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Attachment relationships and emotional intelligence in preschoolers.

Kimberley Ann. Houtmeyers

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ATTACHMENT RELATIONSHIPS AND
EMOTIONAL INTELLIGENCE IN PRESCHOOLERS

by

Kimberley Houtmeyers

M.A., University of Windsor, 1994

A Dissertation
Submitted to the Faculty of Graduate Studies and Research
through the Department of Psychology
in Partial Fulfilment of the
Requirements for the Degree
of Doctor of Philosophy at the
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2000
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ABSTRACT

The purpose of the present study was to examine the association between attachment relationships with mothers and fathers and emotional intelligence in a sample of 31 preschool age children. Based on a review of attachment theory and research, it was hypothesized that both secure maternal and paternal attachment relationships would be associated with higher levels of emotional intelligence, and that attachment to mother would emerge as a more important predictor of emotional intelligence. A multi-method approach was utilized, including parents’ ratings of attachment relationships, teacher ratings of socioemotional competence, and children’s performance on a variety of measures designed to assess aspects of emotional self-awareness, empathy, and achievement orientation. Results generally failed to support an association between maternal attachment and emotional intelligence. However, a more secure attachment relationship with father was found to be associated with lower levels of externalizing behavioural difficulties for the total sample. Analyses completed to examine the combined effect of both attachment relationships revealed no statistically significant findings. When analyses were completed separately according to the sex of the child and parent, results revealed relatively distinctive patterns in which maternal attachment relationships were associated with particular aspects of achievement orientation (i.e., impulse control) for girls but with no aspects of emotional intelligence for boys, and in which more secure paternal attachment relationships were associated primarily with lower rates of externalizing problems for girls and with aspects of achievement orientation (i.e., higher self-evaluation and more internal locus of control) and overall
emotional intelligence for boys. Children’s age, sex and receptive language skills, included as covariates, were also found to be associated in predictable ways with the development of emotional intelligence. Findings are discussed in the context of theory and research on attachment relationships, as well as in terms of methodological limitations of the study. The utility of the construct of emotional intelligence is then considered, particularly in light of the present study’s attempt to develop a measure of emotional self-awareness in preschool age children.
ACKNOWLEDGMENTS

Completion of this dissertation was by no means a solitary effort and, as such, it is only fitting that the many individuals who helped see the final document to fruition be acknowledged. Foremost, to my advisor Dr. Robert Orr, who demonstrated patience and tolerance throughout both my expeditious and inefficient phases in completion of the project. I am very much appreciative of his willingness to allow me executive control of the research, his support of the decisions made, his ability to provide calming words in a timely fashion, and the encouragement he provided which kept me going through the frustration of data collection.

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I am particularly indebted to the families and child care centres who so selflessly gave of their time and efforts to participate in this study. Over the course of the project, I had the privilege of meeting a host of gracious individuals who allowed me to come into their lives in exchange for nothing more than this brief acknowledgment. I hold these individuals in the highest regard, for it is only due to their generosity that we are able to advance in our understanding of child development.

The most heartfelt gratitude is extended to my family, particularly my father, mother and stepfather - my own attachment figures - for a lifetime of love, support and
encouragement. These fabulous individuals instilled in me a pervasive sense of self-confidence, strong aspirations, an insatiable motivation to achieve, and the strength to push myself just a little bit harder when the sometimes overwhelming pressures of my academic pursuits made me question my ability to persist. The enduring presence of my parents and siblings in my life enabled me to realize my dreams, and fills me with a sense of thankfulness which can never be expressed in words.

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CHAPTER I

INTRODUCTION

The purpose of the present study was to examine the association between attachment relationships with mothers and fathers and emotional intelligence in preschool age children. Attachment relationships have been defined as affective bonds, or social relationships, which evolve over the first year of life between infants and their primary caregivers (Bowlby, 1988a). These special relationships involve, to some extent, external modulation of the infant's emotions and are believed to be the basis from which emotional self-regulation evolves (Carlson & Sroufe, 1995). Emotional intelligence is defined as "the ability to monitor one's own and others' feelings and emotions, to discriminate among them, and to use this information to guide one's thinking and actions" (Salovey & Mayer, 1990, p. 189). The present study was designed to explore the impact of attachment relationships with mothers and fathers on young children's ability to monitor and regulate emotions in themselves and others, and their ability to use emotional experiences to guide them in the achievement of goals.

The aim of this study was to advance theory, research, and practice in the area of child development. First, it represents an addition to the growing body of research examining the developmental sequelae of various patterns of attachment relationships (e.g., Bates, Maslin, & Frankel, 1985; Suess, Grossman, & Sroufe, 1992). In particular, this study will serve to augment empirical findings in the relatively neglected area of father-child relationships. Second, although the topic of emotional intelligence has enjoyed recent empirical and theoretical interest, and particular interest within the
popular press as triggered by Goleman (1995), research and writing on emotional intelligence remain sparse. Thus, the present study will add to this research base, as well as potentially stimulating further empirical and theoretical interest. Third, it has been argued that emotional intelligence represents a critical determinant of achievement, success and emotional well-being in one’s life (e.g., Goleman, 1995). Therefore, this study holds valuable potential for aiding clinicians in developing more effective interventions for improving parent-child relationships. Finally, this study represents an initial attempt at bringing together measures of the individual domains of emotional intelligence into a composite measure for use with young children. Such a measure, if effective as an overall measure of emotional intelligence in preschool age children, should be useful for both future clinical and empirical use.

This paper will outline relevant aspects of attachment theory in terms of the theorized function of attachment relationships in young children, various patterns of attachment relationships, the determinants of attachment relationships in terms of parenting styles, and the developmental sequelae of attachment relationships. It is of note that the preponderance of theory and research regarding attachment is focused on the mother-child relationship. In an effort to reflect this study’s inclusion of fathers, the term “mother” has been replaced by “caregiver”, where appropriate, in the review of the attachment literature. In their more recent writings, attachment theorists themselves refer to the more generic “attachment figure”, reflecting the importance of all significant relationships with adults in the child’s life (e.g., Bowlby, 1988a, 1988b). Therefore, reference to sex of attachment figures is only used when cited research is based on a
particular parent. A brief overview of theory and research relevant specifically to fathers as attachment figures is presented. The concept of emotional intelligence is then reviewed, followed by an examination of existing research regarding the association between attachment and the individual domains of emotional intelligence. Based on this review of theory and research, the rationale for the present study is outlined.

**Overview of Attachment Theory**

The study of early human relationships has been developing since at least the time of Freud. Freud (as cited in Waters, Kondo-Ikemura, Posada, & Richters, 1990) viewed the unique relationship between an infant and its mother in terms of drive reduction. He postulated that attachment develops as a result of the mother satisfying the basic biological needs of the infant, and that the attachment relationship is never voluntarily, or completely, given up. Much of the insight provided by Freud helped to set the stage for developmental psychology and remains an important part of attachment theory today.

With the increasingly empirical nature of psychology placing Freud’s psychoanalytic views at risk of being discarded, John Bowlby salvaged many of Freud’s ideas on human development and attachment by interpreting them in an ethological and evolutionary light (Ainsworth, Belhar, Waters, & Wall, 1978). This permitted Bowlby to stress the organized attachment behaviour of infants without attributing complex cognitive processes or intentions to the child.

Bowlby (e.g., 1977) theorized that an infant is biologically predisposed to exhibit certain behaviours, such as crying, to maintain contact with primary caregivers. He
argued that such characteristics evolved as mechanisms of protection for infants since early in the evolutionary period contact maintenance was necessary in order to guard infants against predators. Helpless infants relied on their caregivers to protect them, or help them escape, from danger. Bowlby further proposed that during adolescence and adulthood attachment bonds persist but are accompanied by new bonds with others, arguing that a causal relationship exists between children's experience with their parents and the subsequent ability to establish affectional bonds with others (Bowlby, 1988b). He also posited a connection between children's attachment relationship with their primary caregivers and later emotional disturbances and personality disorders (Bowlby, 1977).

Bowlby identified four phases in the development of infants' attachments to their caregivers. In the first phase, which spans the time from birth to three months of age, infants are not attached to any one particular figure and their signals are not focused. Reflexes such as crying and sucking serve to increase the amount of time the caregiver and infant spend together. It is through these interactions that attachment arises. In the second phase, during the three to six month age period, infants begin to focus their attachment behaviours on one or more specific figures. In order for children to develop an attachment to the focal figure(s), they must experience what Bowlby referred to as the "average expectable environment". That is, the infant must encounter a style of care that is co-adapted to the attachment behavioural system, with the caregiver responding to the infant's care-seeking cues. The third phase, from six to 24 months of age, is characterized by the infant maintaining proximity to the attachment figure(s), something
Ainsworth (1973) later termed “secure base behaviour”. The infant uses the attachment figure(s) as a secure base from which to explore, knowing that, should an alarming situation arise, the attachment figure can be summoned and contact can be restored. This proximity maintenance is achieved by the infant through locomotion and signalling. From 24 to 30 months of age, the child is involved in the fourth phase, known as the phase of goal-directed partnership. During this time, children’s attachment behaviour becomes less arbitrary as they are increasingly able to take into account the caregivers’ activities and goals when the attachment behavioural system is active (Waters et al., 1990). In each situation, children have a “set-goal” of proximity to their attachment figures and, should that distance be exceeded, the attachment behaviour is activated (Ainsworth, Bell, & Stayton, 1974).

An integral part of all four phases of the development of attachment relationships is the reciprocation of the infant’s attachment behaviours with caregiver behaviours. Bowlby (1977) theorized that the attachment relationship is formed as a result of infants’ interactional histories of caregiver responses to their signals for proximity and contact. According to Bell and Ainsworth (1972), attachment behaviour could not perform its protective function were it not dovetailed with reciprocal maternal behaviour, activated either by the infant’s signals or directly by danger or by both in combination. Infant and maternal behaviours are adapted to each other, and thus the environment to which an infant’s attachment behaviours are adapted includes a mother who responds to his signals without undue delay (p.1186).
Ainsworth (e.g., Ainsworth, Bell, & Stayton, 1974) has argued that the quality of the infant-caregiver relationship is based on the caregiver's ability to recognize and respond to the infant's signals and attachment needs. A sensitive caregiver is one who is aware of the infant's signals, interprets these signals accurately, and responds to them promptly and appropriately. Ainsworth proposed that a caregiver who is sensitive to the infant's cues gives the child a sense of security. From past interactions, the child is able to predict how the caregiver will react to various signals, and therefore has a sense of control in the relationship and over the environment. The infant uses the caregiver as a secure base from which to explore, feeling confident of the caregiver's response should danger arise. The child has developed a secure attachment to the caregiver.

An insensitive caregiver, on the other hand, will arouse feelings of insecurity in the child as their interactional history involves sporadic and inappropriate interactions. Children in this situation cannot develop confidence in their relationship with their caregiver and will likely experience a sense of insecurity when the attachment system is aroused, being unsure of how the caregiver will respond, or even if the caregiver will respond at all.

A chief assumption of attachment theory is that attachment quality is the cumulative product of the caregiver's responses to the infant's signals. Differences in parental sensitivity during the infant's first year of life have been related to differences in patterns of infant-caregiver attachment at one year of age (e.g., Pederson et al., 1990).

Ainsworth, through use of a procedure known as the Strange Situation, has identified three distinct patterns of attachment. The Strange Situation involves a series
of separation and reunion episodes between a caregiver and a 12- to 18- month old child, designed to arouse the attachment system in the child. Ainsworth identified the three primary categories of attachment relationships as: A - anxious avoidant attachment; B - secure attachment; and C - anxious resistant attachment. Empirical use of the Strange Situation has revealed that approximately 66% of children can be classified as having a secure attachment to mother, while approximately 20% and 12% can be classified as anxious-avoidant and anxious-resistant, respectively (Ainsworth et al., 1978). Approximately the same proportions of infant-father attachment classifications have been reported in normal populations (e.g., Steele, Steele; & Fonagy, 1996; Volling & Belsky, 1992). Moreover, patterns of attachment have been noted to remain relatively stable over time when caregiving arrangements continue to be stable (Magai & Hunziker, 1993).

The first pattern of attachment, anxious-avoidant, characterizes children who lack the confidence that they will be responded to helpfully when they seek care, and who expect to be rebuffed by the attachment figure. Within the context of the Strange Situation, anxious-avoidant children express less distress during separation than other children and typically ignore the parent upon reunion (Ainsworth et al., 1978). Children with anxious-avoidant attachment relationships often become adults who attempt to live their lives without the love and support of others (Bowlby, 1988b). Such individuals also often avoid situations that are likely to be emotionally arousing (Carlson & Sroufe, 1995). Bowlby (1988b) contended that the anxious-avoidant pattern of attachment results from being consistently ignored or rejected by the caregiver when comfort or
protection are sought.

The second pattern of attachment, referred to as secure attachment, is most consistent with healthy development. Securely attached children are confident that their attachment figures will be available and responsive when adverse situations are encountered. In the Strange Situation, secure infants show signs of missing the parent, seek proximity upon reunion, and then return to play (Ainsworth et al., 1978). Later, securely attached children feel bold in their explorations of the world and have a sense of competence. They are able to remain organized under stressful conditions, and are able to appropriately seek help from others. Moreover, such individuals perceive emotions as serving a communicative function and are not threatened by negative emotions (Bowlby, 1988b; Carlson & Sroufe, 1995). Secure attachment is promoted by a parent who is readily available, sensitive to the infant's signals, and responsive when the child seeks protection, comfort, or assistance (Bowlby, 1988b).

Anxious-resistant attachment characterizes the child who is uncertain regarding caregiver availability and responsiveness when help is sought. Anxious-resistant children become highly distressed during the separation phases of the Strange Situation, focus on the parent upon reunion but cannot be settled by the parent, and seek proximity but display anger at the same time (Ainsworth et al., 1978). Anxious-resistant children tend to be chronically prone to separation anxiety, display a tendency to cling to others, and are anxious about exploring the world. Moreover, such children tend to engage in exaggerated emotional displays in place of more subtle forms of communication, and view a wide range of situations as threatening (Bowlby, 1988b; Carlson & Sroufe, 1995).
Bowlby (1988b) noted that anxious-resistant attachment results from inconsistent parental availability and helpfulness, frequent separations from the parent, and threats of abandonment.

More recently, a fourth pattern of attachment, referred to as disorganized/disoriented attachment (D), has been proposed. This classification evolved from findings that some previously unclassifiable infants demonstrate a common pattern of seemingly undirected behavioural responses in the Strange Situation. In the Strange Situation, these children demonstrate inconsistencies in the usual sequences of behaviour, and also demonstrate unusual behaviours such as freezing and hand flapping (Main & Solomon, 1990). Main and Hesse (1990) proposed that these behaviours result from incomprehensible or frightening caregiver behaviour and that these children are the least securely attached.

The quality of early attachment relationships has been decisively argued to exert an important influence on later behavioural and affective regulation. As noted above, various patterns of attachment are associated with differences in emotional and interpersonal functioning later in life. Bowlby (1988a) theorized that, based on the aggregation of the infant’s patterns of interactions with primary caregivers, the infant internalizes expectations regarding the self and others. Bowlby referred to such expectations as “internal working models”. These models are proposed to provide a basic context for, and to exert an active influence on, the infant’s sense of self-regard, expectations regarding the availability of others, and expectations concerning social relationships. As noted by Belsky and Nezworski (1988)
...the basic assumption guiding attachment research is not that the relationship between mother and infant inevitably affects later development, but rather that the child’s initial relationship experience with mother probabilistically predicts later social development because it affects his/her expectations about others and relationships, feelings about self, and social skills used in other social contexts (p. 5).

Measuring Attachment in Preschoolers

While the quality of early attachment relationships may change over time, and new attachment relationships may be formed, a core premise of attachment theory is that the attachment bonds that form during the early childhood years persist throughout one’s life. However, attachment relationships are conceptualized as changing in their organization as the child develops. So, for example, the proximity-seeking behaviours, such as crying and sucking, that are characteristic of the infancy period are replaced by more distal behaviours, such as smiling and greeting, as the child’s physical and cognitive skills develop. Thus, while the functional significance of attachment behaviour remains the same, the particular manifestation of the behaviours themselves changes in relation to other developmental systems. As a result, it becomes critical to view attachment as a continuously developing system which cannot be subjected to unrevised constructs and measures appropriate for the infancy and toddler period. Rather, the means of assessing the quality of attachment relationships must be tailored to meet the child’s current level of development (Cicchetti, Cummings, Greenberg, & Marvin, 1990).

Although the Strange Situation has been well established as a means of assessing
attachment security in toddlers, the measurement of attachment relationships in
preschool age children has remained somewhat more elusive. Part of the challenge lies
in the fact that it is more difficult to activate the attachment system of preschoolers than
is the case with younger children. Thus, while the brief separation phases of the Strange
Situation impart sufficient stress in toddlers to capture the quality of the attachment
system, it is not necessarily the case that older children are aroused to the same extent by
the procedure. A second difficulty is that the behavioural repertoire of preschoolers is
broader than is the case at younger ages. Solomon and George (1999) note the lack of
consensus among researchers regarding what constitutes secure behaviour in preschool
age children. Finally, while the developed language and cognitive skills of school-age
children and adults enables the use of representational and self-report measures of
attachment in those populations, the limited and varied linguistic and cognitive abilities
of preschoolers renders such tools less sensitive for that age group (Solomon & George,
1999).

To date, there have been three dominant methods of assessing attachment
relationships in preschool age children. The first of these has involved adaptations of the
Strange Situation originally developed for use with toddlers. Often, the procedure has
been varied somewhat to accommodate the developmental level of preschoolers,
including increasing the length of the separation episodes and introducing various tasks
to the procedure, although these variations have not been systematically demonstrated to
be effective. Most efforts have focused on adaptation of the coding system to develop
guidelines for secure and insecure groupings of preschoolers (Solomon and George,
1999). A benefit of utilizing the Strange Situation in assessing quality of attachment relationships in preschoolers is that it permits classification into secure/insecure classifications, maintaining the theoretical and empirical constructs characteristic of the study of attachment in younger children. However, to date there has been little consensus regarding what constitutes secure behaviour in preschool age children, as evidenced by poor agreement on classifications between various coding systems (Solomon & George, 1999). Moreover, the procedure is costly in terms of both time and required resources, and thus tends to be a less efficient measure of attachment than other available tools.

A second approach to the assessment of attachment in preschoolers are measures based on symbolic representation. Such measures have their basis in the concept of internal working models of attachment relationships. Because of the developing linguistic and representational capacities of preschool age children, it becomes possible at this age to begin to investigate attachment processes beyond the level of direct behavioural observations (Cicchetti et al., 1990). Two types of measures based on symbolic representation have been developed. One relies on children’s responses to projective pictures depicting separation from caregivers, and the other is based on observations of children’s doll-play focused on attachment-related separation stories. The benefits of representational measures of attachment lie in their cost and time efficiency, and in the availability of scoring systems which permit classification of children into secure and insecure categories. However, the development of these measures is at an early stage and they have not yet been well standardized (Solomon &
The third major approach to the assessment of attachment relationships in preschoolers is the Attachment Q-sort (AQS) developed by Waters and Deane (1985). The AQS was developed to assess secure-base behaviour within the home environment. This measure was selected for the present study and is described in greater detail later in this paper. Unlike the category systems of the measures previously discussed, the AQS provides security scores based on a linear continuum. Cicchetti et al. (1990) note three major advantages of continuum schemes over those based on security groupings. First, not all patterns of attachment behaviour may match predetermined prototypes. The continuum scheme permits assessment of the security children derive from their attachment relationships regardless of the quality of their behavioural patterns. Second, Cicchetti et al. note that there may be significant differences in felt security between children within the same attachment classification. Unlike category systems, continuum schemes are sensitive to such variability. Finally, continuum schemes hold the potential of reducing measurement error, particularly in the case of relationships that are more difficult to classify. It is also noted that category and continuum systems may be considered to best serve different aspects of prediction. Thus, while category systems may be best suited to the prediction of specific types of developmental difficulties, continuum systems may be considered optimal for the prediction of the extent of such problems (Cicchetti et al.).

A major benefit of the AQS, and the primary rationale behind its selection for the present study, is its affordability in terms of both time and resources. The measure can
be completed by either trained observers or by parents themselves and is completed within the child's home environment. Of concern is the sparsity of research on the congruence of the AQS with classification systems, such as the Strange Situation. Preliminary research suggests that the two measures may not share a strong association (Solomon & George, 1999). This raises concerns that the measures may not tap into the same underlying construct. Also of concern is the potential for bias or measurement error when parents complete the sorts themselves. A different sort of bias may also be introduced when trained observers complete the sorts based on observations of the parent-child dyad within the naturalistic home setting as, in this relatively benign context, the attachment system is unlikely to be activated as it would be in a Strange Situation paradigm (Solomon & George, 1999).

In summary, while a variety of measurement choices are available for the assessment of attachment relationships in preschoolers, this area of development has clearly not proceeded as far as research into the measurement of attachment in younger children. The lack of consensus among the various measures must be taken into consideration in the interpretation of research findings when studies utilize different assessment tools. Further development of these measures will be necessary in order for attachment to be studied across the life span (Cicchetti et al., 1990).

Fathers as Attachment Figures

Although fathers in North American society are beginning to enjoy greater involvement in child-rearing, this is a relatively recent trend. Reflecting the tradition of mother as primary caregiver, decades of theory and research regarding child-caregiver
attachment are disproportionately skewed toward emphasizing the mother-child relationship. Nonetheless, fathers have come to be viewed as an important element in the socioemotional development of children, and father-child attachment relationships have begun to be given a less peripheral place within attachment theory. This section will briefly review attachment theory as it applies specifically to the father-child relationship, and will consider research regarding the special significance of this relationship.

Lamb (e.g., 1976) has documented the differential parenting styles of mothers and fathers. He reports that, while fathers do not necessarily engage in more play with their infants, the quality of fathers’ play is markedly different from that of mothers. Lamb observed that fathers tend to engage in more idiosyncratic and rough-and-tumble play. He also noted that while mothers tend to hold their infants more often than fathers do, this is usually for caretaking purposes. When fathers hold their infants, it is usually for the purpose of playing with the child. In his study of infants at seven and eight months of age, Lamb (1976) observed that these differences in parents’ interaction styles accounted for children’s more positive responses to play and physical contact with fathers than with mothers. Importantly, Lamb also found that the father’s role as playmate did not prevent him from being seen as an attachment figure as well. Specifically, while infants demonstrated a preference for their fathers in terms of affiliative interaction, they did not appear to differentiate mothers and fathers as sources of security (Lamb, 1976).

Cox, Owen, Henderson, and Margand (1992), in their longitudinal investigation of the first-year correlates of infant attachment security with father, found that for both
mothers and fathers, attachment security was predicted by the quality of the parents' interactions with the child at three months of age and the amount of time spent with the child. Specifically, for both parents, sensitivity and responsivity to the infant's cues, positive physical affection, and increased time spent with the child were found to be related to secure infant-caregiver attachment. However, these authors noted additional findings that positive attitudes toward the infant and the parenting role also factored into the predictive equation of attachment security for fathers, but were not predictive of infant-mother attachment security. Therefore, it would appear that largely similar processes are operating in the formation of the attachment relationship to both mothers and fathers, but this process may not be identical for both parents.

The study completed by Cox et al. (1992) also confirmed previous findings that an infant's attachment classification with one parent is largely independent of the attachment classification with the other parent. This independence of attachment patterns suggests that the quality of the attachment relationship is based on the infant's unique history with each particular attachment figure. That children can have discordant attachment relationships with multiple caregivers raises the critical question of what happens in terms of the child's internal working models of the self and others when the child is securely attached to one caregiver but insecurely attached to the other. The suggestion has been offered (e.g., Bretherton, 1985; Easterbrooks & Goldberg, 1990) that, in the case of discordant attachment relationships, children maintain a hierarchy of relationships. This proposition is supported by the work of Main, Kaplan, and Cassidy (1985) who found that, at six years of age, assessment of the child's representation of
attachment was most predictable from attachment classification with the mother when the child was one year of age. Given that most of the mothers in Main et al.'s (1985) sample were fulltime caregivers, it is possible that this attachment relationship was most salient for the children and thus assumed primary status in the children’s attachment relationship hierarchies (Easterbrooks & Goldberg, 1990).

Despite the possibility of such attachment relationship hierarchies, both child-mother and child-father attachment relationships are important determinants in the socio-emotional development of the child (Ainsworth et al., 1978). Moreover, attachment relationships with mothers and fathers appear to have somewhat differential effects on the child’s development. The differential predictiveness of attachments to mother and father, in terms of the developmental sequelae of attachment relationships, has been well-established (e.g., Suess et al., 1992). Specific illustrations of such differences will be discussed, as relevant, later in this paper in terms of the individual domains of emotional intelligence.

The following section will provide an overview of the concept of emotional intelligence. This will be followed by a review of the literature regarding the relationship between attachment and the individual domains of emotional intelligence. It will be proposed that, based on Bowlby’s theory of the development of attachment relationships and the internal working models individuals develop as a result of their earliest attachment relationships, various patterns of attachment relationships can be expected to relate to differences in a child’s degree and quality of emotional intelligence.
Emotional Intelligence

Emotional intelligence is conceptualized as comprising five primary domains, including: knowing one's emotions; managing one's emotions; recognizing emotions in others; handling relationships; and motivating oneself (Goleman, 1995). No particular component of emotional intelligence is a new concept. In fact, all have been studied individually in child and adult populations for decades. Nonetheless, the concept of emotional intelligence as an organizing heuristic is a relatively recent phenomenon. The framework of emotional intelligence is used to bring together, in an organized whole, the five related components comprising the abilities related to the understanding, managing, and use of emotions.

The first of these domains, knowing one's own emotions, involves the ability to accurately recognize, identify, and label feelings and emotions as they arise in oneself. It entails removing oneself from the experience of an emotion enough to develop a self-awareness of what one is feeling, or one's mood. At one extreme, a lack of self-awareness manifests as alexithymia, an inability to describe one's own emotional state. Individuals with alexithymia present as affectively flat, and have exceptional difficulty discriminating among emotions they do experience. At the other extreme, individuals who lack self-awareness of their emotional life may experience emotions as overwhelming and react disproportionately to emotionally-laden events (Goleman, 1995). In contrast, individuals who are emotionally intelligent with respect to self-awareness are able to more quickly and accurately perceive their emotions and, thus, are more skilled at responding appropriately to their emotional life and conveying these
emotions to others (Salovey & Mayer, 1990).

In terms of the development of self-awareness of emotional states, Dunn, Bretherton, and Munn (1987) found that as early as 28 months of age, children are able to talk about feeling states in themselves and others. However, Harter (1986) contended that, prior to approximately seven years of age, children deny that it is possible to experience two conflicting emotions simultaneously. She noted that children will report only one emotional experience, or place two conflicting emotions in a temporal sequence. Further support for this finding was reported by Harris (1995), who found that six-year-old children focused on one emotion when presented with stories in which two contradictory emotion-evoking events were presented. It is not until approximately 11 years of age that children are able to describe the experience of two opposite-valence feelings in the same situation (Harter, 1986).

The second domain of emotional intelligence, managing one's emotions, builds largely on self-awareness. It involves the ability to regulate emotions so that they are experienced appropriately. Individuals who are skilful at managing their emotions are able to create a balance in their emotional life, moderating the intensity and duration of feelings. Such persons are able to cope more effectively with emotionally-laden situations in their lives. In some individuals, deficits in the ability to manage emotions lead to emotional blunting. Such persons are seen as emotionally distant by others. In others, emotional experiences get easily out of control and may become pathological, leading to depression, mania, anxiety disorders and outbursts of rage (Goleman, 1995).

The ability to modulate and control emotional expressions seems to underlie
more complex emotional modulation strategies, including the ability to mask facial expressions. Developmentally, two-year-olds have been found to be unable to voluntarily create requested facial expressions. However, by the age of three years, many children are able to pose at least positive facial expressions on verbal cue and, by the age of four years, the majority of children make facial expressions to reflect all emotions except fear and disgust when requested to do so (Lewis, Sullivan, & Vasen, 1987).

Further, as early as four years of age, children recognize their ability to regulate their emotions. While four- to six-year-olds do not appear to be able to spontaneously suggest cognitive emotion control strategies, they are able to generate effective situational emotion control strategies, and are as able as seven- to nine-year-olds to recognize effective cognitive strategies to control emotion (Brown, Covell, & Abramovitch, 1991).

Recognizing emotions in others, the third domain of emotional intelligence, also builds on self-awareness. Synonymous with empathy, it involves the ability to read feelings in others and to become emotionally attuned to subtle social cues. Individuals who are deficient in identifying their own emotions are necessarily also deficient in knowing what others are feeling. At its extreme, this lack of empathy is seen in criminal sociopaths and in individuals with autism. In contrast, individuals high in empathy are particularly socially effective. Nowicki and Duke (1989; as cited in Goleman, 1995) found that children who were adept at reading nonverbal emotional cues were the most popular among their classmates and the most emotionally stable. Further, holding intelligence constant, these children also performed better academically, suggesting that their emotional competence enabled them to be more effective in the classroom.
Developmentally, the roots of empathy appear to manifest early in childhood. Research indicates that infants are able to feel sympathetic distress prior to developing a sense of separateness from others. Hoffman (1984) described the concept of primary circular reactions, in which young infants respond with distress to the cries of other babies. Hoffman took this as the earliest evidence of the precursor of empathy in infants. Around the age of one year, children develop 'motor mimicry', the physical imitation of distress in other children, leading to the experience of the emotion in themselves (Hoffman, 1984). At approximately two and a half years of age, when motor mimicry responses fade and children recognize another's distress as separate from their own, children can be distinguished in terms of their interpersonal sensitivity. Some children respond to distress in other toddlers with attempts to comfort them, while others tune out from other children's emotional upset. Empathy has also been studied in children by examining children's effectiveness in identifying facial expressions in others. Proft and Whissell (1991) showed children videotaped segments of other children posing five different facial expressions. They found that as early as four years of age, children could correctly identify nearly every presentation of happiness and disgust. The ability to recognize emotions in others was found to increase linearly with age, with 58% accuracy at four years, and 75% accuracy at the age of six years (Proft & Whissell, 1991). Radke-Yarrow and Zahn-Waxler (1984) found that much of the difference in empathic abilities in young children is related to how children were disciplined by their parents. Specifically, children who were most empathic had parents who focused discipline on
the distress in others caused by the child's misbehaviour. Further, children were found to imitate the empathic responses modelled by others.

The fourth domain of emotional intelligence comprises the ability to appropriately and effectively handle interpersonal relationships, a skill more generally known as social competence. A core aspect of social competence involves the skill of managing emotions in others, and is contingent on having developed the ability to accurately identify how others are feeling (the third domain of emotional intelligence) and the ability to exert self-control over one's own emotions (the second domain of emotional intelligence). Individuals adept in social skills are able to shape their interpersonal encounters and to exert an influence over others, and are more likely to succeed in intimate relationships. Deficits in social skills are associated with ineffectiveness in the social world and interpersonal difficulties (Goleman, 1995). However, while the ability to manage and affect emotions in others can be utilized to achieve positive ends for oneself and others, it can also be employed in a more antisocial sense, sociopathically manipulating others for one's own gain (Salovey & Mayer, 1990). That is, the fact that one has the skills to manage and affect emotions in others does not necessarily imply that one will use this knowledge for prosocial ends.

The fifth domain of emotional intelligence is unique in that it emphasizes the utilization of emotions, as opposed to the appraisal, expression, or regulation of emotions emphasized by the other four domains. Salovey and Mayer (1990) conceptualized this domain as comprising four independent abilities, including flexible planning, creative thinking, mood redirected attention, and motivation. They proposed that emotionally
intelligent individuals are able to adaptively utilize and modify their emotional states in order to more effectively solve problems and achieve goals. Goleman (1995) broadly defined this domain as “motivating oneself”, but also incorporated several distinct abilities within it. Emphasizing the harnessing of emotions in the service of personal goals, Goleman proposed that the fifth domain of emotional intelligence involves the abilities to motivate oneself, control one’s impulses and delay gratification, maintain a sense of optimism, and experience a related sense of self-efficacy. Individuals who are adept at these abilities can be viewed as more likely to identify desirable and realistic goals, and to orient themselves toward achieving these goals through the stifling of impulses and the personal belief that they are capable of such achievement. Such persons are likely to enjoy relative success in their endeavours. Conversely, individuals who are emotionally unintelligent with respect to this domain are less likely to achieve personal goals. They may find it difficult to motivate themselves toward the task and control impulses to choose more immediate gratification. Others may possess these two abilities, but ultimately fail at the task due to a lack of belief in their ability to achieve the goal and a corresponding sense of pessimism regarding potential success.

For the purposes of the proposed study, the fifth domain of emotional intelligence will be broadly defined as “achievement orientation”. In keeping with Goleman’s description of this domain, achievement orientation will be viewed as encompassing the following components: motivation, optimism, delay of gratification, and self-efficacy. In addition, a high achievement orientation will be proposed to include an internal locus of control or attributional style (a belief that events in one’s life are within one’s control
and not controlled by outside forces).

It is noteworthy that other theorists have described similar models of emotional adaptation. Howard Gardner (1983; as cited in Carlson and Buskist, 1997), for instance, describes two types of personal intelligence. He defines intrapersonal intelligence as awareness of one's own feelings, and interpersonal intelligence as awareness of, and appropriate responding to, feelings in other people. Although the concept of personal intelligence appears similar to the concept of emotional intelligence, Gardner's conceptualization is cognitively based, focusing on the cognitions about feelings, and tends to neglect the role of emotions themselves in influencing mental life. Moreover, the theory of emotional intelligence, while encompassing other theories of personal or social intelligence, expands upon these to consider the management and use of emotions in optimizing one's overall functioning (Goleman, 1995).

Having defined and described the concept of emotional intelligence as advanced by Salovey and Mayer (1990) and Goleman (1995), the following section of this paper will review literature regarding the association between attachment relationships and the specific domains of emotional intelligence. It is from this literature base that the hypotheses of the proposed study will be drawn.

**Attachment and Self-Awareness of Emotions**

Relative to other areas of socio-emotional development, research regarding the association between infant-caregiver attachments and later self-awareness of emotional states is scant. While the neglect of this area of study may be at least partly attributable to methodological difficulties in measuring the construct of emotional self-awareness in
young children, attachment theory itself has certainly not neglected the topic. Generally speaking, while attachment theory views the role of the parent as a secure base as pertinent to the child's exploration of the external world, it also provides a focus on the role of the parent in the child's exploration of the inner world. Moreover, emotions and emotional signalling play an important role in the interpersonal regulation of the seeking and provision of security. Central to this process is the need for the caregiver to appropriately acknowledge and respond to the child's emotions, particularly negative emotions. By allowing the child to express negative feelings, and to openly experience a broad range of feelings, attachment theory postulates that the child is shown that negative emotional experiences need not be feared and can be controlled. Given these conditions, negative emotions develop in a regulated and organized fashion (Bretherton, 1995).

Based on attachment theory, Fonagy et al. (1995) postulated that a secure attachment relationship provides the basis for children to explore the minds of their caregivers, through which the children "find" and explore the caregivers' mental representation of themselves. The child is said to perceive in the caregiver's behaviour the caregiver's image of the child as a mentalizing, desiring, and believing individual. The role of the caregiver is to reflect and cope with affect which the child experiences as unmanageable, enabling the child to proceed with self-development by identifying the child's own mental states in the mind of the caregiver. In cases where the caregiver is deficient in this regard, insufficiently mirroring emotions in the child or failing to provide reassurance in conjunction with such mirroring, the child is limited in realizing the potential for self-reflection. Moreover, when the caregiver is hostile, abusive, or
emotionally absent, it is postulated that the child defensively turns away from the
caregiver's mental representation of the child, finding the caregiver's representation to
be overwhelming or dangerously indifferent. In such instances, Fonagy et al. proposed,
children will widely disavow their mental states.

Few specific predictions have been put forward regarding the influence of
particular attachment patterns on the self-awareness of emotional states. Even less has
been documented empirically. Specific investigation of attachment theory's proposition
that secure attachment relationships predispose emotional self-reflective capacities,
while insecure attachment relationships underlie a lack of emotional self-knowledge,
awaits investigation.

**Attachment and Regulation of Emotions**

A primary developmental task in childhood involves establishing the capacity to
tolerate and regulate emotional experiences so that affective experiences can progress in
an adaptive fashion. Although, as infants, children have some capacity to regulate their
own emotional states, they are largely dependent on their caretakers to soothe them when
distressed and to maintain them at optimal levels of affective experience (Faude, Jones,
& Robins, 1996). It is from these early experiences of external affect modulation that
self-regulation of emotions is believed to evolve. Under the most suitable conditions,
children develop a balanced affective repertoire in which emotions are experienced in
moderation, and no one emotion dominates the personality (Magai & McFadden, 1995;

Much empirical evidence supports an association between security of child-
mother attachment and the subsequent ability of children to regulate their emotions (e.g., Bates & Bayles, 1988; Erickson, Sroufe, & Egeland, 1985). From the perspective of attachment theory, in the caregiver-child relationship characteristic of a secure attachment, the caregiver permits a balanced range of emotional expressions from the child as acceptable and helps the infant to cope with overwhelming negative emotions. The caregiver remains available to the child when distress is experienced, helping the child to tolerate emotions such as anger, fear, and sadness. From such interactions, the child learns that threatening or frustrating situations can be tolerated, gains a sense of mastery over such events, and comes to believe that others are available to offer assistance. As a result, the securely attached child readily accepts, and openly and directly deals with, negative emotions (Carlson & Sroufe, 1995).

Within the context of the anxious-avoidant attachment relationship, given a pattern of rejecting or rigid patterns of caregiver regulation, the child comes to understand the experience and expression of negative emotions as unacceptable. According to Carlson and Sroufe (1995) and Cassidy (1994), having developed a belief system that expressing negativity causes one to be rejected, the anxious-avoidant child is not able to integrate these feelings with experience. The avoidant child comes to defensively minimize the expression and internal experience of negative emotions, and over time may also defensively avoid experiences that arouse such feelings. According to attachment theory, the avoidantly attached child does not gain a sense of mastery over situations which give rise to negative emotions, and comes to believe in the self as one to whom things happen without any competent control over such events (Carlson & Sroufe,
1995; Cassidy, 1994).

In contrast, the inconsistent caregiver responsiveness characteristic of the anxious-resistant attachment relationship is proposed to contribute to a constant state of arousal in the child. Unsure of the caregiver's availability, the child heightens and exaggerates negative emotions, such as fear, as a means of preventing loss of contact with the inconsistent parent. Moreover, the resistant child is said to selectively attend to frightening aspects of the environment, and to often misperceive relatively benign situations as threatening (Cassidy, 1994). Over the course of development, resistantly attached children come to have negative expectations regarding the expression of emotions and lack confidence in themselves and others regarding communication and regulation of affective experiences. Their history of chronic dysregulation predisposes a sense of the self as lacking in the resources to cope with distress and a view of the self as incompetent, helpless, and vulnerable. Their focus on the availability of others precludes the ability to reflect on, and communicate, their own emotional states (Carlson & Sroufe, 1995).

Initial support for the proposed role of attachment in affect regulation has been gained from examination of differential responding styles in the Strange Situation. In particular, children classified as avoidantly attached to mother have been shown to demonstrate indications of over-control of anger (e.g., heightened interest in toys, compressed lips) during reunion sequences, supporting the hypothesis that these children are vigilant about preventing the expression of negative emotions (Malatesta, Culver, Tesman, & Shepard, 1989).
Additionally, parental factors, such as maternal depression, which are believed to interfere with the establishment of a secure attachment relationship, have been found to be associated with increased rates of emotional disturbances (e.g., Egeland, Kalkoske, Gottesman, & Erickson, 1990). Gaensbauer, Harmon, Cytryn, and McKnew (1984) reported that, in a sample of seven children of bipolar parents and seven control children, significantly more children in the proband sample were classified as avoidantly attached to mother (6 of the 7 children) at 18 months of age. Moreover, they demonstrated significantly greater levels of affective disturbance at three measurement points than did the children in the control group, demonstrating a trend toward increasing severity of disturbance with increasing age. At 12 months of age, the infants of bipolar parents showed significantly more fear during a free play session, and prolonged fear and sadness during a maternal reunion episode. Further, at 15 months of age, they showed less distress during a separation episode when negative affect would be expected. Assessment when the children were 18 months old revealed significant differences for pleasure during the testing situation and maternal reunion, with the control infants showing significantly more pleasure than the proband children. Additionally, the proband infants demonstrated more intense anger and distress during a free-play session with the mother and during the testing situation (Gaensbauer et al., 1984).

Examination of the relationship between attachment and emotional regulation requires consideration of both internalizing (e.g., anxiety, withdrawal) and externalizing (e.g., aggression, hostility) emotional problems. DeMulder, Denham, Schmidt, and Mitchell (2000) reported higher rates of externalizing behavioural difficulties in
preschoolers rated as less securely attached to their mothers on the attachment Q-sort, but no association between maternal attachment and internalizing difficulties. Lyons-Ruth (1992) found children classified as avoidantly attached to mother to demonstrate significantly greater levels of hostile-aggressive behaviour in the kindergarten classroom than their securely attached peers. As well, Hubbs-Tait et al. (1996) reported that preschool age children’s attachment representations were found to be related to mother-reported externalizing problems, such that greater insecurity of attachment was associated with higher levels of behavioural difficulties. Utilizing a different methodology, Anan and Barnett (1999) reported that preschool age children with an insecure attachment to mother, as assessed by the Strange Situation, self-reported higher rates of behavioural problems and had higher rates of parent-reported internalizing problems two years later. Similar findings have been reported by Erickson et al. (1985). In their study of preschoolers, Erickson et al. reported that, while the children classified as anxious-resistant (to mother) during infancy demonstrated less confidence and assertiveness than securely attached children, the children who had been classified as avoidantly attached revealed more overall and varied disturbance. In particular, the avoidantly attached children were found to be more dependent on teachers and less compliant with teachers’ instructions and rules. Further, these children expressed more negative emotion (e.g., whining, pouting, angry outbursts), were more withdrawn, and were rated by teachers as more exhibitionistic and hostile than securely or resistantly attached children. Moss, Rousseau, Parent, St-Laurent, and Saintonge (1998) assessed behaviour problems, as indicated by teacher report, across two age periods (5-7 years and
7-9 years). They found that, across the age span, children who had been classified as having a disorganized attachment with mother at five to seven years, as assessed by the Strange Situation, had the highest rates of both internalizing and externalizing problems across both age periods. Resistantly attached children were reported to have higher rates of externalizing problems than securely and avoidantly attached children only at the younger ages, whereas avoidantly attached children had higher internalizing scores than securely attached children at the older ages. The finding for avoidantly attached children held true only for the boys in the sample.

Although research with adult populations necessarily involves retrospective assessment of attachment relationships (via assessment of current working models of attachment), further support for the relationship between attachment and affect regulation has been generated by studies with teen and adult populations. In general, young adults with working models of secure attachment to mother have been found to be less anxious and less hostile, and to demonstrate less dysfunctional anger than individuals with insecure attachment histories (Kobak, Cole, Ferenz-Gillies, & Fleming, 1993; Kobak & Sceery, 1988).

It is noteworthy that contradictory findings regarding attachment and affect regulation have been reported. Both Bates et al. (1985) and Bates and Bayles (1988) reported no significant differences on parental ratings of internalizing or externalizing difficulties between securely and insecurely attached preschoolers. More recently, Fagot and Leve (1998) reported on the association between maternal attachment and teacher-reported externalizing behaviour problems in a population of preschool age children.
Children’s attachment security with mother was assessed in the Strange Situation at 18 months of age. Attachment security did not emerge as a predictor of later behavioural difficulties. Similarly, Jacobsen and Hofmann (1997), who utilized separation stories to assess attachment representations in a population of school-age children, found no differences in teacher-reported disruptive behaviour problems as a function of secure versus insecure attachment representations. These findings suggest that the influence of early attachment relationships on subsequent affect regulation may not be as strong as attachment theory suggests.

The empirical review presented here also highlights the paucity of investigations into the father’s role in the emotional self-control of their children. Verschueren and Marcoen (1999), in their study of preschool age children, found that children’s teacher-rated anxious/withdrawn behavioural problems were better predicted by children’s representations of the child-father attachment relationship than by their representations of the child-mother relationship. Cowan, Cohn, Cowan, and Pearson (1996) reported that the children of fathers with attachment histories characterized by current anger toward their own parents, as assessed by the Adult Attachment Interview, had higher rates of teacher-reported externalizing behaviour problems. In contrast, mothers’ insecure attachment histories were associated with higher teacher ratings of internalizing behaviour problems in the children. Closer study of the father-child relationship may help to more clearly delineate the nature of the relationship between attachment and affect regulation in children.
Attachment and Empathy

According to attachment theory, the internal working models infants develop as a result of their primary attachment relationships serve as the basis for children’s knowledge of themselves and the social world. These models serve to guide the child’s interpretation of encounters with others. Through the experience of secure attachment relationships, the child learns what it is like to have one’s needs met and becomes effective at partaking in intimate relationships. It is this positive perception of the self and others that is believed to be at the root of empathic abilities (Chase-Lansdale, Wakschlag, & Brooks-Gunn, 1995).

Children with secure attachment histories have had their emotional needs met and have experienced empathic parenting. The internal working models of securely-attached children include the expectation of care from others, and a general perception that intimate relationships are positive in nature. Moreover, when children internalize attachment relationships, they are believed to internalize the entire relationship, both their role and the role of the attachment figure. As such, securely attached children not only come to expect care from others, they also learn to respond empathically with care when others are in need. Not preoccupied with their own emotional needs, they are able to focus on the emotional needs of others. While a secure attachment history is not viewed as causing later empathy, it is viewed as stimulating a process which underlies empathic behaviour. Conversely, children with avoidant attachment histories are believed to have experienced parental rejection in the face of their emotional needs. Although they may experience arousal upon encountering another’s distress, they are
more likely to defend against such feelings as they have become accustomed to avoiding strong emotions. Moreover, they have no representational basis from which to respond appropriately. Children with anxious-resistant attachments to primary caregivers often have histories of inconsistent parental responsiveness. These children tend to become anxious and confused when confronted with strong feelings, often having difficulty determining the boundaries of their own and others' emotional experiences. Therefore, they experience difficulty reacting empathically because they are too preoccupied with their own discomfort (Kestenbaum, Farber, & Stroufe, 1989).

Denham (1994) reported that, in her sample of 47 preschoolers, children who were rated as securely attached to their mothers (as determined by an attachment Q-sort) responded more empathically to displays of anger and sadness in their mothers than did children with insecure attachment histories. Kestenbaum et al. (1989) generated further support for the relationship between child-caregiver attachment and empathy in terms of peer relationships. The empathic responsiveness of twenty-four preschoolers was naturally observed in the preschool setting. Observational data were augmented by teacher ratings of empathy. The quality of the children's attachment relationship to mother had been assessed in the Strange Situation when the children were 12-months of age. Children with secure attachment relationships to their mother were found to demonstrate greater behavioural and emotional empathic responses to another child's distress than were children with anxious-avoidant attachment histories. Empathy scores for the anxious-resistant group were not found to differ significantly from the scores of the other two groups, although their average score fell between those of the other groups.
No sex differences were found in terms of empathic responsiveness.

Preliminary evidence indicates that the infant-mother attachment relationship may be most important in the developmental continuity between the quality of early relationships and the ability to respond empathically. Main and Weston (1981) reported that, while secure attachment to father was related to increased empathy in a sample of toddlers, secure attachment to mother was associated with more empathy than secure attachment to father. However, children with secure attachments to both parents were the most empathic of the sample, while children with insecure attachment to both mother and father were found to be the least empathic.

**Attachment and Social Competence**

Attachment theory also provides clear theoretical predictions regarding the influence of attachment relationships on social competence. According to Sroufe and Fleeson (1986), relationships are continuous and coherent over time, and previous relationship patterns are carried forward to subsequent relationships. Early attachment relationships not only influence the way children feel about themselves, but they also exert an impact on children’s expectations regarding how others will respond. The child with a secure attachment history has developed a working model of the self as an autonomous and effective person who is worthy of love, and a corresponding belief that others will be responsive to the child’s expressed needs. Securely attached children are expected to transfer the trust they have come to develop in their caregivers to trust of others, and an expectation of others to be responsive to affective signals. They have expectations regarding, and are more likely to elicit, positive responses from others.
These children approach peer relations with confidence and a sense of self-efficacy. Theoretically, securely attached children should readily broaden their social network, easily engage in competent and cooperative interactions with others, be effective in seeking help, and be verbally and affectively expressive (Cohn, Patterson, & Christopoulos, 1991; Sroufe, 1979).

Empirical investigation generally supports the influence of early attachment relationships on subsequent social relations (e.g., Park & Waters, 1989; Troy & Sroufe, 1986). As early as 14 months of age, children with secure attachment relationships to mother have been observed as more socially competent in mother-child laboratory assessments (Seifer et al., 1996). Similar findings have been reported at the preschool age (Bost, Vaughn, Washington, Cielinski, & Bradbard, 1998). Maternal factors associated with qualitatively different attachment relationships have been found to impact the child’s social competence. For instance, the children of mothers who display high levels of positive behaviours and affect, and who are more contingent and more coherent in their discipline, have been reported to be more socially competent than the children of more negative or inconsistent mothers (LaFreniere & Dumas, 1992).

LaFreniere and Sroufe (1985) reported that preschool-age girls who had been classified as securely attached to mother during infancy were more outgoing, engaged in more positive interactions with peers, received more attention and esteem from peers, and were viewed by teachers as more socially competent, than were insecurely attached children. The resistantly-attached children in this sample were characterized by passivity, withdrawal, submissiveness and neglect by peers. Those children who had
been classified as avoidantly attached to mother were found to express significantly more negativity, and were more often rejected by classmates. Interestingly, an insecure attachment to mother was found to have a significantly greater negative impact on boys than on girls in terms of subsequent peer relations. Moreover, securely attached girls were found to be more socially competent than securely attached boys (LaFreniere & Sroufe, 1985). More recently, Barglow, Contreras, Kavesh, and Vaughn (1998) reported that children who had been classified as securely attached to mother at one year of age demonstrated higher levels of free-play social competence at six to seven years of age, although the association between attachment security and social competence was stronger for the boys in the sample. Similar findings regarding the association between maternal attachment and social competence were reported in a longitudinal study of 10- and 11-year-olds (Ellicker, Englund, & Sroufe, 1992), although no sex differences were noted in this study. This latter study is noteworthy in that it demonstrates the long-term effects of early attachment relationships.

Several studies have been conducted in which peer dyads with various attachment combinations have been evaluated (e.g., Pastor, 1981). For instance, Park and Waters (1989) assessed the quality of friendship between four-year-olds and their best friends in a free-play session. Quality of attachment to mother was used to classify the pairs as secure-secure or secure-insecure. Dyads containing two secure children were found to be more harmonious, less controlling, more responsive and generally happier than were secure-insecure dyads (Park & Waters, 1989). In a similar study, Pastor (1981) paired avoidant, resistant, and securely attached toddlers with an unfamiliar securely attached
toddler in a play session in which the mothers of both children were present. While the securely attached children were found to be sociable and positively oriented, the anxious-resistant toddlers appeared highly stressed by the situation, ignored the social initiatives of the control toddler, and were more negative toward their mothers. Although the avoidantly attached children were highly engaged in the play session, they were reported to be more negative in their orientation to both their mothers and the peer (Pastor, 1981). Troy and Sroufe (1987) examined victimization among preschoolers with various attachment histories. Victimization was defined as a pattern of exploitation and manipulation in the relationship. These authors reported that preschoolers with a secure attachment to mother assumed the role of neither victim nor victimizer in their free play interactions with peers. In contrast, resistantly attached children were found to consistently assume the role of victim when paired with an avoidantly attached child. Children with an avoidant attachment history assumed the role of victimizer in their interactions with resistantly attached peers. However, when paired with another avoidantly attached child, these children were found to also sometimes assume the role of victim. Victimization was found to occur in every case in which an avoidantly attached child was paired with another insecure child (Troy & Sroufe, 1987).

Some contradictory evidence regarding the association between maternal attachment and social competence has also been reported. In examining several aspects of social competence, Rose-Krasnor, Rubin, Booth, and Coplan (1996) found that attachment to mother was associated with positive social engagement in preschool age children, but not to social problem-solving, social effectiveness or aggression. In a
follow-up study, Booth, Rubin, and Rose-Krasnor (1998) reported that the children who had been identified as insecurely attached to mother at age four had higher rates of externalizing problems at age eight. However, this was only found to be true for the insecurely attached children who also reported excessive reliance on a best friend for emotional support, suggesting that the social outcomes of attachment relationships are mediated by other factors across ages. Moreover, children's perceptions of maternal attachment relationships at age eight were not found to be associated with social adjustment (Booth et al., 1998).

Findings regarding the differential effects of child-father and child-mother attachment relationships on social competence have been less consistent than those that focus exclusively on the mother-child relationship. Kromelow, Harding, and Touris (1990) reported that, during toddlerhood, children with secure attachments to father were significantly more sociable with an adult stranger than were children with insecure attachments to father, particularly with respect to the boys in the sample. The child-father attachment relationship was found to be a more powerful predictor of stranger-sociability than was the child-mother relationship. The effect of child-mother and child-father attachment on social competence with peers during the preschool years appears to be more differentiated. For instance, it has been reported that a secure mother-child attachment is most strongly related to peer popularity for boys, while a secure father-child attachment is most strongly related to children's friendly-cooperative behaviour in the preschool for both boys and girls (Kerns & Barth, 1995). Conversely, Suess et al. (1992) reported that play competence and conflict resolution were significantly related to
infant-mother attachment for preschool-age girls, but not for boys, and that overall social competence was significantly related to attachment to mother for both sexes. Although a secure attachment to father was found to be related to some social competence variables (e.g., autonomous conflict resolution, tension in interpersonal encounters), and effects based on combined attachment information were more powerful for some variables, attachment to mother appeared to be a much more powerful predictor of overall social competence (Suess et al., 1992).

In studies of school-aged children, generalized attachment representations have been reported to be unrelated to levels of social extroversion (Jacobsen & Hofmann, 1997). When representations of maternal and paternal attachment are considered separately, children’s positive friendship qualities and lack of conflict in best friendships have been associated with attachment to both mother and father, while popularity has been reported to be unrelated to perceptions of attachment relationships (Lieberman, Doyle, & Markiewicz, 1999). In this latter study, perceived attachment to father emerged as the most important predictor of low conflict with best friends. Conversely, Hodges, Finnegan, and Perry (1999) found that children who reported a preoccupied or avoidant stance toward mother were more socially impaired in the peer group. Perceptions of attachment to father were not related to social adjustment.

While methodological differences between these studies may partially account for the discrepant findings, these contradictory reports are difficult to reconcile. Nonetheless, social competence appears to be one developmental sequela that the attachment relationship with father influences to some extent. While clarification of this
issue awaits further investigation, these studies serve to emphasize the relative
importance of the father-child relationship, as well as potential differential gender
effects, and point to the need for closer examination of this relationship with respect to
other variables.

Attachment and Achievement Orientation

As noted previously, the achievement orientation domain of emotional
intelligence is defined as comprising five components: motivation, optimism, self-
efficacy, attributional style, and impulse control. Each of these components will be
discussed separately below.

Motivation. According to attachment theory, children’s earliest relationships
with primary caregivers exert a strong effect on their motivation to learn about, act on
and master the environment. The attachment relationship involves an inverse
relationship between the child’s exploratory system and attachment behaviour oriented
toward the caregiver. The securely attached child, feeling confident of the caregiver’s
availability, actively explores the environment using the caregiver as a secure base from
which to explore. When perceived danger arises, the securely attached child ceases
exploratory behaviour and the attachment behavioural system is activated. In order for
the exploratory system to be fully engaged, activation of the attachment behavioural
system must be low. For the resistantly attached child, given a caregiver history of
inconsistent responding, the attachment behavioural system remains at a chronically
elevated level. Hence, the exploratory system of this child is stifled somewhat, and the
anxious-resistant child may be expected to show lower levels of exploration. With
respect to the anxious-avoidant pattern of attachment, the child is assumed to have experienced a history of rejection from, or neglect by, the caregiver. The avoidant child’s tendency to avoid the attachment figure, particularly in times of high stress or arousal, is hypothesized to lead the child to turn to the neutral world of objects. Therefore, the avoidantly attached child may be expected to spend greater periods of time exploring or playing with objects, but the quality of this exploration may be expected to suffer in that the child has turned to the objects as a means of avoiding the attachment figure, rather than as a means of exploring the environment. Quality of exploration for the avoidantly attached child may be compromised by heightened arousal when the child cannot rely on the attachment figure to be available when perceived danger arises. Thus, according to attachment theory, securely attached children have optimal opportunity to explore and master their environment, leading to a generalized expectation that success at difficult tasks is forthcoming with appropriate effort. As a result, they are likely to experience greater motivation in the face of challenging tasks, having developed an internal working model of personal effectiveness under difficult circumstances. Conversely, children with histories of avoidant or resistant attachment relationships, having not achieved a general sense of self-efficacy, may be less likely to experience the motivation to explore and master their environment (Riksen-Walraven, Meij, van Roozendaal, & Koks, 1993).

An additional way in which the qualities of a secure attachment may influence motivation is through the affective sharing characteristic of this relationship. A child who is accustomed to pleasurable interactions with the caregiver associated with object
interaction and challenging activities may come to associate positive feelings with goal-directed play, leading to subsequent independent efforts. Clearly, a sensitive and responsive caregiver, a caregiving style most consistent with the secure attachment relationship, will be most effective in eliciting feelings of pleasure in the child (Maslin-Cole & Speker, 1990).

Empirical tests have been variably supportive of the proposed attachment-motivation link. Aber and Allen (1987) examined effectance motivation in populations of maltreated and non-maltreated children (mean age of five years) through a variety of tasks designed to measure a child’s level of aspiration, curiosity and motivation to seek variation in a task. They reported that maltreated children demonstrated significantly less effectance motivation than non-maltreated children. Based on previous research documenting the higher proportion of insecure attachments in maltreated children, these authors proposed that the maltreated children in this study felt less free to explore the world in a fashion likely to promote a sense of competence and motivation to learn.

More direct tests of the association between attachment and motivation have revealed less consistent findings. In a comparison of securely attached and avoidantly attached toddlers, Riksen-Walraven et al. (1993) reported that avoidant attachment was associated with decreased mastery motivation on independent tasks only for the girls in the sample. For measures of mastery motivation on tasks involving cooperation with the attachment figure, no differences between the groups were found. Maslin, Bretherton, and Morgan (1986; as cited in Maslin-Cole & Speker, 1990) and Speker and Moriset (1986, 1987; as cited in Maslin-Cole & Speker, 1990) reported on samples of non-risk
and social-risk toddlers, respectively. In both studies, avoidant infants demonstrated higher levels of engrossment and object interaction in both free-play and structured tasks than secure, resistant, and disorganized children. This finding is not inconsistent with attachment theory, as avoidantly attached children have been proposed to involve themselves with objects in an attempt to avoid the negative emotions associated with the caregiver. However, the avoidant children in the sample also had higher scores on the majority of the motivation measures than did the securely attached children, who in turn were found to be more motivated than resistantly attached children. No differences in competence were reported between the avoidant and secure children for either sample.

While the findings reported above suggest that attachment relationships may not exert the effect on motivation that has been proposed by attachment theory, multiple difficulties with these studies preclude any definitive conclusions from being drawn. First, with respect to the studies cited by Maslin-Cole and Spieker (1990), motivation was measured in the toddler populations by persistence at tasks. Certainly the validity of persistence (or time-at-task) as a measure of motivation is questionable, and may not adequately tap broader aspects of motivation. In fact, attachment theory may have predicted that the avoidant children would persist at tasks longer than securely attached children as a simple means of avoiding contact with the caregiver. Measuring persistence does not give an adequate measure of the quality of the child’s exploration, and the child’s desire to achieve at the task. Moreover, while avoidant attachment may be associated with greater motivation during the toddler years, it is quite possible that the motivation of avoidant children may qualitatively differ from that of secure children later
in childhood (Maslin-Cole & Spiker, 1990). For instance, in a study of adolescents' perceived attachment to their parents, Learner and Kruger (1997) found that students with higher parent attachment scores demonstrated stronger academic motivation.

The vast majority of the studies cited here exclusively studied the child-mother attachment relationship. In a recent study which examined maternal and paternal representations of care in a population of adolescents, Feldman, Guttfreund, and Yerushalmi (1998) found that only maternal care predicted academic achievement when aptitude was controlled for. Further study appears indicated regarding the impact of child-father attachment on motivation and the association between attachment and motivation in later childhood.

Optimism. Strikingly little has been written about the association between attachment relationships and optimism. Carnelley and Janoff-Bulman (1992) commented on the effect of attachment relationships on optimism about romantic relationships in adulthood. Their study of college-students demonstrated that participants who reported having experienced sensitive maternal caregiving were found to be securely attached in their current romantic relationships, and to have more optimistic attitudes toward intimate relationships. Conversely, those who recalled inconsistent or rejecting histories with their mothers were avoidantly or resistantly attached to current partners and were less optimistic about romantic relationships. While this study illustrates the relationship between attachment and optimism in terms of only a very specific aspect of optimistic thinking, it underscores the importance of a more basic association. Specifically, children with secure attachments to primary caregivers appear
to take a generalized schema from these relationships, in which they feel optimistic about
the nature of later significant relationships. These children may also be expected to be
optimistic about positive outcomes in the more general aspects of their lives. Children
with insecure attachment relationships may question whether positive responses will be
forthcoming since such events are not consistent with their experiences of life. Although
optimism as determined by attachment history may initially be specific to interpersonal
relationships, it is plausible that the child will develop a more general optimistic or
pessimistic view of life based on these initial experiences. Thus, the insecurely attached
child, not anticipating positive outcomes, may be less oriented toward the achievement of
goals. This possibility remains largely unaddressed, but certainly appears to warrant
consideration.

**Self-Efficacy.** The literature regarding associations between attachment and self-
efficacy is also sparse. Brewer (1998) theorized that the parenting style characteristic of
secure attachment relationships predisposes a belief in oneself as one who is capable of
achieving. Parents who are attuned to their child’s abilities and capacity to tolerate
frustration help the child to achieve a tolerable balance of experience. When exploration
becomes frustrating for the child, the sensitive and responsive parent assists the child in
coping with the sense of frustration. In contrast, misattuned caregivers may take over a
task in the face of their child’s frustration or remove the child completely from the task,
such that the child never experiences effectance or develops a tolerance for coping with
frustration. Moreover, if the child cannot rely on the caregiver to be available to the
child in times of stress, or if the caregiver typically reacts to the child’s distress by using
toys as a distraction, the experience of efficacy becomes associated with anxiety and unease (Brewer, 1998).

In partial contrast to Brewer’s (1998) perspective on attachment and self-efficacy, Mayseless (1996) postulated that, in order for one to develop a sense of self-efficacy, one must feel that their environment is predictable and controllable. Mayseless went on to argue that the inconsistent parenting style characteristic of the anxious-resistant attachment style leaves the child with a representation of an unpredictable, uncontrollable attachment relationship which predisposes a low sense of self-efficacy. While the secure attachment relationship provides the predictability and control necessary to establish a high sense of self-efficacy, Mayseless argues that the anxious-avoidant attachment relationship does as well. Although anxious-avoidant individuals are not able to satisfy their attachment needs, their caregiving environment is, nonetheless, predictable and consistent. Moreover, while the parenting style which predisposes the avoidant attachment relationships is characterized by a rejection of negative affect, the avoidantly attached child is able to receive positive attention from the caregiver when positive affect is displayed. Thus, the avoidantly attached individual is able to experience a sense of control and efficacy by succeeding in the things that the attachment figure values (Mayseless, 1996).

Although not a direct assessment of self-efficacy, Verschueren, Marcoen, and Schoefs (1996) reported that preschool age children who self-reported a strong security of attachment to mother, utilizing a puppet interview to assess the representation of self, also self-reported high levels of self-esteem. Similar results were reported in a study of
seven-year-old children (Jacobsen & Hofmann, 1997). When attachment relationships with mothers and fathers were considered separately, Verschueren and Marcoen (1999) found that preschoolers' representations of attachment to mother better predicted positiveness of self than did attachment to father.

Specifically examining self-efficacy in terms of social relationships, Hortacsu (1994) reported that endorsement of secure attachment prototypes of fourth-grade children was positively related to a sense of social efficacy. This study will be reviewed in more detail in the following section. A study by O'Brien (1996), which examined career search self-efficacy in a group of adolescent females, revealed that young women with a moderate degree of attachment to their mothers felt highly efficacious with regard to choosing a career. Attachment to father did not influence career search self-efficacy. In a similar study by Ryan, Solberg, and Brown (1996), the association between career search self-efficacy and attachment to both mother and father was examined in a population of young adult men and women. For both men and women, attachment to mother was a more significant predictor of feelings of efficacy in choosing a career than was attachment to father.

Toth and Cicchetti (1996) utilized a framework based on attachment theory to examine the mechanisms contributing to impaired perceived competence in maltreated and non-maltreated children. Children in the study ranged from 8 to 12 years of age. Approximately half of these children had documented histories of parental maltreatment. A measure of relatedness to mother was employed as an attachment-like measure, however it is important to note that this measure cannot be equated with attachment
history. Rather, it is a measure of the child's current perceptions of significant relationships. Assuming that maltreatment largely precludes the establishment of a secure attachment relationship, the finding that non-maltreated children evidenced significantly greater perceptions of scholastic, social, and behavioural competence than maltreated children can be taken to imply that attachment security is positively correlated with self-efficacy. Of particular interest in this study is the reported finding that a number of the children with histories of maltreatment evidenced a positive sense of relatedness to mother, and that these children did not evidence the same degree of impaired perceived competence as did maltreated children with non-optimal relatedness patterns. Since the perpetrator of the maltreatment was not reported in this study, it is difficult to draw any conclusions regarding the possibility of children forming secure attachments to abusive or neglecting mothers. Nonetheless, considering optimal patterns of relatedness as similar to secure attachment, this finding suggests that a secure attachment to mother may serve as a buffer against the adverse effects of maltreatment. Moreover, it highlights the possibility that, at least in some instances, children are able to rise above abuse experiences to form positive relationships (Toth & Cicchetti, 1996).

Given the lack of a specific measure of attachment style in the above study, it is difficult to draw any definitive conclusions regarding the association between attachment relationships and a subsequent sense of self-efficacy. However, the finding that perceived competence was highest for non-maltreated children with positive relationship perceptions supports the contention that security of attachment is related to a high sense of self-efficacy. Further investigation of this issue seems strongly warranted,
particularly in terms of potentially differential contributions from child-mother and child-father attachment histories.

**Attributional Style.** Closely related to a sense of self-efficacy is a belief in one’s control over events in one’s life. Hortacsu (1994) theorized that the sensitive parental responsiveness which underlies the development of a secure attachment relationship aids in the development of a belief in a predictable and controllable world. Consistent and predictable responses to an infant’s cues give the child an early sense of control over its environment, and consequently a sense of self-efficacy. The child is believed to generalize from these early experiences in the formation of later beliefs regarding the environment as controllable. Using a measure of attachment prototypes for both mother and father as indicative of attachment history in a sample of fourth-grade children, Hortacsu confirmed the expectation, as predicted by attachment theory, that children who endorsed secure attachment prototypes evidenced a significantly more internal locus of control than did children who endorsed insecure attachment prototypes. As noted above, children in the secure group also reported a greater sense of self-efficacy in terms of social relationships. Unfortunately, differential effects of child-mother and child-father attachment histories were not reported in this study.

Studies that have examined the association between attachment relationships and attributional style in older populations have generated somewhat different findings. Greenberger and McLaughlin (1998) found that young adults’ perceived security of attachment to mother was marginally predictive of self-enhancing attributional styles for females but not for males. Perceived attachment to father was not associated with
attributinal style for either males or females. Studying a population of young adult females, Torquati and Vazsonyi (1999) reported that a generally secure attachment style was associated with greater levels of perceived control in conflicts with fathers, but not in conflicts with mothers or dating partners.

Interestingly, contradictory findings have been reported by Whisman and McGarvey (1995). Using an adult attachment interview with a sample of undergraduate students, these investigators found no support for their hypothesis that perceived attachment to primary caregiver (usually mother) would be related to depressotypic attributinal style. Depressotypic attributinal style was operationally defined as making stable and global attributions for hypothetical negative events. This finding suggests that factors other than attachment relationships may operate in the formation of a depressotypic attributinal style. While other factors may certainly play a role, support for the association between attachment and attributinal style from other studies (as noted above), taken together with the overall paucity of research in this area, and the neglect of close examination of the role of child-father attachment, implies that investigation of this relationship should remain open.

Impulse Control. Sroufe (1988) theorized that parental control and support for autonomy are related to the caregiver responsiveness and warmth that fosters secure child-caregiver attachment. He noted that parents differ in terms of their styles of limit setting and discipline, and viewed these differences as orthogonal to attachment pattern. Sroufe contended that children with secure attachment histories are more likely to respond to parental direction and control than are children with histories of avoidant or
resistant attachment, and that the way in which caregivers deal with issues of impulse control interacts with attachment security in the development of self-control in their children.

Olson, Bates, and Bayles (1990) also noted that "control" in the early years of life is imposed from external sources, and that children with sensitive and responsive caregivers are more willing to comply with adult authority. Following 168 children and their mothers in a longitudinal study from six months to six years of age, these authors found maternal responsiveness to the child's verbal communications at age two years to be predictive of the ability to remain task-focused and to delay gratification when the children were six years of age. Moreover, boys who were rated as securely attached to their mothers during infancy, as assessed by the Strange Situation, demonstrated significantly better cognitive impulse-control and delay capabilities at six years of age than did children with avoidant or resistant attachment patterns. Interestingly, this relationship between attachment classification and impulse control was not found for the girls in the sample. The authors note inconsistent findings with regard to sex differences in attachment and impulse control in past research, highlighting the need for further study of this issue (Olson et al., 1990).

Contradictory evidence regarding the association between attachment relationships and impulse control has also been reported. In a longitudinal study of 62 families, Easterbrooks and Goldberg (1990) compared the attachment security of children to both mothers and fathers, as assessed during toddlerhood, to children's level of ego-control during the kindergarten years. Ego control was defined as encompassing
the child's ability to modulate impulses, delay gratification, and appropriately express affect, with over-control being reflected by an undue delay of gratification. These authors hypothesized that, specifically in terms of avoidant-attachment relationships, avoidance of the attachment figure would be associated with overcontrol of impulses in later childhood. This hypothesis was largely supported. Specifically, kindergarteners with a history of secure attachment to mother and father were found to more adaptively control impulses than were insecurely attached (encompassing both anxious-avoidant and anxious-resistant) children, who were found to be over-controlling. Closer analysis revealed that the source of this overcontrol effect lay in the anxious-avoidant children. Furthermore, although a limited sample size precluded definitive conclusions regarding differential effects of attachment to mother and father, a definite trend emerged in which children with two insecure attachments were more over-controlled than children with one secure attachment. Children with two secure attachments were found to function most adaptively in terms of ego-control. This finding strongly suggests that, while having at least one secure attachment with a primary caregiver may serve as a buffer against the negative effects of an insecure attachment, secure attachment to both mother and father predisposes optimal adjustment. No sex differences for the children in terms of ego control were reported (Easterbrooks & Goldberg, 1990).

The discrepancies in the findings of the two studies described above are striking. These differences may be at least partially accounted for by methodological variations between the two studies. Whereas the former study employed impulse control tasks administered directly to the child, the latter obtained information regarding impulse
control from the teachers of the children. Moreover, Olson et al. (1990) focused their research primarily on the cognitive components of impulse control, whereas Easterbrooks and Goldberg (1990) focused more on the emotional aspects of this construct. It is further possible that the resolution to this discrepancy lies in closer examination of the anxious-resistant attachment relationship. Review of the data presented by Easterbrooks and Goldberg indicates that the children classified as having anxious-resistant attachment relationships to both mother and father demonstrated slightly less ego-control than did children with secure attachment relationships, with least ego-control associated most strongly with anxious-resistant attachment to father. Although the authors did not expand on these data, this information points to the possibility that an avoidant attachment history predisposes overcontrol, whereas a resistant attachment history may lead to under-control of impulses.

Interestingly, Belsky, Spritz, and Crnic (1996) found no association between attachment security to mother at one year of age and attention toward affectively laden information at three years of age. Moreover, attachment relationships have not yet been empirically demonstrated to be associated with the behaviours characteristic of Attention Deficit Hyperactivity Disorder (Erdman, 1998). The discrepant findings presented here highlight the need for further study of the relationship between attachment and the ability to delay gratification.

**Proposed Study and Predictions**

It appears evident from the above literature review that early attachment relationships represent a critical component of emotional development. Certainly it is
not suggested that attachment relationships are solely and independently responsible for all aspects of an individual’s emotional functioning. Nonetheless, based on attachment theory, and vast empirical evidence, it is apparent that the quality of children’s attachments to their primary caregivers establishes an interpretive base for subsequent life experiences. This interpretive base is best conceptualized in terms of Bowlby’s concept of internal working models. Again, it should be emphasized that neither Bowlby, nor subsequent attachment theorists, postulate that the internal working models a child develops from early significant relationships are immutable. Rather, these mental representations are conceived of as working models which are constantly changing and integrating new information as a part of normal, healthy development (Bowlby, 1988a). However, it is theorized that these earliest working models serve to influence an individual’s expectations and interpretations of subsequent relationships and events and, thus, that secure attachment relationships with one’s caregivers provide the child with a grounding for optimal emotional development. Moreover, it is important to note that all styles of attachment relationships are viewed as adaptive in terms of the child’s early environment. An avoidant attachment style may represent, for the young child, an ideal means of coping with a hostile and rejecting caregiver (Carlson & Sroufe, 1995). Nonetheless, this same style becomes increasingly maladaptive as the child’s social network broadens and expands and the child must learn to function and achieve in a world in which an emotionally avoidant style of interacting is less than ideal.

The model of emotional intelligence, as conceptualized by Salovey and Mayer (e.g., 1990), and later by Goleman (1995), is a useful organizing heuristic for emotional
development. Emotional intelligence, as a construct, holds the advantage of integrating multiple related components of emotional functioning into an organized whole. It provides a basis for understanding the way in which individuals interpret their own emotional lives and the emotional lives of others, and the manner in which this information is used to guide behaviour in the achievement of goals.

Combining the concepts of attachment and emotional intelligence has important implications for expanding and integrating our understanding of the development of emotional competence. Although attachment has been related to independent aspects of affective functioning, integrating this knowledge under the broader umbrella of emotional intelligence would serve to increase our understanding of emotional development not only in theoretical terms, but in more practical terms as well.

Based on attachment theory and previous research in this area, it was hypothesized in the present study that childhood attachment experiences with primary caregivers would be associated with the preschool child’s level of emotional intelligence in terms of the specific domains which comprise this construct. Factors that were investigated included accuracy in the children’s identification and labelling of their own emotional states, teacher-reported regulation of emotional experiences, empathy, teacher-reported social competence, and achievement orientation (i.e., motivation, optimism, self-efficacy, locus of control, and delay of gratification). The connection between these variables and attachment was assessed utilizing a multi-method approach which included information gathered from parents, preschool teachers and the children themselves.

The relationship among these factors was explored using a sample of mothers,
fathers, and their normally developing preschoolers. A preschool-age population was chosen so that the sample would contain children of a young enough age that attachment relationships with primary caregivers could be measured using the Q-sort technique, while at the same time providing a sample of a mature enough age that emotional intelligence could also be assessed. Given the relative stability of attachment relationships (Magai & Hunziker, 1993), it was expected that assessing attachment in the preschool years would provide an adequate indication of the child's long-standing attachment relationship with each parent.

Predictions

Hypothesis 1: Attachment to Mother and Emotional Intelligence. It was predicted that the security of attachment relationship with mother in preschoolers would be associated with self-awareness of emotional states, affect regulation, empathy, social competence, and achievement orientation (including self-efficacy, attributional style, optimism, motivation, and delay of gratification). More specifically, it was expected that children's attachment to their mothers would account for a significant proportion of the variance in each of the domains of emotional intelligence, such that a more secure attachment relationship with mother would be associated with higher emotional competence while a less secure attachment to mother would be associated with a lower degree of competence.

Hypothesis 2: Attachment to Father and Emotional Intelligence. It was predicted that preschoolers' attachment to father would be associated with each of the domains of emotional intelligence. It was expected that the attachment relationship with father
would account for a significant proportion of the variance in scores on the measures of emotional intelligence, such that a more secure attachment to father would be associated with higher emotional intelligence, while a less secure attachment to father would be associated with a lower degree of competence.

**Hypothesis 3: Relative Importance of Attachment to Mother versus Attachment to Father.** It was predicted that attachment to mother would be a more important predictor of emotional intelligence than attachment to father. More specifically, it was expected that attachment to mother would account for a greater proportion of the variance in children's performance on the measures of emotional intelligence than would attachment to father.

**Empirical Questions.** Given that the construct of emotional intelligence has only recently begun to be studied empirically, and has been studied far less in young children than in older populations, the present study was relatively exploratory in nature. As such, multiple empirical questions were posited which were also addressed in this study.

First, an aim of this study was to explore the cohesiveness of the individual domains of emotional intelligence. This study attempted to address the question of whether the individual domains of emotional intelligence do, in fact, correlate in such a way that it is useful to approach them in terms of the broader heuristic of emotional intelligence, at least in terms of a population of preschool age children. In addition, the question of whether the subdomains which comprise achievement orientation related in such a way as to warrant the clustering of these constructs into one larger domain was considered.
A second purpose of this study was to examine sex differences in the individual domains of emotional intelligence during the preschool years. By including sex of the child as a predictor variable in the data analyses, the study addressed the question of whether boys and girls demonstrate discrepant patterns of strengths and weaknesses in their emotional competence at this developmental level.

Finally, this study explored sex differences in emotional intelligence as a function of sex of the attachment figure. Analyses were completed to address the question of whether attachment to mother and attachment to father were differentially associated with the individual domains of emotional intelligence for boys and girls.
CHAPTER II

METHOD

Participants

Participants in the study consisted of 31 preschool age children (12 males and 19 females) and their parents, recruited from preschool centres in the Hamilton-Wentworth area. The mean age of the children was 51 months ($SD = 5.88$ months). Recruitment was based on the following inclusion criteria: (1) children between the ages of 36 and 60 months, (2) children who had two parents frequently and consistently involved in the care of the child, and (3) children who did not have any formally identified emotional, behavioural, learning or speech-and-language difficulties.

Measures

The association between attachment relationships with mothers and fathers and the five domains of emotional intelligence was assessed utilizing a multi-method approach which included mothers’ and fathers’ completion of the Attachment Behaviour Q-set (Waters, 1986). Preschool teachers completed the Social Competence and Behaviour Evaluation Scale (SCBE; LaFreniere & Dumas, 1995) in order to provide information regarding their perception of the child’s interpersonal competence within the classroom environment, as well as a measure of externalizing and internalizing emotional problems. The children themselves completed a battery of measures, including: (a) a measure of emotional self-awareness designed for the purposes of this study, (b) the Diagnostic Analysis of Nonverbal Accuracy (DANVA 2) Scale (Nowicki & Duke, 1997), (c) Animal Crackers (Adkins & Ballif, 1972), (d) the Optimism-Pessimism
Test Instrument (OPTI; Stipek, Lamb, & Zigler, 1981), (e) the Preschool and Primary
Nowicki-Strickland Internal-External Control Scale (PPNS-IE; Nowicki & Duke, 1973),
(f) the Matching Familiar Figures Test (MFFT; Kagan, 1966; as cited in Barkley, 1988),
and (g) a Delay of Gratification Task (Arend, Grove, & Sroufe, 1979; Olson et al., 1990).
The children also completed the Peabody Picture Vocabulary Test - Revised (PPVT-R;
Dunn & Dunn, 1981) as a screening measure of language and cognitive skills.

**Background Information Questionnaire.** The Background Information
Questionnaire is a brief, self-report measure designed to provide basic demographic
information regarding the family. The questionnaire requests information pertaining to
age of the parents and children, parents’ educational history, socioeconomic status, and
number and sex of children in the family (Appendix A).

**Waters Attachment Behaviour Q-set (version 2.0; Waters, 1986).** Mothers and
fathers were asked to provide attachment security descriptions for their own relationship
with their child. Parents were requested to review a subset of the items and observe their
child’s behaviour for one week prior to completing the Q-set. Parents were asked to
initially sort the 90 items in the Attachment Q-set into three piles representing behaviour
that was most characteristic of their child, least characteristic of their child, and
behaviour that was not applicable to their child. They were then requested to shift items
until they had achieved an even distribution of 30 cards in each pile, and then to further
sort the three piles into nine piles of 10 cards each, ranking the piles from most to least
characteristic of the child (e.g., child keeps track of mother’s/father’s location when
playing; child uses mother’s/father’s facial expression for information; child sometimes
signals mother/father that he wants to be put down, and then fusses or wants to be picked right back up). Security of attachment was then scored by correlating a parent's Q-sort description with a criterion sort, comprised of ratings by five attachment researchers, of the hypothetically most securely attached child. Mothers' security scores on the Attachment Q-set have been found to range from -.02 to .70 (M = .39), while fathers' security scores have been found to range from -.08 to .62 (M = .37; Kerns & Barth, 1995). According to Waters and Deane (1985), the attachment Q-set has demonstrated good discriminant validity and temporal stability. Solomon and George (1999) report that interrater reliability on the attachment Q-set has been found to range from .72 to .95 and note that the measure demonstrates moderate relations to other measures of attachment.

**Peabody Picture Vocabulary Test - Revised (Dunn & Dunn, 1981).** The PPVT-R is a measure of receptive vocabulary skills for use with children and adults. It correlates highly with several measures of intelligence and was included in this study as an estimate of language and cognitive functioning. The test involves showing the child a series of pages depicting four drawings, stating the item word, and asking the child to point to the picture which best shows the meaning of the word. Raw scores are converted to standard scores based on the child's age. The PPVT-R has been extensively normed. Split-half reliabilities for children have been found to range from .67 to .88, immediate retest alternate-forms reliability for standard scores has been reported to range from .71 to .89, and delayed retest alternate-forms reliability for standard scores has been reported to range from .54 to .90. Construct validity of the PPVT has been demonstrated through its
correlation with other vocabulary tests and with vocabulary subtests of intelligence tests (e.g., WISC; Dunn & Dunn, 1981).

**Self-Awareness of Emotions (SAE: Houtmeyers, 2000).** Competence in this domain was assessed utilizing a measure developed for the purposes of this study. Prior to data collection, this measure was piloted on a sample of 12 preschool-age children to evaluate the appropriateness of the test format and item content for children in the preschool age group (Appendix B). The measure consists of 16 items and takes approximately 10 minutes to administer. Children are read scenarios designed to elicit feelings of either happiness, anger, sadness or fear, with four scenarios representing each emotion. The four basic emotions of happiness, anger, sadness and fear were selected as it was felt that these represented emotions that could be identified by children of preschool age. The children are asked to place a plastic chip into a container displaying a pictorial representation of the face that shows the feeling they believe they would feel in each situation. A fifth container depicting a neutral facial expression in also presented as a choice. Scores are based on the number of targeted emotions correctly identified by the child. The format of this task was based on a similar procedure utilized in the Family Relations Test (Bene & Anthony, 1957; as cited in Bierman, 1990).

In the present study, scores on the SAE were found to range from 3 to 12 (\( M = 7.39, SD = 2.67 \)). The measure demonstrated good internal consistency (.62) and split-half reliability (.77) in this sample. Discriminant validity of the SAE may be inferred from the absence of significant correlations between this measure and the DANVA (as

\[ ^1 \text{SAE measure available from author} \]
noted in the following chapter) as the DANVA is designed to measure one’s ability to identify emotions in others as opposed to identification of emotional states in oneself. However, because of the qualitatively different nature of the tasks, particularly the DANVA’s use of actual emotional expressions in voices and faces and the SAE’s reliance on inferences regarding emotions from details in a verbally presented story, it cannot be definitively concluded that performance on the SAE truly distinguishes between empathy and recognition of one’s own emotions. This issue is discussed further in the final chapter.

The Social Competence and Behaviour Evaluation - Preschool Edition (SCBE: LaFreniere & Dumas, 1995). The SCBE is an 80-item teacher-report questionnaire designed to measure an extensive array of behaviours within a preschool setting. Teachers respond to the items on a 6-point likert scale. Higher scores on each scale reflect better adaptation. This measure provides eight basic scales designed to measure the child’s manner of emotional expression, social interactions with peers, and relationship with teachers. The eight basic scales are defined by negative and positive poles and include: Depressive-Joyful, Anxious-Secure, Isolated-Integrated, Dependent-Autonomous, Angry-Tolerant, Aggressive-Calm, Egotistical-Prosocial, and Oppositional-Cooperative. The scale also provides four broad-band measures, including internalizing problems, externalizing problems, social competence, and a general adaptation score. The Internalizing Problems summary scale consists of 20 items generated from the negative poles of four of the subscales, reflecting anxious, depressed, isolated and withdrawn behaviours (e.g., difficult to console when he/she cries; worries; needs
teacher’s presence to function well). The Externalizing Problems summary scale consists of 20 items generated from the negative poles of the four subscales reflecting angry, aggressive, egotistical and oppositional behaviours (e.g., easily frustrated; whines or complains easily; bullies weaker children; refuses to share toys). The Social Competence summary scale is comprised of 40 items generated from the positive poles of the eight subscales, and is designed to assess the positive qualities of the child’s adaptation (e.g., persistent in solving own problems; cooperates with other children in group activities; stays calm when there are conflicts in the group; enjoys demonstrating new songs, games and other things he/she has learned). The General Adaptation summary scale is comprised of all 80 items, and is designed to provide a measure of the quality of the child’s adaptation to the preschool environment.

Interrater reliability among the eight basic scales has been reported to be uniformly high (.72 to .89), and internal consistency of the basic scales has been reported to range from .80 to .89. Convergent validity of the measure has been demonstrated through comparisons of the SCBE to similar validated measures (e.g., Child Behaviour Checklist - Teacher Report Form). Moreover, the SCBE has been found to have good construct validity (LaFreniere & Dumas, 1995).

The Diagnostic Analysis of Nonverbal Accuracy (DANVA 2) Scale (Nowicki & Duke, 1989, 1994, 1997). The DANVA was designed as a measure of accuracy in the sending and receiving of nonverbal information and was utilized in the present study as a measure of empathy. It should be noted that this operational definition of empathy may be narrower than traditionally used, and may alternatively be thought of as ‘emotional
decoding’. The DANVA has been used in research with children as young as three years through to adults. Only four of the subtests assessing receptive accuracy were employed in this study. These subtests included: (1) Adult Faces 2, (2) Child Faces 2, (3) Adult Paralanguage 2, and (4) Child Paralanguage 2. The first two of these subtests involve requesting the child to look at series of photographs of 24 adult faces and 24 child faces. The photographs depict facial expressions of four emotions (happy, sad, angry, and fearful). The child is permitted to view each of the photographs for a maximum of five seconds before the picture is taken away, and then is asked to report which of the four emotions the individual in the picture is feeling. In the third and fourth subtests, the child is instructed to listen to an audiotape of adults’ and children’s voice repeating the phrase “I am going out of the room now and I will be back later” 24 and 32 times, respectively. The voices on the audiotape are varied so as to reflect one of the four emotions of happy, sad, angry or fearful. The child is asked to report which of the four emotions the individual is experiencing based on the audio presentation.

DANVA subtest scores for the receptive measures have been found to be internally consistent (.77 to .88) and reliable over a four-week time period (.74 to .86). Construct validity of the DANVA receptive measures has been demonstrated by significant relationships between the DANVA and indices of personal and social adjustment and academic achievement. Scores on the DANVA have not been found to be related to intellectual functioning (Nowicki & Duke, 1994).

**Animal Crackers (Adkins & Ballif, 1972).** Animal Crackers is a test designed to measure achievement motivation in preschool through first-grade students, particularly in
terms of academic motivation. The measure consists of 60 items and takes approximately 30 minutes to administer. Children are shown pairs of identical animals and given descriptions of the animals that are reflective of differences in motivation. The child is asked to select the animal that likes or does what the child likes or does. The measure provides a Total score, as well as five subscores: School Enjoyment (e.g., This rabbit likes to spend the day at school. This rabbit likes to spend the day at home.), Self-Confidence (e.g., This penguin asks the teacher what it must do to finish its work. This penguin knows what it must do to finish its work.), Purposiveness (e.g., This lamb stops playing if it does not win. This lamb keeps on trying to win.), Instrumental Activity (e.g., This duck gets its things ready for a bus ride. This duck watches the others get ready for a bus ride.), and Self-Evaluation (e.g., This bear can do only easy things well. This bear can do some hard things well.). For the purposes of the proposed study, two of the subscores (Self-Confidence and Self-Evaluation) were utilized as measures of self-efficacy. The remaining three subscores (School Enjoyment, Purposiveness, and Instrumental Activity) provided an index of motivation.

This measure has demonstrated good internal consistency for subtests (.69 to .92), and excellent internal consistency for the total test (.94 to .98). Correlations with teacher ratings range from .23 (for first grade) to .45 (for kindergarten; Clinkenbeard & Murphy, 1990).

**Optimism-Pessimism Test Instrument (OPTI; Stipek, Lamb, & Zigler, 1981).** The OPTI provides a measure of young children's tendencies to expect positive or negative outcomes. Children are shown a series of 20 pictures and are read a short story
about each picture. The participant is asked to choose between two alternative endings for each story, one of which describes a desirable outcome and the other which describes a negative outcome (e.g., John has been learning to play the trumpet. Tomorrow, John is playing in a contest. Do you think John is going to win a prize tomorrow or do you think he will lose?). The child’s optimism score is the total number of positive outcomes selected. The OPTI has demonstrated good test-retest reliability (.71) over a two-week interval, and moderate test-retest reliability (.53) over a seven-month interval. Validity of this measure has been demonstrated by its significant correlation to measures of related constructs (e.g., self-concept, delay of gratification, attitude toward school, and locus of control; Stipek et al., 1981).

Preschool and Primary Nowicki-Strickland Internal-External Control Scale (PPNS-IE; Nowicki & Duke, 1973). The PPNS-IE was designed to measure locus of control in preschool to primary-age children. This measure consists of 26 forced-choice items presented in cartoon format which assess the child’s tendency to believe that events in one’s life are outside of one’s control (e.g., becoming ill, being liked by others). Wording of some of the items was revised in this study for purposes of clarification. The measure was included in the pilot study with the revised wording to ensure that the revisions did not significantly influence scores on the test (Appendix B). The PPNS-IE has been found to have test-retest reliability over a six-week period of .79, and is also correlated with locus of control at older ages and with achievement for females (Nowicki & Duke, 1974).

The MFFT is a measure designed to assess cognitive impulse control in children. Children are presented with a picture of a recognizable object (total of 11 pictures), allowed to examine the picture briefly, then shown an array of four variants of the drawing. The child is asked to choose which picture matches the sample picture exactly. Scores on this measure derive from average latency to first response and total number of errors. However, only the score for total number of errors was used in this study. The MFFT has been used extensively in research assessing impulse control disorders in children. It has been reported to discriminate between children with and without Attention Deficit Hyperactivity Disorder and has been found to be related to measures of activity level, attention, and academic achievement (Barkley, 1988).

**Delay of Gratification Task.** A delay of gratification task, based on strategies described by Arend et al. (1979) and Olson et al. (1990), was employed as an additional measure of self-control. This second measure was added to supplement the MFFT described above, which focuses primarily on the cognitive aspects of impulse control. The delay of gratification task involved a scenario in which the examiner presented two small, wrapped prizes (a box containing stickers and small toys) to the participants. The children were asked to complete a filler task involving colouring geometric shapes according to a particular colouring scheme. They were informed that if they persisted at the task until told to stop by the examiner, they would receive both prizes. Children were also given the option of choosing to terminate the task prematurely by ringing a bell placed in front of them, but were informed that if they rang the bell they would receive only one prize. Children who persisted at the task were stopped after five minutes. All
participants were ultimately given both prizes regardless of whether or not they completed the task to the five minute time limit. The dependent measure on this task was the amount of time (in seconds) that elapsed before the child terminated the filler task. The procedure described here was determined after inclusion of the Delay of Gratification task in the pilot study (Appendix B).

Procedure

Following clearance by the Ethics Committee of the Department of Psychology, The University of Windsor, the directors of 48 preschool centres in the Hamilton-Wentworth area were contacted. The nature of the study was explained and permission was requested to solicit participation of families through the centres. Of the 48 centres that were contacted, 25 agreed to permit solicitation of families. Subsequently, individual meetings were held with the directors of the 25 centres to determine potential participants.

Once suitability for participation had been determined, directors provided selected families with information packages consisting of a cover letter explaining the purpose and nature of the study and a permission form to be completed by the parents indicating their willingness to be contacted personally by the researcher (Appendix C). Returned permission forms were collected from 14 of the centres. The remaining 11 centres had no permission forms returned. Recruitment of participants was felt to have been hampered by a number of components: participation in the project required a relatively significant time commitment from families; participation required involvement of both mothers and fathers, excluding families in which only one parent was interested
in participating; families were not offered any material compensation for their
involvement; and some of the centres solicited did not serve families who met all
recruitment criteria (e.g., two-parent families).

Parents who returned the permission forms \( N = 34 \) were contacted by telephone
by the researcher. At that time, the nature and purpose of the study was explained in
detail and questions from the parents were addressed. Following telephone contact, 31 of
the families confirmed their willingness to participate. Three of the families declined to
participate, each of them indicating a lack of time as their reason for declining.

Upon indicating their willingness to participate, parents were familiarized with a
subset of the Q-sort items and requested to observe their child’s behaviour over a one
week period of time. Appointments for parents to complete the Q-sort were arranged to
take place shortly following the observation period. Parents were informed that
completion of the Q-sort would take approximately one hour. Participants were given
the option of having their child’s participation take place either at their home or at the
child’s preschool centre. They were informed that their child would be tested over two
sessions of approximately 45 minutes each. Appointments for child sessions were
arranged to take place shortly after parent sessions were completed. Parents were also
informed that their child’s teacher would independently complete the SCBE and that
completion of this measure would take approximately 15 minutes.

At the scheduled parent session, participants were again debriefed regarding the
purpose of the study. Parents were told that their participation was voluntary, that verbal
assent would be obtained from their child prior to the child’s participation, that they
could withdraw themselves or their child from the study at any time, and that the
information obtained from all participants (i.e., parents, child, and teacher) would remain
strictly confidential. Parents were asked to read and sign two written consent forms
(Appendix D) indicating that they understood the nature of the study and agreed to the
terms of participation. Parents were given a copy of the consent form for their own
records.

Parents were asked to complete the Background Information Questionnaire. The
Q-sort procedure was then explained to them and they were requested to complete the Q-
sort without interaction with the other parent. Following completion of the parent
session, any additional questions were addressed, parents were thanked for their
participation, and they were informed that they would receive a summary of the research
findings upon completion of the study.

Two appointments for each child’s testing session were arranged to take place
shortly after completion of the parent session. In some instances, when parents chose to
have their children participate at their home, one of the child’s testing sessions took
place during the parent session. Children were tested individually. Testing time was
approximately 45 minutes per session, with total testing time for the children taking
approximately 90 minutes per child. All testing sessions were conducted by the
researcher. In order to minimize investigator bias, parent Qsorts were not scored until
child participation was complete.

At the start of the sessions with each of the children, the children were introduced
to the examiner and the nature of the study. Children were informed that their parents
has consented to their participation, that their participation was voluntary, that they had the right to withdraw at any time and that the information obtained during the sessions would remain strictly confidential. The children were given the opportunity to ask any questions about their participation and verbal assent for participation was obtained.

Each child completed a battery of tests (Self-Awareness of Emotions Test, DANVA, Animal Crackers, OPTI, PPNS-IE, MFFT, Delay of Gratification Task, and PPVT-R) over the course of the two testing sessions. The order of administration of the measures was counterbalanced to control for order effects associated with test administration. Following completion of the child testing sessions, the researcher addressed any additional questions from the children and they were thanked for their participation.

Individual appointments were made with the preschool teachers of each of the children to review the purpose of the study, what their participation in the study involved, and to obtain their informed consent (Appendix E). Teachers were given a copy of the consent form for their own records. The teachers were asked to independently rate each of their participating students on the SCBE at around the same date of the child’s participation. Completed SCBE questionnaires were collected from the teachers, at which time they were thanked for their participation and informed that a summary of the research findings would be available to their respective preschools following completion of the study.

All measures completed by children, mothers, fathers, and teachers were coded with identification numbers to ensure confidentiality.
CHAPTER III

RESULTS

Demographic Data

The 31 children who participated in the study consisted of 12 males and 19 females, with a mean age of 4 years, 3 months ($SD = 5.88$ months; range = 38-60 months). The mean age of the girls in the sample was 4 years, 3 months ($SD = 5.55$ months; range = 40-59 months). The mean age of the boys was 4 years, 2 months ($SD = 6.60$ months; range = 38-60 months). Thirty of the children were Caucasian; one child was Asian. Twenty-nine of the families were intact; two of the families had one parent living outside of the child’s primary residence. The children in these latter two families resided primarily with their mothers, but had regular and consistent contact with their fathers. All of the parents in the study were the biological parents of the participating child.

All of the 31 fathers who participated were employed outside of the home. Of the fathers, 1 (3.2%) had some high school education, 9 (29%) had graduated from high school, 6 (19.4%) had some post-secondary education, 7 (22.6%) had completed post-secondary education, 3 (9.7%) had some graduate level education, and 5 (16.1%) had completed a graduate degree.

Of the 31 mothers who participated, 23 were employed outside of the home. One mother (3.2%) had some high school education, 6 (19.4%) had some post-secondary education, 15 (48.4%) had completed post-secondary education, 2 (6.5%) had some graduate level education, and 7 (22.6%) had completed a graduate degree.
The majority of the families who participated (n = 23; 74.2%) reported annual income levels of more than 50,000 dollars. Five of the families (16.1%) reported an annual income in the 40,000 to 50,000 dollar range, one family (3.2%) reported an annual income in the 30,000 to 40,000 dollar range, one family (3.2%) reported an annual income in the 20,000 to 30,000 dollar range, and one family (3.2%) reported an annual income of less than 20,000 dollars.

With regard to religious affiliation, 12 of the families (39%) reported that they belong to the Roman Catholic faith, eight families (26%) did not respond to the question, two families (7%) reported that they have no religious affiliation, 2 families (7%) reported that they belong to the Anglican faith, and one family each (3%) responded Lutheran, Christian, Protestant and Canadian Reformed. Three of the families (10%) reported different religious affiliations for mothers and fathers. Of these, one mother reported that she belongs to the Catholic faith, one responded that she belongs to the Protestant faith, and the third reported that she is atheist. Of the fathers in these three families, two reported that they belong to the Catholic faith and one reported that he has no religious affiliation.

Overview and Rationale of Main Data Analysis Strategy

Sequential multiple regression analyses were performed in order to assess the association between security of attachment to mothers and fathers, as measured by the attachment Q-sort, and each of the measures of emotional intelligence (the emotional self-awareness measure; subscales and composite scores of the SCBE; the receptive subscales of the DANVA; subscales and composite score of the Animal Crackers test;
the OPTI; the PPNS-IE; the MFFT; and the Delay of Gratification task).

Consideration was initially given to grouping the children into secure and insecure classifications for both attachment to mother and attachment to father based on scores on the attachment Q-sorts, using a methodology described by Park and Waters (1989), and then completing a multivariate analysis of variance (MANOVA) using attachment security categories as the independent variable and the measures of emotional intelligence as dependent variables. However, because of the small size of the overall sample, all of the data sets would have contained fewer cases than dependent variables. According to Tabachnick and Fidell (1983), had a MANOVA been completed, the power of the analysis may have been lowered because of the reduced degrees of freedom for error. As well, a ratio of cases to dependent variables that is too low would artificially create heterogeneity of variance-covariance matrices (Tabachnick & Fidell, 1983).

Consideration was then given to completing separate analyses of variance (ANOVA) for each of the dependent variables. However, this choice of analysis was also determined to be inappropriate as grouping participants into secure and insecure categories would have resulted in large differences in group size between cells. According to Kerlinger (1986), factorial analysis of variance is most appropriate for experimental research in which participants can be randomly assigned to cells, thus achieving an equal number of participants in each group. In the case of the present study, in which equal cell sizes were not attainable, the data were best served with multiple regression analyses. Multiple regression analysis, while yielding the same information as the standard factorial analysis, is better able to account for differences in group sizes (Kerlinger,
1986).

The decision to perform multiple regression analyses eliminated the need to group the children in the sample according to scores on the attachment Q sorts. Attachment security scores, in their original form, are continuous variables. To partition these scores into secure/insecure dichotomies would have discarded information by reducing their variance and, therefore, their possible correlations with other variables (Kerlinger, 1986).

A sequential multiple regression analysis was performed for each of the dependent variables, including separate analyses for the subscales of measures which generated more than one score. Five predictor variables were included in each regression analysis: age (of children), sex (of children), PPVT score, mother Q-sort score and father Q-sort score. The first three predictor variables (age, sex and PPVT scores) were entered as covariates. However, they were included in the analysis only if they were found to account for a significant proportion of the variance in the dependent variable. According to Tabachnick and Fidell (1983), when the ratio of cases to predictor variables is too small, the power of the analysis may become unacceptably low. Therefore, for each dependent variable, there was a desire to only include those covariates which were found to be significant predictors of the dependent variable in order to maximize the ratio of cases to predictor variables in the final model. The three covariates were entered into the regression equation in the first block, using a forward entry method. A liberal probability criterion level for entry of .15 was selected to make it less likely that important covariates would be excluded from the model due to chance fluctuations in the statistics
computed from a single sample. Tabachnick and Fidell (1996) note that, since one can expect some variability in statistics from sample to sample, using a more stringent criterion level may overfit the model to the data, reducing generalizability to the population due to chance differences within a single sample, particularly when the sample size is small. By setting the probability criterion for entry for the covariates at .15, it was possible to maximize the ratio of cases to predictor variables, while at the same time making it less likely that the analysis was overfitting the data to this particular sample. Scores on the mother Q-sort and father Q-sort were entered in the second and third blocks, respectively, using a sequential regression method to determine if addition of information regarding security of attachment to mother and then security of attachment to father improved prediction of scores on the dependent variables beyond that afforded by differences attributable to the covariates. The mother Q-sort variable was entered prior to the father Q-sort variable as attachment to mother was hypothesized to be more influential than attachment to father. Finally, regressions were run again with addition of an interaction term testing the potential interaction effects of attachment security with mother and attachment security with father. These analyses indicated no significant interactions and, thus, the interaction term was excluded from all regression models.

For each of the dependent variables, analyses were performed for evaluation of assumptions. With the use of a $p < .001$ criterion for univariate outliers, these results led to deletion of one univariate outlier on the MFFT and one univariate outlier on the Instrumental Activity subscale of the Animal Crackers test. Results of the evaluation
also led to transformation of the Delay of Gratification variable to reduce skewness. The
distribution of this variable deviated from the normal distribution because many of the
children in the sample (n = 17) completed the task to the five minute limit. A variety of
transformation procedures were attempted but were unsuccessful in improving the
normality of the distribution so the variable was ultimately dichotomized into
complete/incomplete categories, as recommended by Tabachnick and Fidell (1996).

There was also an interest in examining the effect of quality of attachment
relationships on the dependent variables separately for male children and female
children. However, the small size of these subgroups precluded use of multiple
regression analyses. Therefore, two-tailed partial correlation analyses, controlling for
age, were completed to examine the relationship between father Q-sort and each of the
dependent variables, and mother Q-sort and each of the dependent variables, separately
for both male and female children.

Finally, two-tailed partial correlation analyses, controlling for age, were
performed to examine the degree of relationship among the dependent variables.

**Preliminary Analyses**

Preliminary analyses were conducted to determine whether family demographics
were related to attachment security with mother or with father. These variables included
mothers’ education, mothers’ employment, fathers’ education, and socioeconomic status.
Fathers’ employment was not included as a variable as all fathers in the study were
employed outside of the home. Results indicated no significant relations (p > .05)
between demographic variables and security of attachment with mother or with father.
As well, no significant correlations were noted ($p > .05$) when the analysis was run separately for boys and girls.

Means and standard deviations for the entire sample, and separately for boys and girls, on all of the variables are shown in Table 1. Abbreviations of test names used in the tables can be found in expanded form in Appendix F. A 2 (sex of parent) by 2 (sex of child) Analysis of Variance (ANOVA) was completed to examine differences in attachment Q-sort scores as a function of the sex of the participants. There was no significant main effect found for sex of child ($F(1,61) = .895, p > .05$), nor for sex of parent ($F(1,61) = .001, p > .05$). Moreover, no interaction effect was noted ($F(1,61) = 2.923, p > .05$). Thus, neither boys and girls, nor mothers and fathers, differed significantly from each other in terms of attachment Q-sort ratings. Additionally, there were no significant differences between girls’ and boys’ degree of attachment security as a function of the sex of the parent. Results remained non-significant ($p > .05$) when the analysis was run again controlling for age. As sex was entered as a predictor variable for each of the multiple regression analyses completed with the dependent variables, differences between boys and girls on each of the dependent variables is not considered here.

Table 2 displays the point biserial and phi correlations between the five predictor variables for the entire sample, and separately for boys and girls. As can be seen from Table 2, children’s age was significantly positively correlated with attachment scores for both mothers and fathers for the entire sample, indicating that as the age of the children increased, scores on both attachment Qsorts increased as well. However, when
Table 1
Means and Standard Deviations of All Variables for Total Sample, Girls and Boys

<table>
<thead>
<tr>
<th>Variable</th>
<th>Total (N = 31)</th>
<th>Girls (n = 19)</th>
<th>Boys (n = 12)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>PPVT</td>
<td>109.52</td>
<td>13.97</td>
<td>109.74</td>
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<td>MOTHER Q</td>
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<td>.17</td>
<td>.4947</td>
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<td>.16</td>
<td>.4211</td>
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<td>2.67</td>
<td>7.58</td>
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<td>14.58</td>
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<td>52.58</td>
</tr>
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<td>51.79</td>
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<td>11.07</td>
<td>52.74</td>
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Table 2

**Intercorrelations Between Predictor Variables for Total Sample, Girls and Boys**

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<td>4. Mother Q</td>
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</table>

| **Girls (n = 19)** |     |     |      |          |          |
| 1. Age   |     |     | .100 | .619**   | .244     |
| 2. Sex   |     |     |      |          |          |
| 3. PPVT  |     |     | .230 | -.075    |          |
| 4. Mother Q |     |     |      |          | .340     |

| **Boys (n = 12)** |     |     |      |          |          |
| 1. Age   |     |     | .252 | .504     | .645*    |
| 2. Sex   |     |     |      |          |          |
| 3. PPVT  |     |     | .155 | .137     |          |
| 4. Mother Q |     |     |      |          | .368     |

* p < .05  
** p < .01
correlations were run separately by sex of child, analyses revealed that age was correlated with mothers' attachment Q-sort scores for the girls in the sample only, and with fathers' attachment Q-sort scores for only the boys in the sample. Thus, as the age of the children increased, parents described their same-sex children as being more securely attached to them. The significant positive correlation between age and attachment security appears to set the present sample apart from those utilized in other research as no other reviewed study that reported on the association between age and attachment security noted such significant associations (e.g., DeMulder et al., 2000; Park & Waters, 1989).

Main Analyses

Given that attachment security with mother and attachment security with father were predicted to relate to the five domains of emotional intelligence, sequential multiple regression analyses were conducted to examine the individual and combined effects of attachment security with mother and with father on teachers’ ratings of regulation of emotions, teachers’ ratings of social competence, and children’s completion of measures of emotional self-awareness, empathy and achievement orientation. Analyses were run controlling for significant effects of covariates (age, sex, and PPVT). Simple correlations between the predictor and outcome variables are shown in Table 3. The results of the regression analyses are displayed in Appendix G and are described below. Regression analyses adding an interaction term in the fourth block, testing the potential interaction effects of attachment security with mother and attachment security
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* $p < .05$
** $p < .01$
with father, indicated no significant interactions (p > .05).

For statistical reasons previously discussed, it was deemed most appropriate to consider attachment security as a continuous variable. However, the interested reader is referred to Table 4 which displays means and standard deviations for each of the dependent variables according to attachment classifications. There is no predetermined cut-off by which to classify a child as securely or insecurely attached based on attachment Q-sort ratings. Moreover, because the present sample was found to have higher attachment security ratings than has been typical of previous studies, it was felt that it was not appropriate to use cut-off scores based on other samples. It should also be noted that, with the exception of one reviewed study, researchers who have employed the attachment Q-sort as a measure of attachment security have also deemed it most appropriate to leave attachment ratings at a continuous level. The groupings reported in Table 4 were based on transformations of raw Q-sort scores to standardized scores, which was deemed to be the most statistically appropriate way of determining cut-off points. Two Z-scores were computed for each child reflecting attachment Q-sorts completed by mothers and attachment Q-sorts completed by fathers. Children with positive Z-scores were deemed to be “securely attached” to the respective parent, while children with negative Z-scores were deemed to be “insecurely attached”. This computation resulted in four groupings: secure attachment to both mother and father; insecure attachment to both mother and father; secure attachment to mother and insecure attachment to father; insecure attachment to mother and secure attachment to father. The findings reported in Table 4 reflect only descriptive data. It should be noted that these
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findings must be interpreted with extreme caution as the data is felt to be confounded by the previously noted association with age and attachment security. Specifically, while the group of children who were classified as insecurely attached to both parents have means scores on each variable reflecting lower degrees of emotional intelligence than the group of children classified as securely attached to both parents, insecurely attached children are also the youngest in the sample. Therefore, it is impossible to attribute differences in scores between the four groups to attachment security since, as will be seen below, age was also found to be a significant contributing factor to most aspects of emotional intelligence.

**Domain 1: Emotional Self-Awareness**

**Self-Awareness of Emotions Measure.** Of the three covariates considered, age was found to account for the greatest proportion of the variance ($R^2 = .310$, $F_{sec}(1,29) = 13.002$, $p = .001$), and thus was entered into the analysis first. Closer examination of the significant effect of age indicated that older children demonstrated higher scores on the Self-Awareness of Emotions measure than younger children ($\text{Beta} = .556$). PPVT was then found to account for a significant proportion of the remaining variance ($R^2 = .481$, $F_{sec}(1,28) = 9.214$, $p < .01$), and was therefore included in the analysis. Closer examination of the significant effect of the PPVT variable indicated that children who scored higher on the PPVT obtained higher scores on the Self-Awareness of Emotions measure ($\text{Beta} = .420$). Sex was not found to account for a significant proportion of the variance ($p > .15$) and was not included in the equation. After addition of mother Q-sort to prediction of Self-Awareness of Emotions by age and PPVT, $R^2 = .481$ ($F_{sec}(1,27) =$
 Addition of mother Q-sort did not reliably improve $R^2$. After addition of father Q-sort to prediction of Self-Awareness of Emotions by age, PPVT and mother Q-sort, $R^2 = .489$ ($F_{inc}(1,26 = .404, p > .05)$. Addition of father Q-sort did not reliably improve $R^2$.

Thus, these results indicate that children who are older and whose receptive vocabulary skills are stronger, are better able to identify emotions in themselves than are younger children or children with less well developed receptive language skills. Neither security of attachment to mother, nor security of attachment to father, were found to be associated with emotional self-awareness once age and receptive language skills were accounted for.

**Domain 2: Regulation of Emotions**

**SCBE Internalizing Summary Scale.** Of the three covariates considered, age was found to account for the greatest proportion of the variance ($R^2 = .208$, $F_{inc}(1,29) = 7.616$, $p = .01$), and thus was entered into the analysis first. Closer examination of the significant effect of age indicated that older children had fewer teacher-reported internalizing problems than younger children (Beta $= .456$). Sex was also entered into the equation as it met the $p < .15$ criterion for entry ($R^2 = .270$, $F_{inc}(1,28) = 2.358$, $p = .14$). Closer examination of the effect of sex indicated that girls had somewhat fewer teacher-reported internalizing problems than boys (Beta $= .249$). PPVT was not found to account for a significant proportion of the variance ($p > .15$) and was not included in the equation. After addition of mother Q-sort to prediction of internalizing problems by age and sex, $R^2 = .296$, ($F_{inc}(1,27) = 1.015$, $p > .05$). Addition of mother Q-sort did not
reliably improve $R^2$. After addition of father Q-sort to prediction of internalizing problems by age, sex and mother Q-sort, $R^2 = .308$ ($F_{inc}(1,26) = .457, p > .05$). Addition of father Q-sort did not reliably improve $R^2$.

In summary, older children were found to have significantly lower rates of teacher-rated internalizing emotional difficulties than younger children. Results also revealed a trend toward fewer internalizing problems for girls than for boys. Security of attachment to mother, and security of attachment to father, were not found to be associated with teacher-rated internalizing difficulties once the age and sex of the children was accounted for.

**SCBE Depressive-Joyful Subscale.** Of the three covariates considered, age was found to account for a significant proportion of the variance ($R^2 = .177, F_{inc}(1,29) = 6.246, p < .05$) and thus was included in the analysis. Neither sex nor PPVT were found to account for a significant proportion of the variance ($p > .15$) and therefore were not included in the analysis. Closer examination of the significant effect of age revealed that older children had higher levels of joyfulness, as indicated by teacher report, than did younger children (Beta = .421). After addition of mother Q-sort to prediction of joyfulness by age, $R^2 = .209$ ($F_{inc}(1,28) = 1.131, p > .05$). Addition of mother Q-sort did not reliably improve $R^2$. After addition of father Q-sort to prediction of joyfulness by age and mother Q-sort, $R^2 = .224$ ($F_{inc}(1,27) = .505, p > .05$). Addition of father Q-sort did not reliably improve $R^2$.

In summary, older children were found to be rated by their teachers as significantly more joyful than younger children. When the variance in teacher-ratings of
joyfulness associated with age of the children was removed, neither attachment to
mother, nor attachment to father, were found to be associated with children’s joyfulness.

SCBE Anxious-Secure subscale. Of the three covariates considered, age was
found to account for a significant proportion of the variance ($R^2 = .138, F_{(1,29)} =
4.643, p < .05$), and was entered into the analysis first. Closer examination of the
significant effect of age revealed that older children were rated by their teachers as less
anxious than were younger children (Beta = .371). Neither sex nor PPVT were found to
account for a significant proportion of the variance ($p > .15$) and were therefore excluded
from the analysis. After addition of mother Q-sort to the prediction of anxiety by age, $R^2
= .158 (F_{(2,28)} = .659, p > .05$). Addition of mother Q-sort did not reliably improve $R^2$.
After addition of father Q-sort to the prediction of anxiety by age and mother Q-sort, $R^2 =
.173 (F_{(3,27)} = .493, p > .05$). Addition of father Q-sort did not reliably improve $R^2$.

In summary, older children were found to be rated by their teachers as
significantly less anxious than were younger children. Security of attachment to mother,
and security of attachment to father, were not found to be associated with children’s
anxiety once the age of the children was accounted for.

SCBE Isolated-Integrated Subscale. Of the three covariates considered, age was
found to account for a significant proportion of the variance ($R^2 = .238, F_{(1,29)} =
9.050, p < .01$) and was entered into the analysis first. Closer examination of the
significant effect of age indicated that older children were rated as more socially
integrated by their teachers than were younger children (Beta = 4.88). Neither sex nor
PPVT scores were found to account for a significant proportion of the variance ($p > .15$)
and were therefore not included in the analysis. After addition of mother Q-sort to prediction of isolation by age, $R^2 = .264$ ($F_{inc}(1,28) = .979, p > .05$). Addition of mother Q-sort did not reliably improve $R^2$. After addition of father Q-sort to prediction of isolation, $R^2 = .264$ ($F_{inc}(1,27) = .003, p > .05$). Father Q-sort did not reliably improve $R^2$.

Thus, older children were found to be significantly less isolated than were younger children, according to teacher ratings. Attachment security with mothers and with fathers was not found to be associated with children’s isolation after controlling for the effects of age.

**SCBE Dependent-Autonomous Subscale.** Of the three covariates considered, age was found to account for a significant proportion of the variance ($R^2 = .305$, $F_{inc}(1,29) = 12.706, p = .001$) and was entered into the analysis first. Closer examination of the significant effect of age indicated that older children were rated by their teachers as being more autonomous than younger children ($\text{Beta} = .552$). Neither sex nor PPVT scores were found to account for a significant proportion of the variance ($p > .15$) and were, thus, excluded from further analysis. After addition of mother Q-sort to the prediction of autonomy by age, $R^2 = .306$ ($F_{inc}(1,28) = .055, p > .05$). Addition of mother Q-sort did not reliably improve $R^2$. After addition of father Q-sort to the prediction of autonomy by age and mother Q-sort, $R^2 = .375$ ($F_{inc}(1,27) = 2.998, p > .05$). Addition of father Q-sort did not reliably improve $R^2$.

In summary, older children were found to be significantly less dependent than younger children, according to teacher-report. Once the effect of age was controlled for, degree of attachment security with mother and with father was not found to be associated
with a child's level of teacher-rated dependence.

**SCBE Externalizing Summary Scale.** Of the three covariates considered, age accounted for a significant proportion of the variance \( R^2 = .153, F_{inc}(1,29) = 5.253, p < .05 \) and was entered into the analysis first. Closer examination of the significant effect of age indicated that older children were rated by teachers as having fewer externalizing behavioural difficulties than younger children (Beta = .392). Neither sex nor PPVT scores were found to account for a significant proportion of the variance \( (p > .15) \) and were, therefore, excluded from further analysis. After addition of mother Q-sort to the prediction of externalizing problems by age, \( R^2 = .154 (F_{inc}(1,28) = .012, p > .05) \). Addition of mother Q-sort did not reliably improve \( R^2 \). After addition of father Q-sort to prediction of externalizing problems by age and mother Q-sort, \( R^2 = .315 (F_{inc}(1,27) = 6.346, p < .05) \). Addition of father Q-sort reliably improved \( R^2 \). Closer examination of the effect of father Q-sort indicated that children with higher attachment Q-sort scores to father were rated by their teachers as having fewer externalizing behavioural difficulties than children with lower father attachment Q-sort scores (Beta = .436).

Thus, children who had more secure attachment relationships with their fathers had lower rates of externalizing behavioural difficulties as rated by their preschool teachers. Moreover, older children were found to have significantly lower rates of teacher-reported externalizing behavioural difficulties than younger children. The relationship between attachment security and externalizing behavioural problems was not found for attachment to mothers.

**SCBE Angry-Tolerant Subscale.** Of the three covariates considered, age
accounted for the greatest proportion of the variance ($R^2 = .354$, $F_{inc}(1,29) = 15.926$, $p = .00$), and thus was entered into the equation first. Closer examination of the significant effect of age indicated that older children were rated by their teachers as more tolerant than younger children ($\text{Beta} = .595$). Sex was then found to account for a significant proportion of the remaining variance ($R^2 = .427$, $F_{inc}(1,28) = 3.529$, $p < .15$), and was therefore included in the analysis. Closer examination of the effect of sex indicated that girls tended to be rated by their teachers as more tolerant than boys ($\text{Beta} = .269$). After addition of mother Q-sort to prediction of tolerance by age and sex, $R^2 = .445$ ($F_{inc}(1,27) = .907$, $p > .05$). Addition of mother Q-sort did not reliably improve $R^2$. After addition of father Q-sort to prediction of tolerance by age, sex and mother Q-sort, $R^2 = .622$ ($F_{inc}(1,26) = .12.121$, $p < .01$). Addition of father Q-sort reliably improved $R^2$. Closer examination of the effect of father Q-sort revealed that children who had higher attachment Q-sort ratings to father were rated by their teachers as more tolerant than children with lower attachment Q-sort ratings to father ($\text{Beta} = .464$).

In summary, these results indicate that children who had more secure attachment relationships with their fathers were more tolerant than children with less secure attachment to fathers. Additionally, older children were rated by their teachers as significantly more tolerant than younger children, and there was a trend toward girls being rated as more tolerant than boys. Attachment relationships of children with their mothers was not found to be associated with children’s levels of tolerance, once the age and sex of the children was accounted for.

**SCBE Aggressive-Calm Subscale.** Of the three covariates considered, age was
found to account for a significant proportion of the variance ($R^2 = .323, F_{inc}(1,29) = 13.853, p = .001$) and was entered into the analysis first. Closer examination of the significant effect of age indicated that older children were rated by their teachers as less aggressive than younger children ($Beta = .569$). Neither sex nor PPVT were found to account for a significant proportion of the variance ($p > .15$) and were, therefore, excluded from further analysis. After addition of mother Q-sort to prediction of aggression by age, $R^2 = .332 (F_{inc}(1,28) = .385, p > .05$). Addition of mother Q-sort did not reliably improve $R^2$. After addition of father Q-sort to prediction of aggression by age and mother Q-sort, $R^2 = .650 (F_{inc}(1,27) = 4.226, p = .05$). Addition of father Q-sort reliably improved $R^2$. Closer examination of the significant effect of father attachment Q-sort indicated that children with higher attachment Q-sort scores with father were rated by their teachers as less aggressive than children with lower father Q-sort scores ($Beta = .326$).

In summary, children with more secure attachment to fathers were found to be less aggressive than children whose degree of attachment to their fathers was lower. Moreover, older children were rated by their teachers as significantly less aggressive than younger children. Attachment to mother was not found to be associated with children’s levels of aggression once the age of the children was taken into consideration.

**SCBE Egotistical-Prosocial Subscale.** Of the three covariates considered, age was found to account for a significant proportion of the variance ($R^2 = .294, F_{inc}(1,29) = 12.064, p < .01$) and was, therefore, entered into the equation first. Closer examination of the significant effect of age revealed that older children were rated by their teachers as
less egotistical than were younger children (Beta = .542). Neither sex nor PPVT were found to account for a significant proportion of the variance ($p > .15$) and were not included in the equation. After addition of mother Q-sort to prediction of egotistical behaviour by age, $R^2 = .294$ ($F_{28}(1,28) = .001$, $p > .05$). Addition of mother Q-sort did not reliably improve $R^2$. After addition of father Q-sort to prediction of egotistical behaviour by age and mother Q-sort, $R^2 = .477$ ($F_{27}(1,27) = 9.429$, $p < .01$). Addition of father Q-sort reliably improved $R^2$. Closer examination of the effect of father Q-sort revealed that children with higher attachment Q-sort scores with father were rated by their teachers as less egotistical than children with lower father Q-sort scores (Beta = .464).

Thus, children who had more secure attachment relationships with their fathers were found to be more prosocial than children with less secure attachment to fathers. Additionally, older children were found to be more prosocial than younger children. Attachment relationships with mothers were not found to be associated with children’s degree of prosocial behaviour once the influence of age was accounted for.

**SCBE Oppositional-Cooperative Subscale.** Of the three covariates considered, age was found to account for a significant proportion of the variance and was entered into the model first ($R^2 = .574$, $F_{29}(1,29) = 14.286$, $p = .001$). Closer examination of the significant effect of age revealed that older children were rated by their teachers as more cooperative than were younger children (Beta = .574). Neither sex nor PPVT were found to account for a significant proportion of the variance ($p > .15$) and were not further included in the analysis. After addition of mother Q-sort to prediction of oppositional
behaviour by age, $R^2 = .336$ ($F_{st}(1,28) = .258, p > .05$). Addition of mother Q-sort did not reliably improve $R^2$. After addition of father Q-sort to prediction of oppositional behaviour by age and mother Q-sort, $R^2 = .460$ ($F_{st}(1,27) = 6.211, p < .05$). Addition of father Q-sort reliably improved $R^2$. Closer examination of the significant effect of father Q-sort indicated that children with higher scores on the attachment Q-sort with father were rated by their teachers as less oppositional than were children with lower attachment Q-sort scores with father (Beta = .382).

In summary, children with more secure attachments to fathers were found to be less oppositional than children with less secure attachment relationships with their fathers. Age was also found to be associated with teacher-ratings of oppositional behaviour, such that older children were found to be more cooperative than younger children. Once the influence of age of the children was accounted for, security of children’s attachment relationships with their mothers was not found to be associated with oppositional behaviour.

**Summary of SCBE Subscales.** Results of the multiple regressions completed for the eight internalizing and externalizing subscales of the SCBE, as well as the Internalizing and Externalizing summary scales, suggest two somewhat discrepant patterns of outcomes. That is, children’s attachment relationships with their fathers were found to be associated with lower rates of all examined externalizing behavioural difficulties, but not with internalizing problems. In particular, results indicated that children with more secure attachments to their fathers were rated by their teachers as being less angry, aggressive, egotistical, and oppositional than children with less secure
attachment relationships with their fathers. In contrast, degree of attachment security with fathers was not found to be associated with children’s levels of internalizing difficulties. Moreover, children’s attachment relationships with their mothers were not found to be associated with either internalizing or externalizing emotional problems once the effects of the significant covariates (i.e., age, sex, and language development) were controlled for.

In terms of the covariates considered, older children were found to have lower rates of both teacher-rated internalizing difficulties and externalizing difficulties than younger children. Additionally, when sex of the children was examined, there was a trend toward lower rates of overall internalizing difficulties and a lower degree of anger for the girls in the sample. Children’s receptive language development, as measured by the PPVT, was not found to be associated with levels of internalizing or externalizing difficulties.

Domain 3: Empathy

DANVA Adult Faces. Of the three covariates considered for entry, sex was found to account for the greatest proportion of the variance ($R^2 = .163$, $F_{inc}(1,29) = 5.640$, $p < .05$) and was entered into the model first. Closer examination of the significant effect of sex indicated that girls correctly identified significantly more emotional expressions in adult faces than did boys ($\text{Beta} = .404$). After controlling for the effect of sex, age was found to account for a significant proportion of the variance ($R^2 = .302$, $F_{inc}(1,28) = 5.596$, $p < .05$) and was entered into the model second. Closer examination of the effect of age revealed that older children correctly identified significantly more emotional
expressions in adult faces than did younger children (Beta = .374). PPVT was not found to account for a significant proportion of the variance (p > .15) and was excluded from the analysis. After addition of mother Q-sort to prediction of recognition of adult faces by sex and age, $R^2 = .313$ ($F_{mc}(1,27) = .434, p > .05$). Mother Q-sort did not reliably improve $R^2$. After addition of father Q-sort to prediction of recognition of adult faces by sex, age and mother Q-sort, $R^2 = .351$ ($F_{mc}(1,26) = 1.490, p > .05$). Addition of father Q-sort did not reliably improve $R^2$.

In summary, results indicate that girls were better able than boys to identify emotional expressions in adults’ faces. Moreover, older children were better able to recognize adults’ facial expressions than were younger children. Once the influence of sex and age was accounted for, neither children’s security of attachment to their mothers, nor their attachment relationships with their fathers, were found to influence their ability to identify emotional expressions in adults’ faces.

**DANVA Child Faces.** Of the three covariates considered, age was found to account for the greatest proportion of the variance ($R^2 = .246, F_{mc}(1,29) = 9.465, p < .01$) and was entered into the analysis first. Closer examination of the significant effect of age indicated that older children were more accurate than younger children in their identification of emotional expressions in children’s faces (Beta = .496). After controlling for the effect of age, sex was found to account for a large proportion of the variance ($R^2 = .310, F_{mc}(1,28) = 2.595, p < .15$) and was the second variable entered into the model. Closer examination of the effect of sex revealed that girls tended to be more accurate than boys in their identification of emotional expressions in children’s faces.
(Beta = .253). PPVT was not found to account for a significant proportion of the variance (p > .15) and was excluded from the analysis. After addition of mother Q-sort to prediction of identification of children’s facial expressions by age and sex, $R^2 = .339$ ($F_{(1,27)} = 1.191, p > .05$). Addition of mother Q-sort did not reliably improve $R^2$.

After addition of father Q-sort to prediction of children’s facial expressions by age, sex and mother Q-sort, $R^2 = .340$ ($F_{(1,26)} = .046, p > .05$). Addition of father Q-sort did not reliably improve $R^2$.

In summary, older children were found to be significantly better able to identify emotional expressions in other children’s faces than were younger children. Results also indicated a trend toward more accurate identification of facial expressions in other children for girls as compared to boys. As was the case for identification of facial expressions in adults, neither degree of attachment security with mother, nor degree of attachment security with father, were found to be associated with children’s ability to identify emotional expressions in other children’s faces, once the influence of age and sex was controlled for.

**DANVA Adult Language.** Of the three covariates considered, PPVT was found to account for the greatest proportion of the variance ($R^2 = .323, F_{(1,29)} = 13.824, p = .001$) and was entered into the model first. Closer examination of the significant effect of the PPVT indicated that children who performed at higher levels on the PPVT were better able to correctly identify emotional expressions in adult voices than were children with lower PPVT scores (Beta = .568). After controlling for the variance accounted for by the PPVT, age was found to account for a significant proportion of the remaining
variance ($R^2 = .518$, $F_{1,28} = 11.375$, $p < .01$) and was entered into the model second. Closer examination of the significant effect of age indicated that older children were more accurate than younger children in their identification of emotional expressions in adult voices (Beta = .449). Sex was not found to account for a significant proportion of the variance ($p > .15$) and was not included in the analysis. After addition of mother Q-sort to prediction of DANVA adult voices by PPVT and age, $R^2 = .562$ ($F_{1,27} = 2.667$, $p > .05$). Addition of mother Q-sort did not reliably improve $R^2$. After addition of father Q-sort to prediction of DANVA adult voices by PPVT, age and mother Q-sort, $R^2 = .582$ ($F_{1,26} = 1.229$, $p > .05$). Addition of father Q-sort did not reliably improve $R^2$.

Thus, results indicate that children with better developed receptive language skills, as measured by the PPVT, were better able to identify emotional expressions in adults’ voices than were children with less well developed receptive language abilities. Additionally, older children were found to be better able than younger children to identify emotional expressions in adults’ voices. Once the influence of these two variables was accounted for, neither degree of attachment security with mother, nor degree of attachment security with father, were found to be associated with children’s ability to identify adults’ vocal emotional expressions.

**DANVA Child Language.** Of the three covariates considered, age was found to account for the greatest proportion of the variance ($R^2 = .335$, $F_{1,29} = 14.616$, $p = .001$) and was entered into the model first. Closer examination of the significant effect of age indicated that older children were more accurate than younger children in their identification of emotional expressions in other children’s voices (Beta = .579). Of the
two remaining covariates, sex was found to account for the largest proportion of the variance \( R^2 = .397, F_{sex}(1,28) = 2.860, p < .15 \) and was entered second into the model. Closer examination of the effect of sex revealed that girls tended to be more accurate than boys in their identification of emotional expressions in the voices of other children (Beta = .249). PPVT was then found to account for a large proportion of the variance \( R^2 = .446, F_{sex}(1,27) = 2.395, p < .15 \) and was the third covariate entered into the analysis. Closer examination of the effect of PPVT indicated that children with higher scores on the PPVT tended to be more accurate in their identification of emotional expressions in the voices of other children than were children with lower PPVT scores (Beta = .225). After addition of mother Q-sort to prediction of DANVA child voices by age, sex and PPVT, \( R^2 = .450 \) \( F_{sex}(1,26) = .178, p > .05 \). Addition of mother Q-sort did not reliably improve \( R^2 \). After addition of father Q-sort to prediction of DANVA child voices by age, sex, PPVT and mother Q-sort, \( R^2 = .454 \) \( F_{sex}(1,25) = .205, p > .05 \). Father Q-sort did not reliably improve \( R^2 \).

In summary, older children were found to be better able to identify emotional expressions in other children’s voices than were younger children. Moreover, trends emerged suggesting that girls, and children with well-developed receptive language skills, tended to be better able to identify children’s vocal emotional expressions than boys and children with less well-developed receptive language abilities. Once the influence of these covariates was accounted for, neither attachment security with mother, nor attachment security with father, were found to be associated with children’s ability to identify emotional expressions in other children’s voices.
Summary of the DANVA Subscales. In summary, results indicate that neither security of attachment relationships with mothers, nor security of attachment relationships with fathers, were associated with children’s empathy, as measured by the receptive subscales of the DANVA. That is, degree of attachment security with mothers and fathers was not found to be related to children’s abilities to identify facial and vocal emotional expressions in adults and other children.

However, the development of empathy in this preschool population was found to be associated with the age of the children. Specifically, older children were better able to identify emotional expressions in both adults’ and children’s faces and voices than were younger children. Sex differences were also noted in terms of children’s ability to identify emotional expressions in the faces of others. In particular, girls were better able than boys to identify emotional expressions in both adults’ faces and other children’s faces. Girls also tended to be somewhat better able than boys to identify emotional expressions in other children’s voices. Finally, receptive language skills, as measured by the PPVT, were found to be associated with children’s abilities to identify emotional expressions in the voices of others. Results indicated that, the stronger children’s receptive language skills, the better able they were to identify emotional expressions in voices, particularly in terms of adults’ voices.

Domain 4: Social Competence

SCBE Social Competence Summary Scale. Of the three covariates considered, age was found to account for a significant proportion of the variance ($R^2 = .332, F_{(1,29)} = 14.427, p = .001$) and was entered into the model first. Closer examination of the
significant effect of age indicated that older children were rated by their teachers as more socially competent than were younger children (Beta = .576). Neither sex nor PPVT were found to account for a significant proportion of the variance (p > .15) and were excluded from the analysis. After addition of mother Q-sort to prediction of social competence by age, $R^2 = .332$ ($F_{inc}(1,28) = .005, p > .05$). Addition of mother Q-sort did not reliably improve $R^2$. After addition of father Q-sort to prediction of social competence by age and mother Q-sort, $R^2 = .407$ ($F_{inc}(1,27) = 3.381, p > .05$). Addition of father Q-sort did not reliably improve $R^2$.

In summary, results indicate that older children were more socially competent than younger children, as indicated by teacher report. Children’s attachment security with mother, and their attachment security with father, were not found to be associated with social competence after controlling for the effects of age.

**Domain 5: Achievement Orientation**

**Subdomain 1: Motivation**

**Animal Crackers School Enjoyment Subscale.** Of the three covariates considered, none were found to account for a significant proportion of the variance (p > .15). Therefore, no covariates were included in the analysis. After addition of mother Q-sort to prediction of school enjoyment, $R^2 = .009$ ($F_{inc}(1,29) = .276, p > .05$). Mother Q-sort did not reliably improve $R^2$. After addition of father Q-sort to prediction of school enjoyment by mother Q-sort, $R^2 = .046$ ($F_{inc}(1,28) = 1.069, p > .05$). Father Q-sort did not reliably improve $R^2$.

Thus, children’s attachment relationships with mothers and fathers were not
found to be associated with their self-reports of school enjoyment. Moreover, no association was found between school enjoyment and age, sex or receptive language skills.

**Animal Crackers Purposiveness Subscale.** Of the three covariates considered, PPVT was found to account for a significant proportion of the variance \( R^2 = .134, F_{inc}(1,29) = 4.475, p < .05 \) and was entered into the analysis first. Closer examination of the effect of PPVT indicated that children with higher scores on the PPVT self-reported higher levels of purposiveness than did children with lower PPVT scores (Beta = .366). Neither age nor sex accounted for a significant additional proportion of the variance \( p > .15 \) and were not included in the analysis. After addition of mother Q-sort to prediction of purposiveness by PPVT, \( R^2 = .146 \) \( F_{inc}(1,28) = .415, p > .05 \). Addition of mother Q-sort did not reliably improve \( R^2 \). After addition of father Q-sort to prediction of purposiveness by PPVT and mother Q-sort, \( R^2 = .160 \) \( F_{inc}(1,27) = .452, p > .05 \). Addition of father Q-sort did not reliably improve \( R^2 \).

In summary, results indicate that children with well-developed receptive language skills view themselves as more purposeful than children whose receptive language skills are less well-developed. After controlling for the influence of language skills, children's attachment relationships with their mothers and fathers were not found to influence their self-reports of purposiveness.

**Animal Crackers Instrumental Activity Subscale.** Of the three covariates considered, age was found to account for a significant proportion of the variance \( R^2 = .290, F_{inc}(1,28) = 11.444, p < .01 \) and was entered into the analysis first. Closer
examination of the significant effect of age indicated that older children self-reported higher levels of instrumental activity than did younger children (Beta = .539). Of the two remaining covariates, PPVT was found to account for the greatest proportion of the variance \( R^2 = .347, F_{\text{inc}}(1,27) = 2.339, p < .15 \) and was entered into the analysis second. Closer examination of the effect of PPVT indicated that children with higher scores on the PPVT tended to self-report higher levels of instrumental activity than did children with lower PPVT scores (Beta = .242). Sex was not found to account for a large proportion of the remaining variance \( (p > .15) \) and was excluded from the model. After addition of mother Q-sort to prediction of instrumental activity by age and PPVT, \( R^2 = .388, F_{\text{inc}}(1,26) = 1.755, p > .05 \). Addition of mother Q-sort did not reliably improve \( R^2 \). After addition of father Q-sort to prediction of instrumental activity by age, PPVT and mother Q-sort, \( R^2 = .458, F_{\text{inc}}(1,25) = 3.213, p > .05 \). Addition of father Q-sort did not reliably improve \( R^2 \).

In summary, results indicate that older children, and children with well-developed receptive language skills, have higher self-reports of instrumental activity than do younger children and children whose receptive language skills are less well-developed. After controlling for the influence of these two variables, neither children's attachment relationships with their mothers, nor their attachment relationships with fathers, were found to be associated with self-reports of instrumental activity.

**Average and Summary of Motivation Subscales.** An average motivation score, comprised of scores from the three motivation subscales outline above, was computed for each child and a sequential regression was completed. Of the three
covariates considered, age was found to account for a significant proportion of the variance \( (R^2 = .155, F_{inc}(1,29) = 5.338, p < .05) \) and was entered into the analysis first. Closer examination of the significant effect of age indicated that older children self-reported higher levels of motivation than did younger children (Beta = .394). Of the two remaining covariates, PPVT was found to account for the greatest proportion of the variance \( (R^2 = .229, F_{inc}(1,28) = 2.676, p < .15) \) and was entered into the analysis second. Closer examination of the effect of PPVT indicated that children with higher scores on the PPVT tended to self-report higher levels of motivation than did children with lower PPVT scores (Beta = .276). Sex was not found to account for a large proportion of the remaining variance \( (p > .15) \) and was excluded from the model. After addition of mother Q-sort to prediction of motivation by age and PPVT, \( R^2 = .232, F_{inc}(1,27) = .117, p > .05 \). Addition of mother Q-sort did not reliably improve \( R^2 \). After addition of father Q-sort to prediction of motivation by age, PPVT and mother Q-sort, \( R^2 = .263, F_{inc}(1,26) = 1.092, p > .05 \). Addition of father Q-sort did not reliably improve \( R^2 \).

In summary, neither attachment relationships with mothers, nor attachment relationships with fathers, were found to be associated with children’s self-reports of motivation. However, results do indicate that older children self-reported higher levels of motivation than did younger children. Moreover, children with better developed receptive language skills tended to be more motivated than children with less well-developed language abilities, according to children’s self-report.

**Subdomain 2: Optimism**

**OPTI**. Of the three covariates considered, age was found to account for a
significant proportion of the variance ($R^2 = .150$, $F_{inc}(1,29) = 5.103$, $p < .05$) and was entered into the analysis first. Closer examination of the significant effect of age indicated that older children self-reported higher levels of optimism than did younger children (Beta = .387). Neither sex nor PPVT were found to account for a significant proportion of the remaining variance ($p > .15$) and were excluded from the analysis.

After addition of mother Q-sort to prediction of optimism by age, $R^2 = .158$ ($F_{inc}(1,28) = .291$, $p > .05$). Addition of mother Q-sort did not reliably improve $R^2$. After addition of father Q-sort to prediction of optimism by age and mother Q-sort, $R^2 = .168$ ($F_{inc}(1,27) = .317$, $p > .05$). Addition of father Q-sort did not reliably improve $R^2$.

In summary, older children were found to be more optimistic than were younger children. After controlling for the influence of age, attachment security with both mothers and fathers was not found to be associated with children’s levels of optimism.

Subdomain 3: Self-Efficacy

Animal Crackers Self-Evaluation Subscale. Of the three covariates considered, age was found to account for a significant proportion of the variance ($R^2 = .256$, $F_{inc}(1,29) = 9.970$, $p < .01$). Closer examination of the significant effect of age revealed that older children reported higher self-evaluations than did younger children (Beta = .506). Neither sex nor PPVT were found to account for a significant proportion of the variance ($p > .15$) and were excluded from the analysis. After addition of mother Q-sort to prediction of self-evaluation by age, $R^2 = .282$ ($F_{inc}(1,28) = 1.038$, $p > .05$). Addition of mother Q-sort did not reliably improve $R^2$. After addition of father Q-sort to prediction of self-evaluation by age and mother Q-sort, $R^2 = .330$ ($F_{inc}(1,27) = 1.934$, $p > .05$).
Addition of father Q-sort did not reliably improve $R^2$.

Thus, results indicate that older children have higher self-evaluations than do younger children. Degree of attachment security was not found to be associated with children's self-evaluations for either their relationships with their mothers or their relationships with their fathers.

**Animal Crackers Self-Confidence Subscale.** Of the three covariates considered, age was found to account for a significant proportion of the variance ($R^2 = .267$, $F_{inc}(1,29) = 10.553$, $p < .01$) and was entered into the model first. Closer examination of the significant effect of age indicated that older children reported higher levels of self-confidence than did younger children (Beta = .517). Neither sex nor PPVT were found to account for a significant proportion of the variance ($p > .15$) and were excluded from the analysis. After addition of mother Q-sort to prediction of self-confidence by age, $R^2 = .331$ ($F_{inc}(1,28) = 2.697$, $p > .05$). Addition of mother Q-sort did not reliably improve $R^2$. After addition of father Q-sort to prediction of self-confidence by age and mother Q-sort, $R^2 = .332$ ($F_{inc}(1,27) = .012$, $p > .05$). Addition of father Q-sort did not reliably improve $R^2$.

In summary, older children were found to be more self-confident than were younger children. Neither attachment security with mothers, nor attachment security with fathers, was found to be associated with children's self-confidence once the influence attributable to age was accounted for.

**Average and Summary of Self-Efficacy Subscales.** A composite self-efficacy score was generated for each child, based on an average of the two self-efficacy
subscales discussed above, and a sequential regression was completed. Of the three covariates considered, age was found to account for a significant proportion of the variance ($R^2 = .408, F_{(1,29)} = 20.019, p = .000$). Closer examination of the significant effect of age revealed that older children had higher reports of self-efficacy than did younger children (Beta = .639). Neither sex nor PPVT were found to account for a significant proportion of the variance ($p > .15$) and were excluded from the analysis. After addition of mother Q-sort to prediction of self-efficacy by age, $R^2 = .413 (F_{(1,28)} = .234, p > .05$). Addition of mother Q-sort did not reliably improve $R^2$. After addition of father Q-sort to prediction of self-efficacy by age and mother Q-sort, $R^2 = .427 (F_{(1,27)} = .660, p > .05$). Addition of father Q-sort did not reliably improve $R^2$.

In summary, results indicate that older children have higher reports of self-efficacy than do younger children. However, neither children's attachment relationships with their mothers, nor with their fathers, were found to be associated with levels of self-efficacy after controlling for the influence of age.

**Subdomain 4: Attributional Style**

**PPNS-IE.** Of the three covariates considered, none accounted for a significant proportion of the variance in children's self-reports of attributional style ($p > .15$). Therefore, no covariates were entered into the analysis. After addition of mother Q-sort to prediction of PPNS-IE, $R^2 = .020 (F_{(1,29)} = .600, p > .05$). Addition of mother Q-sort did not reliably improve $R^2$. After addition of father Q-sort to prediction of PPNS-IE by mother Q-sort, $R^2 = .020 (F_{(1,28)} = .003, p > .05$). Addition of father Q-sort did not reliably improve $R^2$. 
Thus, neither children’s attachment relationships with their mothers, nor their attachment relationships with their fathers, were found to be associated with attributional style. Additionally, age, sex and receptive language skills were not found to be related to children’s attributional styles.

**Subdomain 5: Impulse Control**

**MFFT.** Of the three covariates considered, age was found to account for the greatest proportion of the variance ($R^2 = .287, F_{inc}(1,28) = 11.276, p < .01$) and was entered into the model first. Closer examination of the effect of age indicated that older children committed significantly fewer errors on the MFFT than did younger children ($Beta = -.536$). Of the two remaining covariates, PPVT was found to account for the largest proportion of the remaining variance ($R^2 = .353, F_{inc}(1,27) = 2.758, p < .15$) and was entered into the analysis second. Closer examination of the effect of PPVT indicated that children with higher PPVT scores tended to commit fewer errors on the MFFT than did children with lower PPVT scores ($Beta = -.257$). Sex was not found to account for a significant proportion of the remaining variance ($p > .15$) and was excluded from the analysis. After addition of mother Q-sort to prediction of MFFT error-rate by age and PPVT, $R^2 = .440 (F_{inc}(1,26) = 4.016, p = .056)$. Addition of mother Q-sort approached significance in improving $R^2$. Closer examination of the marginal effect of mother Q-sort indicated that children with higher attachment Q-sort scores with mother committed fewer errors on the MFFT than did children with lower mother attachment Q-sort scores ($Beta = -.335$). After addition of father Q-sort to prediction of MFFT error-rate by age, PPVT and mother Q-sort, $R^2 = .440 (F_{inc}(1,25) = .005, p > .05)$. Addition of
father Q-sort did not reliably improve $R^2$.

In summary, older children, and children with better developed receptive language skills, were found to have lower rates of cognitive impulse control than did younger children and children with less well-developed language abilities. Children’s attachment relationships with their mothers approached significance in predicting their level of cognitive impulse control. Specifically, children with more secure attachment relationships with their mothers were found to have somewhat better cognitive impulse control skills than children with less secure attachments with their mothers. Security of attachment with fathers was not found to be associated with children’s cognitive impulse control after attachment with mothers, age and language development were accounted for.

**Delay of Gratification Task:** Of the three covariates considered, age was found to account for the greatest proportion of the variance ($R^2 = .122$, $F_{se}(1,29) = 4.016$, $p < .15$) and was entered into the model first. Closer examination of the effect of age indicated that older children tended to be more likely to complete the delay of gratification task to the time-limit than were younger children (Beta = .349). Neither sex nor PPVT were found to account for a significant proportion of the remaining variance ($p > .15$) and were excluded from the analysis. After addition of mother Q-sort to prediction of delay of gratification by age, $R^2 = .130$ ($F_{se}(1,28) = .257$, $p > .05$). Addition of mother Q-sort did not reliably improve $R^2$. After addition of father Q-sort to prediction of delay of gratification by age and mother Q-sort, $R^2 = .131$ ($F_{se}(1,27) = .044$, $p > .05$). Addition of father Q-sort did not reliably improve $R^2$. 
In summary, older children were found to be somewhat better able to delay gratification than were younger children. Neither attachment relationships with mothers, nor attachment relationships with fathers, were found to be associated with children’s abilities to delay gratification.

**Average and Summary of Achievement Orientation.** A composite achievement orientation score was generated by computing the average of standardized scores of each measure of the subdomains of achievement orientation for each child. A sequential multiple regression was completed for the achievement orientation composite score. Of the three covariates considered, age was found to account for a significant proportion of the variance ($R^2 = .379, F_{inc}(1,29) = 17.719, p = .000$) and was entered into the analysis first. Closer examination of the significant effect of age revealed that older children had a stronger motivation to achieve than did younger children (Beta = .616). Neither sex nor PPVT were found to account for a significant proportion of the variance ($p > .15$) and were not included in the analysis. After addition of mother Q-sort to prediction of achievement orientation by age, $R^2 = .381 (F_{inc}(1,28) = .088, p > .05)$. Addition of mother Q-sort did not reliably improve $R^2$. After addition of father Q-sort to prediction of achievement orientation by age and mother Q-sort, $R^2 = .389 (F_{inc}(1,27) = .326, p > .05)$. Addition of father Q-sort did not reliably improve $R^2$.

Thus, age was the only variable which was found to be significantly associated with overall achievement orientation, such that older children had a stronger orientation toward achievement than did younger children. Neither security of attachment with mother, nor security of attachment with father, were found to be associated with
orientation to achieve, although there was a trend indicating a tendency toward greater cognitive impulse control for children with more secure attachment relationships with their mothers. No sex differences in achievement orientation were found for overall achievement orientation, nor for any of the individual subdomains. However, children's receptive language skills were found to be associated with some aspects of the achievement orientation variable, including purposiveness, instrumental activity and cognitive impulse control. For each of these, children with well-developed receptive language skills were found to be more oriented toward achievement than were children with less well-developed language skills.

**Emotional Intelligence Composite**

A composite Emotional Intelligence (EI) score was computed for each child by standardizing and averaging scores across all measures. A sequential multiple regression was performed to examine the association of attachment with mother, attachment with father, and the three covariates (age, sex, PPVT) with overall emotional intelligence.

Of the three covariates considered, age was found to account for the greatest proportion of the variance \( R^2 = .573, \ F_{1,29} = 38.917, p = .000 \) and was entered into the analysis first. Closer examination of the effect of age indicated that older children had higher levels of emotional intelligence than did younger children (Beta = .757). Of the two remaining covariates, PPVT was found to account for the largest proportion of the remaining variance \( R^2 = .640, \ F_{1,28} = 5.232, p < .05 \) and was entered into the analysis second. Closer examination of the effect of PPVT indicated that children with higher PPVT scores had higher levels of emotional intelligence than did children with
lower PPVT scores (Beta = .263). Sex was then found to account for a substantial proportion of the remaining variance ($R^2 = .674, F_{1,27} = 2.805, p < .15$) and was entered into the analysis third. Closer examination of the effect of sex indicated that girls tended to be somewhat higher in emotional intelligence than boys (Beta = .184). After addition of mother Q-sort to prediction of emotional intelligence by age, PPVT and sex, $R^2 = .686 (F_{1,26} = .996, p > .05)$. Addition of mother Q-sort did not reliably improve $R^2$. After addition of father Q-sort to prediction of emotional intelligence by age, PPVT, sex and mother Q-sort, $R^2 = .689 (F_{1,25} = .235, p > .05)$. Addition of father Q-sort did not reliably improve $R^2$.

In summary, children’s attachment relationships with their mothers and fathers were not found to be associated with overall emotional intelligence for this population of preschoolers. Each of the three covariates was found to be related to overall emotional intelligence. Results indicated that older children were more emotionally intelligent that younger children. Moreover, children with well-developed receptive language skills were found to be more emotionally intelligent than children with less well-developed receptive language skills. Finally, there was a trend which indicated that, at the preschool age, girls tended to be somewhat more emotionally intelligent than boys.

Additional Analyses

Partial Correlations

To assess the relationship between parent-child attachment security and emotional intelligence as a function of the sex of both the parent and the child, attachment scores for each parent-child dyad were correlated with the dependent
measures separately for boys and girls. Because age was found to be associated with attachment security of children with their same-sex parent, it was subsequently partialed out of the correlations between attachment Qsorts and each of the dependent variables computed separately for boys and girls. Table 5 displays the two-tailed partial correlation values (controlling for age) among the attachment Qsorts and each of the dependent variables for the boys and girls in the sample. Although a number of marginal correlations were found, only correlations which met at least a $p < .05$ criterion level are discussed here as the small size of the present sample increases the likelihood of spurious correlations. However, marginal correlations can be noted in the table.

Mother Q-sort and Emotional Intelligence (Girls). After controlling for the effect of age, scores on the mother Q-sort were found to be significantly negatively correlated with the Delay of Gratification task ($r = -.518$) for the girls in the sample. This result indicates that girls with more secure attachment relationships with their mothers were able to delay gratification for shorter periods of time than were girls with less secure attachment relationships with their mothers. This finding is contrary to the prediction that attachment security would be associated with an increased ability to delay gratification. Partial correlations between mother Q-sort and the other dependent variables for the girls in the sample were not found to be significant ($p > .05$).

Mother Q-sort and Emotional Intelligence (Boys). None of the partial correlations between mother Q-sort and the dependent variables were found to be significant ($p > .05$) for the boys in the sample. Thus, for the boys in the sample, security of attachment relationships with mothers was not associated with any of the individual
Table 5
Partial Correlations (Controlling for Age) Between O-Sorts and Dependent Variables for Girls and Boys

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<th>Variable</th>
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<th>Boys (n = 12)</th>
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* approaching significance (p<.10)

* p<.05

** p<.01
domains of emotional intelligence, nor with overall emotional intelligence.

**Father Q-sort and Emotional Intelligence (Girls).** As can be seen from Table 5, father Q-sort was significantly correlated in the predicted direction with the Angry-Tolerant subscale of the SCBE (r = .517), the Egotistical-Prosocial subscale of the SCBE (r = .698), and the Oppositional-Cooperative subscale of the SCBE (r = .473). These results indicate that girls with more secure attachment relationships with their fathers are more tolerant, prosocial and cooperative, according to teacher ratings, than are girls with less secure attachment relationships with their fathers. A significant correlation was also noted between attachment security and the Adult Language subscale of the DANVA (r = -.594). This finding was contrary to expectations, indicating that girls with more secure attachment relationships with their father were less accurate in their recognition of emotional expressions in adults’ voices than were girls with less secure attachment relationships with their fathers. None of the other partial correlations were significant (p > .05).

**Father Attachment Q-sort and Emotional Intelligence (Boys).** For the boys in the sample, father Q-sort was significantly correlated in the predicted direction with the self-evaluation subscale of the Animal Crackers test (r = .840) and with the PPNS-IE (r = -.619). These results indicate that boys with more secure attachment relationships with their fathers have more positive self-evaluations and more internal attributional styles than do boys with less secure attachment relationships with their fathers. Moreover, a significant correlation was found between father Q-sort scores and the composite self-efficacy score (r = .632), indicating that boys with more secure attachment relationships
with their fathers view themselves as more efficacious. Finally, a significant correlation was noted between the composite emotional intelligence score and the father Q-sort (r = .601). This finding suggests that boys who are more securely attached to their fathers are higher in overall emotional intelligence than are boys who are less securely attached to their fathers. None of the other partial correlations were found to be significant (p > .05).

Summary of Correlations between Attachment and Sex of Child. When the relationship between attachment security and emotional intelligence was examined with consideration to the sex of the parents and children, results indicated substantial differences between attachment relationships with mothers and with fathers. For the girls in the sample only, security of attachment with mother was found to be associated with decreased ability to delay gratification. No other significant correlations were noted for girls, nor boys, with respect to security of attachment with mother. In contrast, a number of significant correlations emerged when examining security of attachment to father, although the particular associations differed according to the sex of the child. For the girls in the sample only, a more secure attachment relationship with father was associated with lower levels of some externalizing behavioural difficulties, including anger and oppositional behaviour, as well as a higher degree of prosocial behaviour. Moreover, girls with more secure attachment relationships with their fathers were found to be less accurate in their identification of emotional expressions in adults’ voices. For the boys in the sample only, more secure attachment relationships with their fathers was found to be associated with several individual aspects of achievement orientation, including more positive self-evaluations, a more internal attributional style, and a
stronger sense of self-efficacy. Importantly, for the boys in the sample only, more secure
tagument to fathers was associated with higher levels of overall emotional intelligence.

Partial Correlations Between and Within the Dependent Variables. Table 6
displays the partial correlations (controlling for age) for the entire sample between the
dependent variables and within the subscales of the measures which generated more than
one score. As can be seen, the majority of the significant correlations occurred within
the subscales of the multi-scale measures, although a number of the between-measure
correlations were also significant and in the expected direction. The significant
correlation between the DANVA adult language subscale and the Egotistical-Prosocial
subscale of the SCBE (r = -.426) was not in the predicted direction. The direction of this
correlation indicates that children’s accuracy in reading emotional cues in adults’ voices
was associated with lower teacher ratings of prosocial behaviour.
Table 6
Partial Correlations Between and Within Dependent Variables

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+ approaching significance (p < .10)  * p < .05  ** p < .01
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+ approaching significance ($p < .10$)  
* $p < .05$  
** $p < .01$
CHAPTER IV

DISCUSSION

The purpose of the present study was to examine the association between attachment relationships with mothers and fathers and emotional intelligence in preschool age children. Based on a review of attachment theory and research, it was hypothesized that children with more secure attachment relationships with their mothers and with their fathers would be more emotionally intelligent than children whose attachment relationships with their mothers and fathers were less secure. Moreover, it was predicted that attachment relationships with mothers would emerge as more influential on children's emotional intelligence than attachment relationships with fathers. A number of empirical questions were also posed. In particular, this study attempted to address the question of whether boys and girls differ in levels of emotional intelligence at the preschool age, and if the influence of attachment relationships on emotional intelligence differs as a function of the sex of the parent and the sex of the child. Additionally, this study represented a preliminary attempt at exploring the cohesiveness of the individual domains of emotional intelligence.

A multi-method approach was utilized with a population of 31 preschool age children, their parents and their preschool teachers. Parents completed attachment Q-sorts as a measure of the security of their child's relationship with themselves. The children completed a battery of measures designed to assess aspects of emotional self-awareness, empathy, and achievement orientation. Teachers completed a measure of children's internalizing and externalizing emotional difficulties and their social
competence within the classroom setting. Analyses were completed to examine the influence of children’s attachment relationships on the individual domains, and composite, of emotional intelligence after controlling for the effects of age and sex of the children and their receptive language skills.

This chapter reviews the findings of this study in terms of children’s attachment relationships with their mothers and with their fathers, and current findings are interpreted in the context of attachment theory and previous research. The chapter then turns to consideration of the influence of age, sex and language skills on the development of emotional intelligence at the preschool age. Results related to the utility of the construct of emotional intelligence, and this study’s attempt to integrate various measures of the individual domains of emotional intelligence, are discussed. Strengths and limitations of the present study are then reviewed, and the chapter is concluded with discussion of practical implications of the findings and directions for future research.

Attachment to Mothers and Emotional Intelligence

Contrary to expectations, the present study generally failed to find an association between emotional intelligence and security of children’s attachment relationships with their mothers. Results suggested a marginal association between attachment security with mothers and children’s cognitive impulse control. Specifically, children with more secure attachment relationships with their mothers were found to be less cognitively impulsive than children with less secure maternal attachments. When analyses were conducted separately according to the sex of the child, this study revealed no association between maternal attachment security and emotional intelligence for the boys in the
sample. For the girls only, attachment with mother was found to be associated with children’s abilities to delay gratification. However, while it was hypothesized that children with more secure attachment relationships with their mothers would demonstrate abilities to delay gratification for longer periods of time, findings indicated that girls with more secure maternal attachments were actually able to delay gratification for significantly shorter periods of time than girls with less secure maternal attachments.

The lack of support for the hypothesized relationship between emotional intelligence and maternal attachment relationships is largely inconsistent with the results of much previous research. A preponderance of the evidence gathered from former studies substantiates a link particularly between maternal attachment security and both emotional control and social competence, as previously documented. However, there have been a number of other studies that have also failed to note a relationship between maternal attachment and emotional control (e.g., Bates et al., 1985; Bates & Bayles, 1988; Fagot & Leve, 1998; Jacobsen & Hoffman, 1997), utilizing a variety of methodologies. Moreover, consistent with results of the present study, DeMulder et al. (2000) reported no association between maternal attachment security and social competence. However, they did report findings that more secure attachment relationships with mothers were associated with lower levels of externalizing behavioural difficulties. It is noteworthy that the study completed by DeMulder et al. shared strong methodological similarities with the present study. In particular, DeMulder et al. studied attachment and peer relations in a population of preschool age children utilizing the attachment Q-sort and the SCBE.
Relatively less research has been done in consideration of the association between attachment relationships with mothers and emotional self-awareness, empathy, and achievement orientation. Results of the present study suggest that the link between maternal attachment security and these variables may not be as strong as predicted by attachment theory.

A number of interpretations of the current study’s findings with regard to maternal attachment security are possible. First, it may be that children’s security of attachment relationships with their mothers may not, in fact, be strongly associated with emotional intelligence. It is conceivable that a variety of other factors, such as development, gender, cognitive skills and temperament, may be more important predictors of emotional intelligence than maternal attachment. As noted by Chorpita and Barlow (1998), “... it is frequently difficult to rule out the confounding effects of extensive biological and environmental factors that can act as common influences for attachment and outcome measures” (p. 11). In the present study, the presence of confounding variables was addressed by statistically controlling for the influence of such factors.

Second, it is possible that methodological differences between the present study and past research may account for discrepancies in findings. For instance, a number of measures have been utilized across various studies in the assessment of attachment relationships. While some degree of overlap between such measures has been established, it has not been conclusively determined that the various measures of attachment definitively tap into identical underlying constructs (Solomon & George,
1999). Use of the attachment Q-sort, in particular, precludes differentiation of children into secure and insecure categories. Moreover, the measure does not distinguish between the resistant and avoidant subtypes of insecure attachment. Several previous studies have documented not only differences in outcome measures between securely and insecurely attached children, but also between the subtypes of insecure attachment. This is particularly the case with regard to emotional control (e.g., Erickson et al., 1985; Moss et al., 1998) and social competence (e.g., LaFreniere & Sroufe, 1985; Troy & Sroufe, 1987), the study of which suggest inconsistent differences between avoidant and resistant maternal attachment. In fact, attachment theory itself distinguishes between expected outcomes for avoidantly and resistantly attached children in many aspects of socio-emotional functioning as outlined in the introductory chapter.

This is not to say that the attachment Q-sort is not a useful tool for the measurement of the security of attachment relationships; its use in a multitude of research projects has established its utility in the broader study of securely versus insecurely attached children. However, it is possible that, for at least some aspects of emotional intelligence that were examined in the present study, differences between children with secure maternal attachments and children with insecure maternal attachments may have been masked by comorbid differences between resistantly and avoidantly attached children, the latter of which were not differentiated. So, for instance, while attachment theory speculates that avoidantly attached children are more prone to internalize the experience of negative emotions, and that resistantly attached children tend toward the externalizing of negative emotions, when these two types of attachment
relationships are considered together under the broader umbrella of insecure attachment they may serve to "cancel each other out." On the other hand, it is also important to note that, with the small sample of the present study, if classification measures of attachment had been used it is unlikely that there would have been a sufficient number of children in each category to consider the differential effects of avoidant and resistant attachments. It should also be noted that some studies which have employed the attachment Q-sort have, in fact, reported differences in aspects of socioemotional functioning between "more securely" and "less securely" attached children. DeMulder et al. (2000), for instance, found that children with more secure maternal attachments as determined by the attachment Q-sort were rated by their teachers as having significantly fewer externalizing behaviour problems than children with less secure maternal attachments.

Methodological consideration must also be given to measurement of dependent variables in the present study. Several issues with regard to evaluation of children's abilities to identify their own emotional states are considered later in this chapter. While assessment of emotional control, social competence, and aspects of achievement orientation has been characteristically broad and varied in past research (including behavioural observations, teacher report, parent report, and child self-report), it is noteworthy that research examining the influence of attachment on the development of empathy has tended to rely primarily on behavioural observations of children's empathic responding. In contrast, the present study focused on children's ability to identify emotional expressions in the faces and voices of others. It is conceivable that the ability
to recognize emotions in others is different in some respects from behavioural
responsiveness to others' expressed emotions. Thus, some methodological differences
make comparison of the present study with previous research more difficult.

A third consideration in interpreting the findings of the present study is that Q-
sort means for the present sample were found to be somewhat higher than has been
reported in other studies, particularly with respect to girls' attachment relationships with
their mothers (see Table 1 for Q-sort means for the present study). In a study completed
by Kerns and Barth (1995), mothers and fathers rated attachment security for their 41- to
51-month old children using the Attachment Q-sort. These authors reported mean
attachment scores of .39 for the mothers in their sample and .37 for the fathers.
Attachment scores were not reported separately according to the sex of the child.
DeMulder et al. (2000), using trained observers to rate attachment security with mother
on the Attachment Q-sort in a population of 35 to 58 month old children, reported mean
security scores of .35 (SD = .28) for the boys in their sample and .32 (SD = .26) for the
girls. Finally, Park and Waters (1989) reported mean maternal Q-sort ratings of .38 for
boys and .41 for girls in a sample of children between the ages of 25 and 61 months. In
that study, mothers completed the Qsorts themselves. Additionally, although
information on variance was available from only one of the cited studies, it appears that
the attachment Q-sort ratings for this sample were somewhat less variable than has been
the case in other research. One possible explanation for these findings is that the present
sample truly represented a more securely attached group of children than is typical and
that, therefore, the current sample is not representative of the larger population (i.e., did
not contain sufficient numbers of “insecurely” attached children. Since parents self-selected to the study, and since qualitative observation would suggest that in most participating families the mothers initiated participation in the project (e.g., mother most typically listed as contact person), it is possible that the mothers of more securely attached children were more likely to volunteer for participation than mothers of less securely attached children. Perhaps the parenting qualities that facilitate the development of a secure attachment relationship are related to the qualities of parents who would be more likely to participate in child development research. Moreover, it is conceivable that mothers who felt more confident about the quality of their relationship with their child were consequently more open to participating in research geared toward the examination of that relationship.

Consideration must also be given to observer bias in parental completion of the attachment Q-sort. Solomon and George (1999) note that factors such as social desirability and infant temperament can influence parental Q-sort ratings, while different factors can bias the ratings of trained observers. Thus, it is also plausible that, rather than representing a more securely attached group of children, attachment Q-sort means for the present study may have been artificially inflated.

If the children who participated in the present study did in fact represent a largely “securely” attached group, the generally nonsignificant findings for maternal attachment may suggest that, past a certain threshold, degree of attachment to mother is no longer a significant contributing factor. That is, simply being securely attached to one’s mother may be sufficient to facilitate adaptive socioemotional functioning. Once a child has
established a secure maternal attachment relationship, it may be that the degree of
security within that category is irrelevant.

Finally, it is important to consider that hypotheses regarding maternal attachment
may have been largely unsupported in this study because of the sample size. It is
plausible that the present sample was simply too small to uncover any meaningful
associations between attachment relationships with mothers and emotional intelligence.

The finding that girls with more secure attachment relationships with their
mothers were able to delay gratification for shorter periods of time than girls with less
secure maternal attachments warrants further discussion. This finding is particularly
interesting on two levels. First, it is noteworthy that the only other outcome variable
(marginally) associated with maternal attachment security was cognitive impulse control.
Measures of delay of gratification and cognitive impulse control were selected to
represent both the behavioural and cognitive aspects of the broader subdomain of
impulse control, respectively. Thus, the results of this study suggest that children’s
attachment relationships with mothers may influence this particular aspect of
achievement orientation. Second, the direction of the relationship between maternal
attachment and delay of gratification for the girls in the sample was contrary to
expectations. Thus, while it was predicted that children with more secure attachment
relationships would be able to delay gratification for longer periods of time than those
with less secure attachments, the opposite was found to be true for the girls in this study.
This finding is in direct contradiction to results reported by Olson et al. (1990), who
found that boys with more secure maternal attachments were able to delay gratification
for longer periods of time than boys with insecure maternal attachments, and that
maternal attachment security was not associated with delay of gratification for girls.
However, the current findings are somewhat more consistent with results reported by
Easterbrooks and Goldberg (1990). These authors found that insecurely attached
children tended to be over-controlled, as reflected by an undue delay of gratification.
This finding was interpreted in terms of the anxious-avoidant attachment relationship,
where avoidance of the attachment figure was associated with an overcontrol of
impulses. Thus, it is conceivable that increased maternal attachment security may be
associated with a tendency to delay gratification for shorter periods of time. A number of
children in the present study completed at least a portion of their participation in their
homes. It can be speculated that children perceived the delay of gratification task to be
somewhat stressful, the result of which may have been activation of the attachment
system. That is, the more securely attached children may have sought out their
attachment figure in the face of the stress of the task, thereby terminating the task
prematurely. However, this interpretation remains speculative, and can only be put forth
for the girls in the sample in terms of their relationships with their mothers.

Attachment to Fathers and Emotional Intelligence

A relatively unique contribution of the present study to the broader attachment
research base was the inclusion of information regarding children’s attachment
relationships with their fathers. In general, results supported the hypothesis that paternal
attachment relationships are associated in meaningful ways to at least some aspects of
emotional intelligence. Contrary to expectations, attachment to father actually emerged
as a more important predictor of certain domains of emotional intelligence than maternal attachment relationships. Moreover, results indicated that the association between paternal attachment and emotional intelligence may be differentiated as a function of the sex of the child.

In considering the entire sample, attachment relationships with fathers were found to be associated with all aspects of externalizing behavioural difficulties. Specifically, children who were rated as more securely attached to their fathers were also rated by their teachers as being less angry, aggressive, egotistical and oppositional than children with less secure paternal attachments. However, when partial correlation analyses were completed separately for boys and girls, results indicated that the source of the significance of the association between paternal attachment and externalizing behavioural difficulties was primarily attributable to the girls in the sample. Girls with more secure attachment relationships with their fathers were rated by their teachers as more tolerant, prosocial and cooperative. While little other research has examined the father-child attachment relationship in terms of children’s emotional control, results of the present study are congruent with those reported by Kerns and Barth (1985) who found secure father-child attachments to be related to children’s friendly-cooperative behaviour in the classroom. Interestingly, Verschueren and Marcoen (1999) found security of paternal attachments to be more strongly associated with children’s levels of internalizing (e.g., anxiety, withdrawal) difficulties than externalizing problems.

Further analysis of sex differences associated with attachment relationships with fathers revealed that, contrary to expectations, a more secure attachment relationship
with father was associated with a decreased ability to recognize emotional expressions in
the voices of adults for the girls in the sample. As little previous research has examined
the influence of paternal attachment on the development of empathic abilities, this
finding is difficult to interpret. Interpretation is further complicated by the coinciding
correlations between both of these variables (i.e., paternal attachment and recognition of
emotions in adult voices) with teacher ratings of girls’ levels of prosocial behaviour.
Specifically, increased ability to recognize adults’ vocal emotional expressions is
associated both with lower levels of prosocial behaviour and less secure attachment to
father for girls, while prosocial behaviour and paternal attachment are positively
correlated with one another. It may be that, for girls, a more secure attachment
relationship with father predisposes greater adeptness in peer relations with a lesser
reliance on nonverbal cues from adults. Certainly this hypothesis can be considered to fit
with empirical findings that children tend to demonstrate a preference for their fathers in
terms of affiliative interactions, resulting from fathers’ tendencies to engage in primarily
physical interactions with their children (Lamb, 1976), suggesting that girls with more
secure paternal attachments gain more experience in affiliative skills which is then
translated into the peer environment, while at the same time being less tuned to subtle
emotional cues from adults, perhaps as a result of fathers’ emphasis on more physical
play.

For the boys in the sample, more secure attachment relationships with fathers
were found to be associated with several aspects of achievement orientation, including
more positive self-evaluations, more internal attributional styles, and a higher overall
sense of self-efficacy. Moreover, for boys but not girls, more secure paternal attachment was associated with higher overall levels of emotional intelligence. The findings regarding the various aspects of achievement orientation are somewhat inconsistent with those of previous studies. For instance, Verschueren and Marcoen (1999) found children’s positive views of self to be more strongly associated with maternal attachment security than with attachment to father, but found the opposite to be true for children’s behavioural indications of self-esteem, with paternal attachment emerging as a stronger predictor. Results of this study suggest that, at least for boys, paternal attachment is in fact associated with internal perceptions of self. Studies which have examined self-efficacy and attributional style in adult populations, using retrospective attachment measures, have tended to find these aspects of achievement orientation to be more strongly associated with maternal attachment security than with attachment to father (e.g., Greenberger & McLaughlin, 1998; Ryan et al., 1996). These inconsistencies may indicate that the influence of maternal and paternal attachment relationships shifts over time. However, methodological differences, specifically the use of measures which look at young adults’ perceptions of their attachment relationships with their parents, may also account for the discrepancies.

In interpreting the findings for paternal attachment security, it is important to bear in mind that the results are correlational in nature. So, while it is possible that children’s attachment relationships with their fathers may exert an influence on subsequent socioemotional development, it is equally possible that the paternal behaviours that influence children’s abilities to establish secure attachments with their fathers are in turn
influenced by the child’s emotional and behavioural functioning. That is, it may be that fathers of children who are more prone, for example, to externalizing behavioural difficulties have a more difficult time establishing secure attachments with their children than fathers of less difficult children. If this were the case, the findings of this study would suggest that mothers’ attachment relationships are less susceptible to emotional and behavioural difficulties in their children than are fathers’.

**Summary of Findings Related to Attachment**

Results of this study partially supported hypotheses that security of attachment relationships would be related to the various domains of emotional intelligence. Contrary to expectations, security of paternal attachment emerged as a more important predictor of some aspects of emotional intelligence than attachment relationships with mother, suggesting that different attachment relationships influence different aspects of children’s development. Exploratory analyses revealed that the correlates of attachment security were further differentiated as a function of both the sex of the parent and the sex of children. In general, for the girls in the sample, attachment relationships with mothers were most strongly associated with specific aspects of achievement orientation (i.e., impulse control), while attachment to father was most strongly associated with externalizing behavioural difficulties. For boys, attachment to father predicted multiple aspects of achievement orientation, and was associated with overall emotional intelligence, while analyses with regard to maternal attachment security revealed no significant correlations.

The differential findings for attachment to mother and to father highlight the
importance of considering both of these relationships in the study of attachment in order to capture a more complete understanding of the influence of attachment on emotional development. Moreover, the absence of significant correlations between maternal and paternal attachment security, suggests that these relationships remain separate and distinctive for children. Others who have considered both of these attachment relationships have also found that their measurement reveals two distinct parent-child relationships, each of which is related to different aspects of children’s socioemotional development (e.g., Kerns & Barth, 1995; Verschueren & Marcoen, 1999). When the present study statistically considered the combined effects of both attachment relationships, no significant findings emerged. Thus, it appears that children derive rather unique contributions from their relationships with their mothers and with their fathers. This conclusion is inconsistent with the suggestion that has been put forth that children maintain a hierarchy of attachment relationships, forming internal working models of the self and others based on a dominant attachment figure (e.g., Bretherton, 1985; Easterbrooks & Goldberg, 1990). Rather, it appears that different attachment relationships influence different specific areas of development, with no one attachment relationship assuming priority.

It also bears reiteration that the differential findings for mothers and fathers in this study, particularly the general lack of support for the association between maternal attachment and emotional intelligence, should be interpreted in the correlational context of the research. Thus, the findings regarding paternal attachment and externalizing behavioural difficulties may indicate that more secure attachment relationships with
fathers predispose more adaptive emotional control in preschoolers. However, it is also possible that fathers' attachment relationships with their children are more vulnerable to difficult personality characteristics and that the maternal attachment relationship is more robust to such child-related influences. As is the case with most attachment research, it is difficult to tease these two competing hypotheses apart.

An interesting finding that emerged in the present study is the previously noted increase in attachment security with age for children and their relationships with their same-sex parents. The finding may suggest that attachment security with the same-sex parent actually increases with age. This would certainly fit with Freudian theories of the child's identification with the same-sex parent during the preschool years. It may also be that parents perceive a more secure attachment relationship with their same-sex children as the children become more gender-stereotyped in their behaviour across age. Thus, parental ratings of attachment security may be influenced by their perceptions of the degree to which their children are similar to themselves, or the degree to which they would desire them to be. However, the finding is more likely the result of measurement error, as no other reviewed study has reported this correlation, even when using the same measure of attachment with the same age group. Also, attachment relationships have been previously demonstrated to remain relatively stable over time when the child-rearing environment also remains relatively stable (e.g., Symons, Clark, Isaksen, & Marshall, 1998; van Ijzendoorn, 1996).

In summary, while consideration of attachment relationships in the present study suggested that these important relationships are associated with some specific aspects of
emotional intelligence, attachment in and of itself did not account for the full picture.

The discussion turns now to consideration of other influences on the emotional
development of children.

**Emotional Intelligence as a Developmental Construct**

Results of the present study suggested a strong influence of age on the
development of emotional intelligence. Perhaps to be expected, age emerged as the most
robust predictor of overall emotional intelligence. Its influence was also pervasive,
relating to most individual aspects of emotional intelligence with the exception of
children’s attributional styles and their self-reports of their degree of school enjoyment
and sense of purposiveness. Older children in the present study were found to be more
aware of their own emotional states, to demonstrate better emotional control, to be more
aware of emotional expressions in others, and to be more socially competent. They were
also found to have a higher sense of self-efficacy, to be more optimistic, and better in
control of their impulses.

The children who participated in the present study ranged in age from three years,
two months to five years, zero months. The results of this study support theory and
research which hold the preschool years to be a time of growth in emotional
development, and serve to highlight the rapid nature of this change during this
developmental period. As noted by Denham (1998), these changes should be expected
because of the development of cognitive, language and perspective-taking skills that
takes place during the preschool years.

A more thorough review of current knowledge regarding the development of
emotional intelligence across the preschool years has already been presented in the first chapter. However, it is important to note here that it is unlikely that present findings regarding increases in emotional intelligence with age are associated strictly with corresponding improvements in children's "test-taking" abilities (e.g., comprehension of instructions, sustained attention) as results relying on teacher-report of children's behaviour within the preschool environment also reflected such growth. Moreover, these results highlight the importance of considering children's developmental levels, both in sample selection and statistically, in the study of emotional development.

**Sex Differences in Emotional Intelligence**

Consistent with the results of much previous research, results of this study indicated the presence of differences in the development of some aspects of emotional intelligence as a function of the sex of children. In all instances where sex differences were observed, girls emerged as having higher levels of development than boys. However, it is important to note that the vast majority of the differences that were found were marginal in their significance. There was a trend toward girls having lower rates of overall internalizing emotional difficulties, lower rates of angry behaviour, somewhat stronger abilities to accurately recognize emotions in other children's faces and voices, and to be somewhat higher in overall emotional intelligence. However, the only significant finding that emerged was with regard to girls' accuracy in identifying emotional expressions in adult faces.

Thus, the most clear difference between girls' and boys' emotional intelligence appeared to be specific to the domain of empathy. This is an interesting finding, as
previous research has found that, in adult populations, women are consistently more adept at detecting feelings associated with the facial expressions of others than are men (Goleman, 1998). Findings of the present study suggest that the basis for such differences are already in place as early as the preschool age.

LaFreniere and Dumas (1996), studying the scale characteristics of a shortened version of the Social Competence and Behaviour Evaluation (SCBE) Scale, similarly reported that boys were rated as substantially higher in anger-aggression than girls. However, they reported that girls were found to also be significantly more socially competent on this rating scale, a finding that was not replicated here. Moreover, no trends toward sex differences in internalizing difficulties (i.e., anxiety-withdrawal) were reported by LaFreniere and Dumas as were noted in the present study. It is, though, not surprising to find some inconsistencies between the two studies as LaFreniere and Dumas reported on a shortened version of the measure used in the present study.

Goleman (1995) and others (e.g., Denham, 1998) argue that sex differences in emotional development can be largely accounted for by socialization factors. They note empirical findings which suggest that girls tend to be exposed to more information about emotions than boys. Specifically, parents tend to discuss emotions more with girls, discuss emotional states themselves in greater detail, use more emotion words in their discussions with daughters, and display a wider range of emotions in their play with girls. In contrast, parents have been generally found to discuss the specific emotion of anger more frequently with their male children (Denham, 1998; Goleman, 1995).

Thus, girls appear to be primed to be more emotionally intelligent than boys, at
least in terms of recognizing and responding to emotions in themselves and in others.

Although findings of the present study emerged primarily as trends, these results suggest that the impact of differential socialization experiences become apparent at very young ages, and point to the importance of giving consideration to gender when studying factors which predispose emotional intelligence.

**Language and Emotional Intelligence**

Although the PPVT-R was included in the present study as a screening measure of cognitive functioning, its inclusion in statistical analyses suggested an association between children’s language development and certain aspects of emotional intelligence. In particular, children with more highly developed receptive language skills (as measured by the PPVT) were found to be better able to label their own emotional states, more accurate in their perceptions of nonverbal emotional cues in the voices of others, and to be higher in some aspects of achievement orientation (i.e., sense of purposiveness, instrumental activity, and cognitive impulse control).

Consistent with research on the impact of cognitive growth on children’s emotional development, the development of language skills has often been found to be associated with the development of various aspects of children’s emotional functioning. Gains in language open the door to more sophisticated ways of understand, talking about and regulating emotional experiences. As such, children with more restricted language abilities are prone to higher rates of emotional and behavioural difficulties and to greater challenges in social interactions as a result of their limited verbal resources (Donahue, Hartas, & Cole, 1999). Reduced access to the verbal medium appears to predispose a
stronger reliance on behavioural means of communicating with, and responding to, others.

The findings of the present study which support an association between children’s scores on the PPVT and certain aspects of achievement orientation may be reflective of the measure’s previously noted correlation with more general aspects of cognitive functioning. Children with stronger cognitive skills can be expected to experience higher rates of success within the school environment. In contrast, children who have not had the benefit of positive educational experiences may feel less effective in a learning environment, and subsequently be less motivated to achieve, perhaps perceiving that achievement is not within their control. What is striking about this finding is the fact that children have already begun to develop a strong sense of their achievement abilities as early as the preschool years.

**Emotional Intelligence**

Although neither the concept of emotional development as being multi-faceted, nor the analogy drawn between emotional development and intelligence, are necessarily new additions to the field of psychology, the construct of emotional intelligence provides a framework by which to guide the study of socioemotional growth. By emphasizing the various inter-related dimensions of social and emotional functioning, as opposed to considering each aspect in isolation, emotional intelligence serves as an organizing heuristic for consideration of the complexities of emotional life. The study of emotional intelligence is largely in its infancy. Hence, a purpose of the present study was to contribute to preliminary empirical attempts to consider the cohesiveness of the five
domains of emotional intelligence and to establish means of assessing emotional intelligence in young children. To this end, a variety of pre-existing measures of the individual domains of emotional intelligence were brought together into a larger assessment battery. As well, an attempt was made to develop a measure of emotional self-awareness in preschool children.

Although necessarily limited in its scope because of the small size of the present sample, analysis of the associations between measures of the individual domains and subdomains of emotional intelligence indicates that they generally relate to one another in theoretically meaningful ways. Most compelling was the finding that results were generally consistent across informants (i.e., teacher and child) and measurement strategies (i.e., self-reports versus performance-based measures). So, for example, children who were rated by their teachers as being more joyful and tolerant, self-reported higher levels of motivation, greater enjoyment of school, and more positive self-assessments (as measured by the Animal Crackers test). Moreover, children who performed at lower levels on the self-awareness of emotions test were also rated by their teachers as demonstrating higher rates of internalizing difficulties and anger, to be less socially competent, and to be lower in general socioemotional adaptation. Additionally, stronger empathic skills (specifically, greater abilities to recognize emotional expressions in the voices of other children) were found to be associated with teacher reports of greater joyfulness, and children’s self-reports of higher self-confidence and overall motivation to achieve. Interestingly, the association between children’s abilities to recognize emotional expressions in the voices of adults was found to be negatively
correlated with teacher-reports of prosocial behaviour. One possible interpretation of this finding is that children whose social skills are less well developed may rely more on cues from adults, heightening their awareness of more subtle emotional signals to guide them in their actions.

Within the domain of achievement orientation, measures of individual subdomains also tended to be associated in logical ways. Children who self-reported more external attributional styles were found to delay gratification for lesser periods of time on a measure of the behavioural component of impulse control, suggesting that a belief that events in one’s life are out of one’s control is associated with lower levels of self-control. Additionally, children who self-reported higher levels of purposiveness had significantly higher error rates on a measure of cognitive impulse control. Not only do such findings support the expected relationships between various aspects of emotional intelligence, but the consistency between children’s self-reports, as compared with performance-based measures and teacher reports, highlights the accuracy of children’s perceptions of themselves even as young as the preschool age.

Of particular interest in the present study was the attempt made to develop a measure of emotional self-awareness in young children (SAE). Use of the measure with the present sample suggested that it demonstrated generally good reliability. Validity of the measure proved to be somewhat more difficult to establish. Discriminant validity of the measure may be inferred from the absence of significant correlations with the DANVA, a test designed to measure identification of emotions in others (i.e., empathy) as opposed to in oneself (i.e., emotional self-awareness). However, because the DANVA
relies on a different medium (i.e., identification of the actual expression of emotions as compared to inferences regarding emotions based on narratives), it is not possible to conclude that the SAE does in fact measure a phenomenon that is meaningfully different from empathy.

Measurement of emotional self-awareness is inherently difficult in any age group because of the lack of any external criterion by which to judge the accuracy of an individual's responses. While it would be possible to establish normative data for a given set of narratives and compare an individual's responses to those of a larger group, inconsistencies would not necessarily imply that the individual in fact "mislabeled" that particular emotion. It may just as likely be that the label itself was accurate and that the individual's experience of that situation differed from the norm. So, for instance, on the SAE, if a child were to respond that he would feel sad in response to a particular situation that was expected to evoke an anger response (or even that evoked an anger response from most other children), it does not necessarily follow that the child's label of the feeling was wrong. If the child's label was actually correct, but his perceived experience of the situation was unique, this would mean something theoretically different from a lack of emotional self-awareness in that situation. Unfortunately, there is no obvious means for determining the accuracy of an individual's labeling of emotional experiences aside, perhaps, from measuring aspects of actual physiological responding.

This difficulty then leads to the question of whether or not emotional self-awareness is a useful dimension of emotional intelligence. On purely theoretical
grounds, inclusion of the domain of emotional self-awareness fits nicely as a complement to the empathy domain (i.e., recognition of emotional states in the self and others). Moreover, it makes inherent sense to assume that one cannot develop the ability to be aware of emotions in others, nor to adaptively control emotional experiences, without also being in tune with one’s own emotional states. However, empirically speaking, it may be argued that the domain’s inclusion in a theory of emotional intelligence raises epistemological problems. It is difficult to theorize about constructs that cannot be measured; hypotheses that are based on the construct cannot be tested.

The theory of emotional intelligence can be viewed as a “working model” of emotional functioning. Given its relatively recent introduction to the field, it is likely that it will undergo several revisions as empirical findings emerge. However, the concept of emotional intelligence holds promise for providing both clinicians and researchers with a practically and empirically useful organizing heuristic under which to consider the multiple, intertwined elements of socioemotional adaptation.

Strengths and Limitations of the Present Study

A number of strengths and limitations of the present study have already been reviewed in the context of interpreting the research findings. Inclusion of information regarding children’s attachment relationships with both their mothers and their fathers was considered to be one of the most prominent strengths of this study. To date, relatively little research has considered the impact of the child-father relationship on subsequent emotional development. Results of the present study suggest that this is a fruitful area of inquiry. Not only were paternal attachments found to be associated in
meaningful ways with aspects of emotional intelligence, but results also indicate that the father-child relationship is unique and distinctive from the mother-child relationship. It appears that children can benefit from secure paternal attachments in ways that are not simply redundant with the benefits of secure maternal attachment relationships. To gain a more complete picture of the developmental sequela of attachment, it is necessary to consider all important relationships in a child's life. Recent societal changes have seen fathers become increasingly involved in the caregiving role. It is critical that research on child development reflect these important changes.

A further important strength of the present study was the use of a multi-method approach in assessing the association between attachment relationships and emotional intelligence. This included the gathering of information from parents, children and preschool teachers. Moreover, emotional development was broadly defined and measured. Many other studies tend to focus on aspects of socioemotional adaptation in isolation. In this study, attempts were made to take a more comprehensive approach, integrating knowledge about several related elements of emotional development using the framework of emotional intelligence. Statistically speaking, the present study also gave careful consideration to a number of variables in addition to attachment relationships (i.e., age, sex, language/cognitive development) which could have possibly served to confound the findings.

Finally, the present study represented an initial effort to empirically examine the construct of emotional intelligence, both in terms of methodological and theoretical considerations. Attempts were made to develop a measure of emotional self-awareness
in preschool age children which may prove useful for future research.

A number of limitations of the present study should also be noted in interpretation of the findings. Despite efforts to recruit participants through a number of preschool and daycare centres, the sample size remains particularly small. As a result, one cannot be confident that the sample utilized in this study is representative of the larger population. This is of particular concern in this study due to the previously noted finding that the present sample appeared to represent a more securely attached group of children than is typical of the larger population, a phenomenon that may be the result of self-selection of families to the study. Concerns about the representativeness of the sample raises issues regarding the generalizability of results. Moreover, the study was less likely to find significant differences if they do, in fact, exist due to both the small size of the sample and the possibility of reduced variance associated with high attachment security scores.

Finally, although the attachment Q-sort which was used to measure attachment security is a generally established and economical measure, analysis of the results was somewhat inhibited by the fact that the attachment Q-sort does not differentiate between the various attachment classifications (i.e., secure, anxious-resistant, anxious-avoidant). As previously noted, attachment theory predicts, and some previous research has documented, important differences between the insecure attachment subtypes. Such predictions could not be explored in the present study as there is no means by which to differentiate children according to such groupings. However, even if an attachment measure which provides such classifications had been employed (e.g., the Strange Situation), it is unlikely that the present sample would have been sufficiently large
Practical Implications and Directions for Future Research

Decades of theory and research have emphasized the importance of maternal attachment in children’s socioemotional development, an unfortunate result of which has been a skewed emphasis on the mother-child relationship to the relative exclusion of the father-child relationship. Results of the present study indicate that children also benefit in meaningful ways from secure attachment relationships with their fathers. Findings such as this have important implications in a society which has demonstrated a trend toward single-parent families, often headed by female caregivers, and which historically has attributed primary blame to mothers when emotional development goes awry. These results suggest that children are influenced by their relationships with their fathers in ways that go beyond the traditional conception of fathers as breadwinners, disciplinarians and playmates. Future research would benefit from the study of children from single-parent families to determine whether the presence of both caregivers in children’s lives is a necessary component of optimal emotional adaptation, or if perhaps there is a compensatory effect when children have only one primary attachment figure (i.e., that the relationship with one attachment figure compensates for the absence of the other).

Congruent with much previous research, results of this study also indicated a trend toward higher levels of emotional intelligence for girls as compared to boys. Such discrepancies between the sexes are likely the result of socialization factors. However, given the contention that emotional intelligence is an important determinant of more general success and adaptation, it would appear warranted that an emphasis be placed on
facilitating the socioemotional development of boys. Clinically speaking, such findings emphasize the importance of stressing for parents the need to encourage the process of identification and expression of emotions with their sons. Since gender differences emerge at such young ages, various mediums directed at the development of parenting skills need to increase parental awareness of the influence of socialization factors on emotional development and highlight means of facilitating emotional adaptation in both boys and girls.

Attachment relationships in this study were not found to hold the predictive power with regard to emotional intelligence that was originally hypothesized. Although this may be the result of the various methodological limitations previously discussed, it also suggests that other factors are likely involved in the development of emotional intelligence. It would be interesting, for instance, to study the influence of parents’ levels of emotional intelligence on the emotional intelligence of their children, or to consider how parents’ emotional intelligence influences their subsequent ability to establish secure attachment relationships with their children. Moreover, the utilization of different measures of attachment in future research may enable the study of several factors, including the effect of discordant attachment relationships on emotional intelligence and differences in emotional intelligence between the subtypes of insecure attachment.

With regard to the broader study of emotional intelligence, much research remains to be done. Advancement of the construct would be facilitated by the study of emotional intelligence across developmental levels. Moreover, factor analytic study of
the various domains of emotional intelligence may help to verify their theoretically proposed distinctions. Finally, while the present study attempted to bring together individual measures of the domains of emotional intelligence, both empirical and clinical interest in this area would benefit from construction of a more cohesive measure of emotional intelligence for children.
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APPENDIX A

Background Information Questionnaire
Background Information Questionnaire

Please note that all questions are optional.

1) Today’s date: year______month______day______

2) Child’s birthdate: year______month______day______

3) Mother’s birthdate: year______month______day______

4) Father’s birthdate: year______month______day______

5) How many children do you have? _____ For each child, please specify age, sex, and relationship: Child 1 C2 C3 C4 C5

Age(s)                      — — — — —

Sex(es)                     — — — — —

Relationship: (mark ‘m’ for mother and ‘f’ for father in the appropriate column for each child)

Biological Parent          — — — — —

Adoptive Parent            — — — — —

Stepparent                 — — — — —

Foster Parent              — — — — —

Legal Guardian             — — — — —

Other________              — — — — —

6) Ethnicity of mother:

1)____Caucasian          3)____Hispanic          5)____Native

2)____Black             4)____Asian/Pacific   6)____Other________
7) Ethnicity of father:
   1) __Caucasian  
   2) __Black       
   3) __Hispanic    
   4) __Asian/Pacific
   5) __Native      
   6) __Other ______

8) Is mother currently employed?   (1) __Yes     (2) __No

9) Is father currently employed?   (1) __Yes     (2) __No

10) What is mother’s current occupation and job title? ________________________________

11) What is father’s current occupation and job title? ________________________________

12) Using the chart below, please indicate the highest level of education achieved by:
   (1) __Mother       (2) __Father

   (a) less than 8 years
   (b) graduated elementary school
   (c) some high school
   (d) graduated from high school or equivalent
   (e) some college or university
   (f) graduated from college or university. Degree(s) ____________________________
   (g) some work beyond Bachelor’s degree
   (h) finished graduate degree. Degree(s) ____________________________

13) What is your religious affiliation?: ________________________________
14) Has your child ever received psychological counselling or services?
   Yes__ No__

   If yes, please describe the type of service and the approximate date of such service.

   _____________________________________________________________

   _____________________________________________________________

15) In what city and province do you reside? _______________________

16) Was mother born in Canada? (1) __ Yes     (2) __ No
   If not, where was mother born? ________________________________

17) Was father born in Canada?  (1) __ Yes     (2) __ No
   If not, where was father born? ________________________________

18) Were your children born in Canada? (1) __ Yes     (2) __ No
   If not, please list who was born outside of Canada and where.

   _____________________________________________________________

19) What is the approximate income bracket of your family?

   1) __ less than 10,000  3) __ 20,000-30,000  5) __ 40,000-50,000
   2) __ 10,000-20,000  4) __ 30,000-40,000  6) __ over 50,000
APPENDIX B

Pilot Study
PURPOSE

The purpose of the pilot study was to pre-test three of the measures to be utilized in the larger study. Two of these measures, the Self-Awareness of Emotions Test and a Delay of Gratification Task, were designed specifically for the purposes of the larger study. The third, the Preschool and Primary Nowicki-Strickland Internal External Control Scale (PPNS-IE; Nowicki & Duke, 1973), was modified slightly for the purposes of the larger study and was included in the pilot study to ensure that the modifications did not significantly change the nature of the measure. A fourth measure, the Peabody Picture Vocabulary Test -Revised (PPVT; Dunn & Dunn, 1981), was included as a screening measure of cognitive functioning.

METHOD

Recruitment Procedures

Participants were recruited from three preschools in the Hamilton-Wentworth area. Recruitment was based on the following inclusion criteria: (1) children between the ages of 36 months and 60 months, and (2) children with no identified cognitive, emotional, behavioural or speech-and-language difficulties.

Participants

Participants of the pilot study consisted of 12 children (7 male, 5 female). Eleven of the children were Caucasian; one child was African American. The mean age of the sample was 47.75 months (SD = 3.91; range = 41 to 54 months).

Measures

Self-Awareness of Emotions Test. This measure was developed for the purposes
of the larger study to assess children’s ability to correctly identify emotional states in themselves. Prior to the pilot study, 16 emotion-provoking scenarios were written by the researcher, designed to elicit feelings of anger, sadness, happiness, and fear. The scenarios were written to range in difficulty from obvious to subtle emotional provocation. Five colleagues of the researcher were asked to independently review the 16 scenarios and indicate which emotional experience they believed each one generated. An agreement rate of 100% was found for 14 of the items. On the remaining two items, four of the five raters (80%) were in agreement with the researcher. This was felt to reflect a reliable rate of agreement, and the original items were kept intact. For the pilot study, children were shown cups with sketched “faces” representing the four basic emotional states of happy, angry, sad, and afraid. A fifth cup depicting a “neutral” face was added to represent a lack of emotion. The children were told the emotion labels of each face as they were shown the cups (happy, sad, mad, scared and no feeling at all). The children were then read the series of 16 emotion-evoking scenarios, and requested to place small plastic chips in the cup representing the emotion they believed they would feel in that situation (“The face you would be wearing if that really happened to you.”). The children were instructed to place only one chip in the cup if they believed they would experience the feeling “only a little bit” and to place two chips in the cup if they felt they would experience the feeling “a lot”. Accurate identification of emotions was measured by scoring the number of correct chip placements, and emotional intensity was measured by scoring the number of chips placed in a cup for each scenario.

**Delay of Gratification Task.** A delay of gratification task was designed for the
purposes of the larger study as a measure of behavioural impulse control. It was included in the pilot study to examine the efficacy of the procedure. The task utilized here was based on similar tasks described by Arend et al. (1979) and Olson et al. (1990). The procedure involved the examiner introducing the task as a “colouring activity that has prizes”. Children were shown one of the “prizes” (a covered box containing stickers, crayons and small toys) and told that there was a second “prize” in the examiner’s carrying case. They were then introduced to the filler task which involved having the child colour a series of geometric shapes according to a particular colouring scheme. Children were instructed that if they persisted at the colouring task until the examiner said “stop” they would receive both prizes. They were also informed that they had the option of saying “stop” before the examiner did but that if this happened they would receive only the prize that was visible to them. Children were queried about their understanding of the task procedure and any misunderstandings were corrected. The gift was placed in front of the child and the examiner remained in the room with the child as the colouring task was completed. The dependent measure on this task was the amount of time (in seconds) that elapsed before the child took the gift. Children who persisted at the filler task were stopped after five minutes. All children were given both gifts regardless of whether or not they reached the five minute limit.

Preschool and Primary Nowicki-Strickland Internal-External Control Scale (PPNS-IE: Nowicki & Duke, 1973). This measure has been previously described in the Method section for the larger study. It was included in the pilot study because it was felt that the wording of some of the items may be confusing for children in the 3- to 4-year
age range. These items were modified for ease of comprehension.

Peabody Picture Vocabulary Test - Revised (PPVT; Dunn & Dunn, 1981). This measure has been previously described in the Method section for the larger study. It was included in the pilot study as a screening measure of cognitive functioning.

Procedure

After obtaining clearance from the Departmental Ethics Committee, directors of five preschools in the Hamilton-Wentworth area were contacted by the researcher. The nature of the study was explained and permission to request participation of children in the preschools was obtained. All five preschools agreed to participate and the researcher met with appropriate personnel to identify potential participants.

Once suitability for participation had been determined, teachers distributed consent packages consisting of a cover letter explaining the purpose and nature of the study (Appendix H) and two parental consent forms to the parents of potential participants (Appendix I). Participants were ultimately recruited from only three of the preschools due to a delayed response time from the remaining two.

Children who received parental consent to participate in the pilot study were tested individually on the battery of measures at a suitable location in their preschool during the regular preschool day. Total testing time was approximately 45 minutes. All testing sessions were conducted by the author.

At the start of each session, participants were introduced to the examiner and the nature of the study. Participants were told that the purpose of the study was to practice and learn about a variety of activities that would be completed with other children of the
same age in the future. Participants were informed of parental consent and verbal assent was obtained from each participant. It was further explained that participation was voluntary despite previous parental consent, that each participant had the right to not answer any question, that individual results would be kept confidential, and that participation could be discontinued at any time.

The order of administration of the four measures was counterbalanced to control for order effects associated with test administration. At the end of each session, participants were encouraged to ask any questions they had pertaining to their participation. Participants were then thanked for their participation, and encouraged to speak to their teachers should any further questions arise.

FINDINGS

Means and standard deviations for the entire sample on each of the four measures are shown in Table B1.

Self-Awareness of Emotions Test (SAE; Houtmeyers, 2000): As previously noted, an interrater agreement of 100% (5 out of 5 raters) was found for 14 of the scenarios among five colleagues of the researcher. Interrater agreement was 80% (4 out of 5 raters) on the remaining two items. This was felt to reflect good interrater reliability and the scenarios were left unchanged.

The limited sample size available precluded the usage of any formal statistics in analyzing the individual items of the test. Individual review of each item was completed based on completion of the measure by the 12 children in the pilot study. It was pre-determined that any item could be expected to be completed correctly by 2.4 of the 12
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children by chance factors alone. That is, a child had a one in five (20%) chance of identifying the targeted emotion for any item by randomly guessing. As such, items for which fewer than three children identified the targeted response were deemed to be too difficult for this age group. Five of the items yielded targeted responses from two or fewer children. To confirm that these items were too difficult for children in the preschool age group, responses of the top scoring 25% of the children in the sample (N=3) were examined for each of the five identified items. Targeted emotions for each item were correctly identified by one or fewer of the top-scoring three children in the sample. As such, it was concluded that these items were not appropriate for the preschool age group and they were subsequently modified to increase the saliency of the targeted emotion.

Two additional items were identified as being too salient with regard to the targeted emotion as 11 of the 12 children correctly identified the targeted response. The responses of the three lowest scoring children (25%) of the sample were examined on these items and all were found to correctly identify the targeted emotion. These items were therefore felt to lack a discriminating quality and were subsequently modified to decrease the saliency of the targeted emotion.

The remaining nine items generated targeted responses from between four to nine of the children in the sample, which was felt to be adequate, and were left unmodified. The 16 items of the modified version of the Self-Awareness of Emotions Test are shown in Appendix J.

A second element of the Self-Awareness of Emotions Test was to assess the
degree to which the children reported experiencing their selected emotion. To this end, children were instructed to place one chip in the cup if they felt they would experience the emotion “only a little bit” and to place two chips in the cup if they felt they would experience the emotion “a lot”. Completion of the measure with the pilot sample revealed that the vast majority of the children chose to put two chips in each cup regardless of the saliency of the scenario and regardless of their accuracy in selecting the targeted response. While several interpretations of this phenomenon may be possible, qualitative observations of the children during test administration indicated that they particularly enjoyed the process of placing plastic chips into cups. Thus, when given the choice of one or two chips, most children opted for the greater amount. Either way, measurement of degree of emotion did not meaningfully discriminate among the children and it was decided that this element of the procedure would be eliminated.

Delay of Gratification Task: The procedure originally proposed for the Delay of Gratification Task was felt to be unsatisfactory for a number of reasons. The most significant of these concerns was that 10 of the 12 children worked on the filler task for the full time allotted, generating little variability in scores. Second, when children were questioned about their understanding of the procedure prior to beginning the task, several of them were confused by the instructions that they could say “stop” before the examiner did. A third related concern was that some of the children would ask “Can I stop now?” rather than saying “stop”. It was difficult to answer this question without potentially biasing their subsequent choice of whether or not to terminate prematurely.

The option of extending the time limit to increase variability in scores was
considered but was not felt to be an ideal choice given the length of the full test battery for the larger study. It was decided instead to modify the procedure of the task so that it would be more concrete. In doing so, it was hoped that children would more clearly understand the choices available to them and therefore reduce the likelihood of a child persisting at the task simply because they did not understand that they had the option to terminate early. As such, it was decided that for the larger study the task would be modified in the following ways. First, it was decided that both prizes would be placed on the table simultaneously so that it was clear that there was a choice between one or both prizes. Second, it was decided that the children would have a small bell placed in front of them and told to ring the bell if they wanted to terminate the task prematurely. It was hoped that this would be a more concrete explanation that would delineate their choices more clearly, thereby reducing both confusion about the instructions and the likelihood of a child asking the examiner if they were permitted to stop.

**PPNS-IE**: All children in the sample were administered this task with the modified instructions. Previous studies have found the mean on the original measure to be 13.61 (SD = 3.02) for 5-year-old boys and 12.65 (SD = 2.99) for 5-year-old girls (Nowicki, 1975; as reported by S. Nowicki, personal communication, 1999). For the present sample, the mean for boys (n = 7) and girls (n = 5) was found to be 12.29 (SD = 2.22) and 10.4 (SD = 2.41), respectively. Since the means generated for the present sample using the revised format of the PPNS-IE did not differ by more than one standard deviation from the means reported utilizing the original measure, it was determined that revising the wording of items for the purposes of clarification would not significantly
impact on the integrity of the measure. Appendix K displays the original items and their modifications.
APPENDIX C

Parent Information Letter
Dear Parent,

I have been given permission by the Director of your daycare/preschool to write and ask if you, your child, and your child’s other parent would be willing to participate in a research project I am conducting as one of the requirements for completing my doctoral degree in Clinical Child Psychology at the University of Windsor. The study is about the possible link between a child’s relationship with his/her primary caregivers and his/her ability to assess, control, and appropriately use emotions. The study has been cleared by the Department of Psychology Ethics Committee at the University of Windsor, and your child’s daycare/preschool.

I am asking mothers, fathers, and preschoolers to participate in the study. Participation from the parents will involve completing two questionnaires. Participation from the children will involve completing several short child-oriented tasks. Both parents and the child can participate at the same time, and participation will take approximately 1 ½ to 2 hours. Participants can either take part in this study in their own home, or at any other convenient location. I will also be asking for permission to have the preschool teachers complete a questionnaire about the behaviour of the children in the preschool setting. This will take approximately 15 minutes and can be completed independently by the teachers. Once the study has been completed, interested families and daycares/preschools may receive a summary of the findings by contacting me, Kimberley Houtmeyers (as below).

If you are open to being contacted in the near future regarding this study, either because you wish to participate or would like to ask questions, please complete the attached sheet and return it to your child’s teacher.

If you have any questions about participating, please feel free to contact me, Kimberley Houtmeyers, at home (905-543-8057) or my research supervisor, Dr. Robert Orr, at the University of Windsor (519-253-4232, Ext. 2026).

Thank you for taking the time to read this letter and for considering participation in this research project.

Sincerely,

Kimberley Houtmeyers, M.A., Ph.D. Candidate
My name is ___________________________ and I am willing to be contacted regarding your study. My telephone number is ________(Home) ________(Work).

___ I have questions to ask about your study.

___ I am interested in having my family participate in your study.

___ Both of the above.

The best days and times to reach me are as follows (circle where applicable):

Monday  Tuesday  Wednesday  Thursday  Friday  Saturday  Sunday

Morning  Afternoon  Evening

Home  Work

Please sign ___________________________
APPENDIX D

Parent Consent Form
Consent Form

I, ______________________ (please print) and I, ______________________
understand and consent to the following:

We consent to our participation, and the participation of our child, ______________________, in a study regarding the association between children's relationships with their parents and the children's emotional functioning. In the study, we will be asked to each respond to two questionnaires. Our child will be asked to respond to a number of questions looking at aspects of emotional functioning. In addition, our child's daycare/preschool teacher will be asked to respond to a questionnaire regarding our child's behaviour in the daycare/preschool classroom. The results of these questionnaires will not be shared with anyone, and will be used only for the purposes of this study. Results will be summarized for the group, not by individual families. We can obtain a summary of the findings following completion of the larger study by contacting the primary researcher, Kimberley Houtmeyers. We are aware that it may take about 1 ½ to 2 hours for ourselves, and our child, to complete the study.

We are aware that the participation of ourselves, our child, and our child's teacher is completely voluntary, and that all participants have the right to withdraw at any time. Confidentiality regarding the responses of all participants will be protected by not having any identifying information on any questionnaire material.

This procedure has been reviewed and cleared by the University of Windsor's Psychology Department Ethics Committee. If we wish, we may contact the Chairperson of the Ethics Committee, Dr. Douglas Shore, through the Department of Psychology at the University of Windsor (519-253-4232).

If we have any questions about participating, we may also contact Kimberley Houtmeyers (905-543-8057) or her research supervisor, Dr. Robert Orr, at the University of Windsor (519-253-4232, Ext. 2026).

We have received a copy of this form.

Signature of mother ______________________ Date ________________

Signature of father ______________________ Date ________________
APPENDIX E

Teacher Consent Form
Consent Form

I, ___________________________ (please print) understand and consent to the following:

I consent to participate in a study regarding the association between a child's relationships with his/her primary caregivers and his/her level of emotional functioning. In the study, I will be asked to respond to a number of questions looking at aspects of the behavioural and emotional functioning of children in the preschool in which I am a teacher. I have received consent from the parents of participating children to complete this information about the children. The results of the questionnaires will not be shared with anyone and will be used only for the purposes of this study. Results will be summarized for the group, not by individual child. I am aware that it may take approximately 15 minutes to complete the questionnaire for each child.

I am aware that my participation is completely voluntary, and that I have the right to withdraw from participation at any time. Confidentiality of my responses will be protected by not having any identifying information about myself, the children, or their parents, on any questionnaire material.

This procedure has been reviewed and approved by the University of Windsor's Psychology Department. If I wish, I may contact the Chairperson of the Ethic's Committee (Dr. Douglas Shore) at the University of Windsor (519-253-4232). I may also contact Kimberley Houtmeyers (905-543-8057) or her research supervisor, Dr. Robert Orr, at the University of Windsor (519-253-4232 Ext. 2026).

I have received a copy of this form.

Signature ___________________________

Date ________________
APPENDIX F

Expanded Test Names Corresponding To Abbreviations
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APPENDIX H

Pilot Study Parent Information Letter
Dear Parent,

I am writing to request permission for the participation of ________________________ in a study designed to develop measures of emotional self-awareness, impulse control, and attributitional style in preschool-age children. These measures will be used as part of a larger study that is being completed to fulfill the requirements for a doctoral degree in Clinical Child Psychology. The study has been cleared by the Department of Psychology Ethics Committee at the University of Windsor, and your child’s daycare/preschool.

Children who participate in this portion of the study will complete brief child-oriented tasks looking at the child’s ability to correctly identify feelings in him/herself, to delay gratification in completion of a task, and to answer questions related to attribution of events to personal or external sources. Testing time is expected to take approximately 30 minutes and will be completed at your child’s daycare/preschool during the normal school day.

All results will remain strictly confidential. The information obtained will be used only in summary form, not identifying individuals. Verbal permission from the children will be obtained prior to participation, and children will be made aware that they are free to withdraw from participation at any time.

If you are willing to have your child participate in this portion of the study, please complete the attached consent form (an additional copy is attached for you to keep) and return it to your child’s daycare/preschool by _____________. You are free to withdraw your child from participation at any time by contacting your child’s daycare/preschool, and only those children for whom parental/guardian consent and verbal permission (from the child) are obtained will be included.

A summary of findings from the larger study can be made available to you following completion of the study.

If you have any further questions, please feel free to contact me, Kimberley Houtmeyers, at home (905-543-8057) or my research supervisor, Dr. Robert Orr, through the Department of Psychology at the University of Windsor (519-253-4232, Ext. 2026).

Thank you for your consideration,

Kimberley Houtmeyers, M.A., Ph.D. Candidate
APPENDIX I

Pilot Study Parent Consent Form
Consent Form

I, ___________________________________________ (please print) understand and consent to the following:

I consent to allow the participation of my child, ___________________________________________, in a study regarding the development of measures of emotional self-awareness, impulse control, and attributional style in preschool-age children. In this study, my child will be asked to respond to a number of questions looking at aspects of emotional self-awareness, attribution of events to personal or external sources, and to complete a brief task designed to assess delay of gratification. The results of my child’s participation will be kept confidential and will be used for research purposes only. Results will be summarized for the group, not by individual. I can obtain a summary of the findings following completion of the larger study by contacting the primary researcher, Kimberley Houtmeyers. I am aware that it may take approximately 30 minutes to complete the testing session.

I am aware that my child’s participation is completely voluntary, and that I have the right to withdraw my child from participation at any time. Confidentiality regarding my child’s responses will be protected by not having my, or my child’s, name or any other identifying information on any questionnaire material.

This procedure has been reviewed and approved by the University of Windsor’s Psychology Department Ethics Committee. If I wish, I may contact the Chairperson of the Ethics Committee, Dr. Douglas Shore, through the Department of Psychology at the University of Windsor (519-253-4232).

If I have any questions about participating, I can contact Kimberley Houtmeyers, at home (905-543-8057), or her research supervisor, Dr. Robert Orr, at the University of Windsor (519-253-4232, Ext. 2026).

I have received a copy of this form.

Signature ___________________________________________

Relationship to Child ___________________________________________

Date __________
APPENDIX J

Self-Awareness Of Emotions Scale
Instructions:

“These cups have drawings of faces on them. Here is a happy face, a sad face, a mad face, and a scared face. This last cup shows a face that is feeling nothing at all. This is an imagination game. I am going to read you a bunch of little stories and we’re going to pretend that these stories really happened to you. After I read each story, I will give you a plastic chip and you are to put the chip in the cup that shows the face you would be wearing if the story really did happen to you. Happy, sad, mad, scared, or nothing at all.”

Items:

1. You are painting a pretty picture at school. Another kid comes over and scribbles all over your painting, saying “ha! ha!” How would you be feeling? (Angry)

2. At dinner, your mom gives you a vegetable you don’t like and says you have to eat it. It’s really gross, but you eat it all. After dinner your mom says that because you ate the vegetable you get to have dessert. How would you be feeling? (Happy)

3. You have a doctor’s appointment because you have been sick for the last few days. You might get a needle at the doctor’s office. How would you be feeling? (Afraid)

4. At school, you worked hard to make a really special card for your mom for her birthday. When you come home from school, you find out that you lost the card and you can’t find it anywhere. How would you be feeling? (Sad)

5. It is your mom’s birthday. Your family goes out for dinner and then goes home for birthday cake. How would you be feeling? (Happy)

6. You have a best friend who you really like to play with and do lots of special things with. One day, you find out your friend has a new best friend and he/she doesn’t invite you to play. How would you be feeling? (Sad)

7. It’s bed time. You’re not tired. You want to watch t.v. Your parents make you go to bed anyway. How would you be feeling? (Angry)

8. You are driving in the car with your dad. Another car swerves out in front and your car almost hits that car. How would you be feeling? (Afraid)

9. Your pet runs away from home. You have tried to look for him but haven’t found him yet. Your mom and dad say that maybe he will come home on his own, but you will have to wait and see. How would you be feeling? (Sad)
10. You are at a friend’s house for a sleep-over. While you are sleeping you have a bad dream, and when you wake up the house is dark and you cannot find your friend. How would you be feeling? (Afraid)

11. You are at home with your mom for the day. The two of you go out shopping, do some cleaning and make dinner together. How would you be feeling? (Happy)

12. You and another child are playing with a toy at school. The other child plays too rough with the toy and breaks it. The teacher blames you for breaking the toy and you get in trouble for it. How would you be feeling? (Angry)

13. You are at the mall shopping with your mom. You lose your mom in a big crowd of people. You can’t see her anywhere. How would you be feeling? (Afraid)

14. You are playing with a fun new toy at school. Another kid comes over and takes it away from you without even asking. How would you be feeling? (Angry)

15. You find a sick baby bird in your back yard. You bring it into the house, and for a couple days try to make it better. You come home from school one day, and your mom tells you the baby bird has died. How would you be feeling? (Sad)

16. You work hard on a drawing at school. When you bring it home your dad puts it on the fridge for everyone to see. How would you be feeling? (Happy)
APPENDIX K

Original And Modified Items Of The PPNS-IE
(Nowicki & Duke, 1973)
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<th>Original Items</th>
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<tr>
<td>1. Can you make other kids like you?</td>
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<td>2. Do you believe that you can stop yourself from catching a cold?</td>
<td>Can you stop yourself from catching a cold?</td>
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<tr>
<td>3. Do you feel that getting the teacher to like you is very important?</td>
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<td>4. Do you have a good luck charm?</td>
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<td>5. Are you often blamed for things that just aren’t your fault?</td>
<td>Do you get blamed a lot for things that are not your fault?</td>
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<td>6. Will people like you no matter how you act?</td>
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<td>7. If you ask for something enough, will you get it?</td>
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<td>8. Do you believe that wishing can make good things happen?</td>
<td>Can wishing make good things happen?</td>
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<td>9. When a kid your age decides to hit you, is there anything you can do to stop him or her?</td>
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<td>10. Can you get friends to do what you want them to do?</td>
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<tr>
<td>11. Do you have a lucky number?</td>
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<tr>
<td>12. Can you get your mommy and daddy to do what you want to do instead of what they want to do?</td>
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<td>13. Does whether or not mommy and daddy like you depend on how you act?</td>
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<td>14. When people were mean to you, was it usually for no reason at all?</td>
<td>When people were mean to you, was there a reason for it?</td>
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</table>
15. When you do something wrong, is there nothing you can do to make it right again? 

16. Most of the time, do you find it easy to get your own way at home? 

17. Are most kids just born good at running races? 

18. When somebody your age wants to be your enemy, is there anything you can do to make him or her like you? 

19. Should your mommy and daddy decide what you should do? 

20. Is it almost impossible to try to win a game because most of the other kids are just plain better than you are? 

21. When a person doesn’t like you, is there anything you can do about it? 

22. Are most of the other girls/boys your age stronger than you are? 

23. Are you the kind of child who believes that thinking about what you are going to do makes things turn out better? 

24. Do you think it’s better to be smart than to be lucky? 

25. When another child hits you, is it usually because of something you did? 

26. Is one of the best ways to handle a problem just not to think about it?
VITA AUCTORIS

Kimberley Ann Houtmeyers was born in Chatham, Ontario on August 27, 1969. She graduated from Chatham Collegiate Institute in 1988, following which she attended The University of Western Ontario where she completed her Honours Bachelor of Arts Degree in 1992, graduating on the Dean’s Honour Roll. Kimberley completed her graduate work at The University of Windsor, receiving her Master of Arts in Psychology in 1994 and her Doctor of Philosophy in Clinical Child Psychology in 2000. She currently lives in Hamilton, Ontario where she is employed with Hamilton Health Sciences Corporation and is also working in private practice.