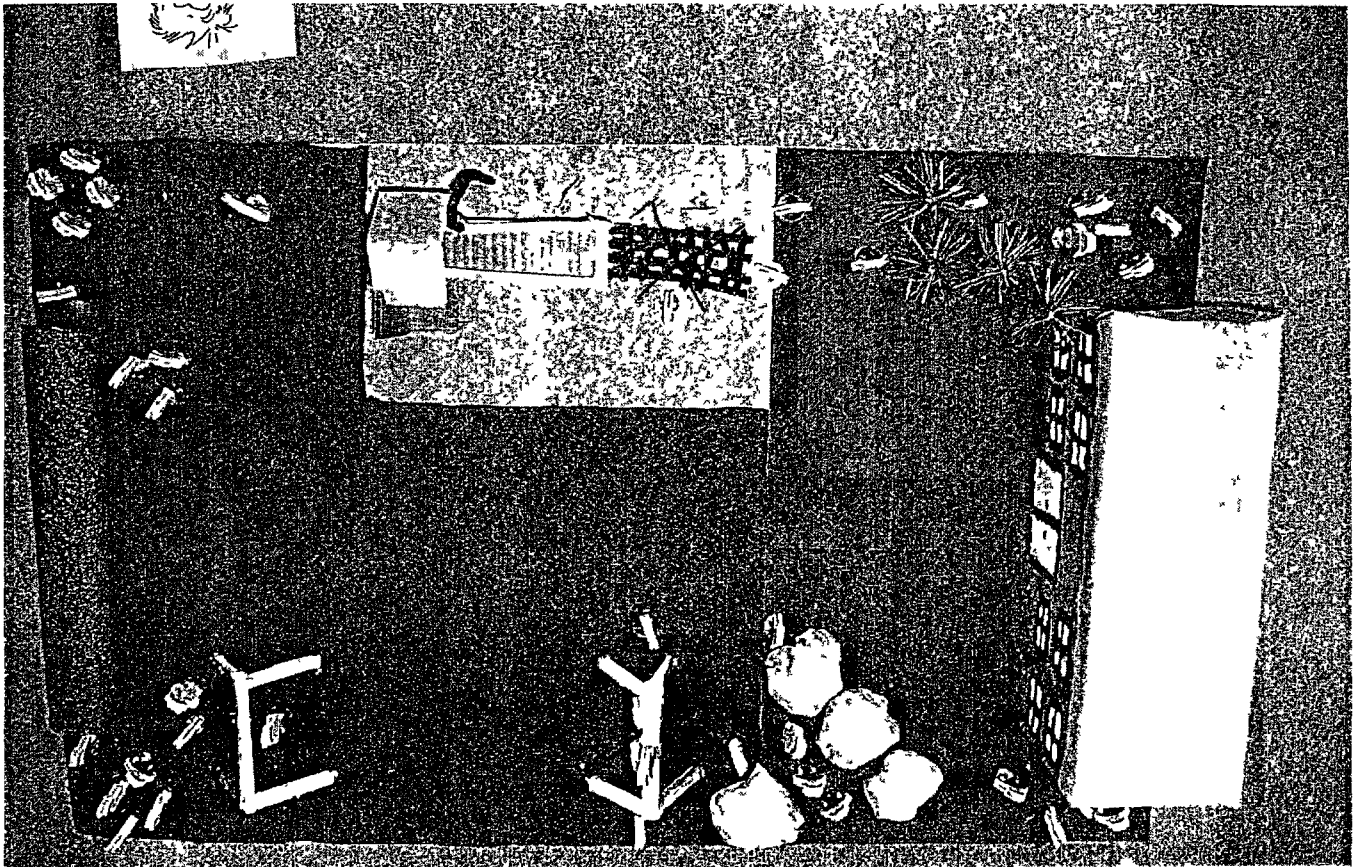
Playground One: Peripheral Social Information



Playground 2 : No Social Information



Playground 2: Central Social Density



Playground 2: Peripheral Social Information